

CAREERS 360

TEST **Series**

CAT 2025

20 Full Mock Tests & Explanations

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MOCK TEST - 1

Section - 1 - Verbal Ability & Reading Comprehension

Directions for Questions 1 to 4: Read the passage given below and answer the questions with the most appropriate choice.

Passage 1

Imagine, if it's possible, that Jeremy Paxman and Matthew Parris are recorded on tape advising a corporate lobbyist how to get her favoured MP into the coalition cabinet. Then imagine that this MP is accused of defrauding the national exchequer of billions of pounds. This is the scandal that unfolded in India last week – more disturbing and revealing for the Indian public than anything from WikiLeaks. In addition to this story, in one of the audio recordings intercepted by India's income tax department, Vir Sanghvi, a leading TV host, is heard offering his services to Niira Radia, a lobbyist for two of India's biggest corporate houses, the Tatas and Reliance Industries.

"What kind of story do you want?" Sanghvi asks Radia, and goes on to offer a "fully scripted" and "rehearsed" television interview to her client, Mukesh Ambani, India's richest man. Another tape has Barkha Dutt – who hosts a popular TV show called We, the People – can also be heard offering to relay messages from Radia to politicians whom Radia wants to influence in the process of forming a cabinet.

Radia's candidate – A Raja – did indeed go on to become the telecommunications minister. He now stands accused of depriving the national exchequer of \$39bn by selling mobile phone "2G spectrum" bandwidth cheaply to, among other telecom companies, Tata – represented by Radia. Under pressure from opposition parties and the supreme court, Raja resigned last month. The journalists caught on tape have preferred to brazen it out, insisting that they were only squeezing a likely source for information.

At first it seemed they might get away with it when such high-circulation mainstream newspapers as the Times of India and the Hindustan Times refused to cover the scandal. But public anger, amplified by the internet, may now be making the censorship unsustainable. Yesterday Dutt appeared on her own TV channel, claiming she was guilty of nothing more than an "error of judgment". Her prickly defence – that only a naive journalist would see something newsworthy in the oversized influence of corporate lobbyists on political processes – pointed to a deeper rot in the New India beloved of globalised elites. As Sonia Gandhi, the Congress party leader, put it: the country's economy may "increasingly be dynamic, but our moral universe seems to be shrinking ... The principles on which Independent India was founded, for which a generation of great leaders fought and sacrificed their all, are in danger of being negated."

It is too easy, however, to focus on the moral obtuseness of a few journalists and businessmen. A broader consensus exists within the middle class beneficiaries of India's economy, a wider culture of deference to powerful and wealthy people, and intolerance and meanness towards the poor and defenceless, and their few articulate advocates. Mainstream journalists too have succumbed to this political pathology. What the tapes reveal most vividly is not spectacular corruption – not exactly news – so much as why the supposed watchdogs of democracy have assumed the militant aggressiveness and vanity of the very privileged in a wretchedly poor country.

Ratan Tata, whose conversations with Radia were also recorded, now complains that India is turning into a "banana republic". But Tata's own praise of Modi signified the ethical deficit among India's rich and powerful. Certainly, Sanghvi sounded like a Latin American oligarchist when, criticising the US decision to deny Modi a visa, he argued: "Modi may be a mass murderer. But he is our mass murderer." Claiming to speak for the "educated Indian middle class", Sanghvi asserted that "we are entirely justified in being angered" by Arundhati Roy's recent remarks on India's military occupation of Kashmir. Marvelling at a "concept of Indian unity" that endorses extrajudicial execution and torture, the social psychologist Ashis Nandy recently wondered if there was "a large enough section of India's much-vaunted middle class fully sensitive to the demands of democracy". Or could it be that, far from upholding progressive values, many exalted Indians, including journalists, will do anything to protect "their new-found social status and political clout"?

Certainly, these revelations and their attempted suppression by mainstream media not only validate Nandy's grim diagnosis. They also confirm his suspicion that, notwithstanding the anarchist culture of WikiLeaks, the future of censorship in India is "very bright".

Q. 1. The concluding sentence of the passage is not:

- A. a despondent remark about the future of Indian media and how he sees no hope for the future.
- B. a sardonic reference to the current state of affairs and the possibility of information suppression in India through censorship.
- C. a profound observation regarding the distinction between the Indian Media and WikiLeaks.
- D. An effort to elucidate the future of the media in India and how it will follow in the footsteps of Wikileaks

Q. 2. The principal objective of the author of the passage is:

- A. to bring attention to the cronyism that pervades the media as a whole and how it undermines the very foundations of democracy.
- B. to describe the working of Indian democracy and the function of the media in the larger picture.
- C. to demonstrate how business and the media are working together closely to act as tools of subversion against India's democratic procedures.
- D. to express his own grievances against the Indian media.

Q. 3. Paraphrase: 'Mainstream journalists too have succumbed to this political pathology'?

- A. Journalists share the same desires as politicians.
- B. Journalists have succumbed to the same biases and maladies as politicians.
- C. Journalists have given in to the mandates of politicians and are now plagued with the same maladies.
- D. Journalists have lost the ability to distinguish between the good and the evil.

Q. 4. What does the author mean by 'watchdogs of democracy'?

- A. members of the democratic process
- B. those who safeguard the democratic process
- C. antagonists of the democratic procedure
- D. curators of sensitive elements of the democratic process.

Directions for Questions 5 to 8: Read the passage given below and answer the questions with the most appropriate choice.

Passage 2

It's time to take a look at the line between "pet" and "animal." When the ASPCA sends an agent to the home of a Brooklyn family to arrest one of its members for allegedly killing a hamster, something is wrong. That "something" is this: we protect "companion animals" like hamsters while largely ignoring what amounts to the torture of chickens and cows and pigs. In short, if I keep a pig as a pet, I can't kick it. If I keep a pig I intend to sell for food, I can pretty much torture it. State laws known as "Common Farming Exemptions" allow industry — rather than lawmakers — to make any practice legal as long as it's common. "In other words," as Jonathan Safran Foer, the author of "Eating Animals," wrote to me via e-mail, "the industry has the power to define cruelty. It's every bit as crazy as giving burglars the power to define trespassing."

Meanwhile, there are pet police. So when 19-year-old Monique Smith slammed her sibling's hamster on the floor and killed it, as she may have done in a fit of rage last week, an ASPCA agent — there are 18 of them, busily responding to animal cruelty calls in the five boroughs and occasionally beyond — arrested her. In light of the way most animals are treated in this country, I'm pretty sure that ASPCA agents don't need to spend their time in Brooklyn defending rodents.

In fact, there's no rationality to be found here. Just a few blocks from Ms. Smith's home, along the M subway line, the city routinely is poisoning rodents as quickly and futilely as it possibly can, though rats can be pets as well. But that's hardly the point. This is: we "process" (that means kill) nearly 10 billion animals annually in this country, approximately one-sixth of the world's total. Many, if not most, of these animals are raised (or not, since probably a couple of hundred million are killed at birth) industrially, in conditions that the philosopher Peter Singer and others have compared to concentration camps. Might we more usefully police those who keep egg-laying hens in cages so small the birds can't open their wings, for example, than anger-management-challenged young people accused of hamstercide?

Yet Ms. Smith was charged as a felon, because in New York (and there are similar laws in other states) if you kick a dog or cat or hamster or, I suppose, a guppy, enough to "cause extreme physical pain" or do so "in an especially depraved or sadistic manner" you may be guilty of aggravated cruelty to animals, as long as you do this "with no justifiable purpose." But thanks to Common Farming Exemptions, as long as I "raise" animals for food and it's done by my fellow "farmers" (in this case, manufacturers might be a better word), I can put around 200 million male chicks a year through grinders, castrate — mostly without anesthetic — 65 million calves and piglets a year, breed sick animals (don't forget: more than half a billion eggs were recalled last summer, from just two Iowa farms) who in turn breed antibiotic-resistant bacteria, allow those sick animals to die without individual veterinary care, imprison animals in cages so small they cannot turn around, skin live animals, or kill animals en masse to stem disease outbreaks. All of this is legal, because we will eat them. We have "justifiable purposes": pleasure, convenience — there are few things more filling per dollar than a cheeseburger — and of course corporate profits.

Arguing for the freedom to eat as much meat as you want is equivalent to arguing for treating farm animals as if they could not feel pain. Yet no one would defend Ms. Smith's cruel action because it was a pet and therefore not born to be put through living hell. Is it really that bad? After all, a new video from Smithfield, the world's largest pork producer, makes industrial pig-raising seem like a little bit of heaven. But undercover videos from the Humane Society of the United States tell quite a different story, and a repulsive one.

Our fantasy is that until the industrial era domesticated animals were treated decently. Maybe that's true, and maybe it isn't; but certainly they weren't turned out by the tens of thousands as if they were widgets. We're finally seeing some laws that take the first steps toward generally ameliorating cruelty to farm animals, and it's safe to say that most of today's small farmers and even some larger ones raise animals humanely. These few, at least, are treated with as much respect as the law believes we should treat a hamster. For the majority of non-pets, though, it's tough luck.

Q. 5. The principal objective of the author of the passage is:

- A. to demonstrate the disparities between the treatment of pet animals and eating animals, and the need for a standardised approach to both groups.
- B. to emphasise the absurdity of the treatment of pet owners and the need to repeal the laws governing this treatment.
- C. to demonstrate the absurdity of industrial farming practises, the hypocrisy of our treatment of pet animals and eating animals, and the need for a more considerate approach.
- D. to emphasise the problems facing the farming sector and how they are eternally in the centre of the storm, whatever the reason.

Q. 6. Which of the following practices are analogous to the reasoning behind the state laws referred to in the passage as "Common Farming Exemptions"?

- I. If people across the entire state have grown accustomed to taking natural drugs and substances that intoxicate such as weed, it should be legalised.
- II. If a large percentage of drivers in an area in question regularly commit parking violations and park on the street, these practices should be made legitimate.
- III. If moonshine products are readily available on the open market for additional money, then selling them ought to be deemed legitimate.

- A. I & III only
- B. I only
- C. II only
- D. I & II

Q 7. The appropriate title for the passage is:

- A. Animal versus Animal: who will come out on top?
- B. Animals and their appeal for Equality
- C. Animals must take matters into their own hands!
- D. Some Animals Have Greater Equality Than Others

Q. 8. Which of the following statements does the author of the passage concur with?

- A. We ought to advocate for the freedom to consume as much meat as you want, as human consumption is an issue that must be addressed first.
- B. The inhumane treatment of Miss Smith's pet should not be justified, and she should be seriously admonished.
- C. We should treat animals with greater respect and raise fewer of them; this would reduce the amount we consume naturally. In general, the situation is better for us, the animals, and the entire globe.
- D. We have justifiable motives for killing farm animals, such as glee, functionality, and financial gain.

Directions for Questions 9 to 12: Read the passage given below and answer the questions with the most appropriate choice.

Passage 3

Darwin's work has the property of greatness in that it may be admired from more aspects than one. For some the perception of the principle of Natural Selection stands out as his most wonderful achievement to which all the rest is subordinate. Others, among whom I would range myself, look up to him rather as the first who plainly distinguished, collected, and comprehensively studied that new class of evidence from which hereafter a true understanding of the process of Evolution may be developed. We each prefer our own standpoint of admiration; but I think that it will be in their wider aspect that his labours will most command the veneration of posterity.

A treatise written to advance knowledge may be read in two moods. The reader may keep his mind passive, willing merely to receive the impression of the writer's thought; or he may read with his attention strained and alert, asking at every instant how the new knowledge can be used in a further advance, watching continually for fresh footholds by which to climb higher still. Of Shelley it has been said that he was a poet for poets: so Darwin was a naturalist for naturalists. It is when his writings are used in the critical and more exacting spirit with which we test the outfit for our own enterprise that we learn their full value and strength. Whether we glance back and compare his performance with the efforts of his predecessors, or look forward along the course which modern research is disclosing, we shall honour most in him not the rounded merit of finite accomplishment, but the creative power by which he inaugurated a line of discovery endless in variety and extension. Let us attempt thus to see his work in true perspective between the past from which it grew, and the present which is its consequence. Darwin attacked the problem of Evolution by reference to facts of three classes: Variation; Heredity; Natural Selection. His work was not as the laity suppose, a sudden and unheralded revelation, but the first fruit of a long and hitherto barren controversy. The occurrence of variation from type, and the hereditary transmission of such variation had of course been long familiar to practical men, and inferences as to the possible bearing of those phenomena on the nature of specific difference had been from time to time drawn by naturalists. Maupertuis, for example, wrote: "Ce qui nous reste à examiner, c'est comment d'un seul individu, il a pu naître tant d'espèces différentes." And again: "La Nature contient le fonds de toutes ces variétés: mais le hasard ou l'art les mettent en œuvre. C'est ainsi que ceux dont l'industrie s'applique à satisfaire le goût des curieux, sont, pour ainsi dire, créateurs d'espèces nouvelles." Such passages, of which many (though few so emphatic) can be found in eighteenth century writers, indicate a true perception of the mode of Evolution. The speculations hinted at by Buffon, developed by Erasmus Darwin, and independently proclaimed above all by Lamarck, gave to the doctrine of descent a wide renown. The uniformitarian teaching which Lyell deduced from geological observation had gained acceptance. The facts of geographical distribution had been shown to be obviously inconsistent with the Mosaic legend. Prichard, and Lawrence, following the example of Blumenbach, had successfully demonstrated that the races of Man could be regarded as different forms of one species, contrary to the opinion up till then received. These treatises all begin, it is true, with a profound obeisance to the sons of Noah, but that performed, they continue on strictly modern lines. The question of the mutability of species was thus prominently raised.

Q. 9. The phrase 'veneration of posterity', as used in the passage, alludes to:

- A. stature and respect acquired in society
- B. respect of generations to come
- C. respect of one's contemporaries;
- D. observable stature and respect earned in current society.

Q. 10. It can be inferred from the passage that the author means the following when he states, "Darwin was a naturalist for naturalists":

- A. Darwin's writing style was organic, making him easy to grasp and assimilate.
- B. Darwin was a natural in his own discipline, which was apparent in his work.
- C. Darwin's work was put together in a way that demanded expertise from those around him.
- D. Darwin's work was so complicated that even his fellow naturalists battled to fathom it.

Q. 11. The author uses the passage attributed to Maupertuis to illustrate:

- A. how Darwin was the first to conceive the theory of natural selection
- B. how evolution had been thoroughly comprehended by the previous generation of authors
- C. how the generations before Darwin contributed to the overall depth of the subject.
- D. Only the authors of the 18th century had a genuine understanding of Evolution's mode.

Q.12. Except as noted, the author of the passage adopts each of the following positions regarding Darwin:

- A. unmitigated acclaim
- B. informed admiration
- C. pejorative recognition
- D. revered acclaim

Directions for Questions 13 to 16: Read the passage given below and answer the questions with the most appropriate choice.

Passage 4

Every living creature was at some stage of its life nothing more than a single cell. It is generally known that human beings result from the union of an egg-cell and a sperm-cell, but it is not so universally understood that these germ-cells are part of a continuous stream of germ-plasm which has been in existence ever since the appearance of life on the globe, and which is destined to continue in existence as long as life remains on the globe.

The corollaries of this fact are of great importance. Early investigators tended naturally to look on the germ-cells as a product of the body. Being supposedly products of the body, it was natural to think that they would in some measure reproduce the character of the body which created them; and Darwin elaborated an ingenious hypothesis to explain how the various characters could be represented in the germ-cell. The idea held by him, in common with most other thinkers of his period, is still held more or less unconsciously by those who have not given particular attention to the subject. Generation is conceived as a direct chain: the body produces the germ-cell which produces another body which in turn produces another germ-cell, and so on.

But a generation ago this idea fell under suspicion. August Weismann, professor of zoölogy in the University of Freiburg, Germany, made himself the champion of the new idea, about 1885, and developed it so effectively that it is now a part of the creed of nearly every biologist. Weismann caused a general abandonment of the idea that the germ-cell is produced by the body in each generation, and popularized the conception of the germ-cell as a product of a stream of undifferentiated germ-plasm, not only continuous but (potentially at least) immortal. The body does not produce the germ-cells, he pointed out; instead, the germ-cells produce the body.

The basis of this theory can best be understood by a brief consideration of the reproduction of very simple organisms. "Death is the end of life," is the belief of many other persons than the Lotus Eaters. It is commonly supposed that everything which lives must eventually die. But study of a one-celled animal, an Infusorian, for example, reveals that when it reaches a certain age it pinches in two, and each half becomes an Infusorian in all appearance identical with the original cell. Has the parent cell then died? It may rather be said to survive, in two parts. Each of these daughter cells will in turn go through the same process of reproduction by simple fission, and the process will be continued in their descendants. The Infusorian can be called potentially immortal, because of this method of reproduction.

The immortality, as Weismann pointed out, is not of the kind attributed by the Greeks to their gods, who could not die because no wound could destroy them. On the contrary, the Infusorian is extremely fragile, and is dying by millions at every instant; but if circumstances are favorable, it can live on; it is not inevitably doomed to die sooner or later, as is Man. "It dies from accident often, from old age never."

Now the single-celled Infusorian is in many respects comparable with the single-celled germ of the higher animals. The analogy has often been carried too far; yet it remains indisputable that the germ-cells of men reproduce in the same way—by simple fission—as the Infusorian and other one-celled animals and plants, and that they are organized on much the same plan. Given favorable circumstances, the germ-cell should be expected to be equally immortal. Does it ever find these favorable circumstances?

The investigations of microscopists indicate that it does—that evolution has provided it with these favorable circumstances, in the bodies of the higher animals. Let us recall in outline the early history of the fertilized germ-cell, the zygote formed by the union of ovum and spermatozoön. These two unite to form a single cell, which is essentially the same, physiologically, as other germ-cells. It divides in two similar cells; these each divide; the resulting cells again divide, and so the process continues, until the whole body—a fully developed man,—has been produced by division and redivision of the one zygote.

Q. 13. The author employs Infusorian as an illustration to:

- A. demonstrate that germ cells are delicate.
- B. provide evidence that Weismann's theory is correct.
- C. contradict Darwin's theory.
- D. establish a new theory relating the behaviour of germ cells.

Q. 14. The tone employed by the author of the passage is

- A. diligent
- B. speculative
- C. scrutinising
- D. analytical

Q. 15. The author of the passage would concur with which of the following conclusions, in addition to those already stated in the passage?

- A. it is possible to create mortal germplasm.
- B. it is possible to create immortal germplasm.
- C. it is possible to create immortal organisms.
- D. it is possible to create mortal organisms.

Q. 16. The passage's principal objective is:

- A. to propose a new scientific theory
- B. to settle a controversial matter
- C. to foster comprehension of a scientific phenomenon
- D. to highlight scientific mistakes

Q. 17. Given below is a short paragraph and a set of four options. Read the paragraph and select the best summary for the paragraph.

Under the original Constitution, citizens of the United States were required to be first a citizen of some State - something blacks of the south could not claim. This is why it was imperative for the first section to begin with a definition of citizenship so that no State could refuse recognition of newly freed slaves as U.S. citizens and thereby leaving them with less protection and remedies under State laws of justice compared with a white citizen. It should be pointed out that after the south surrendered there were no longer any organized Southern States belonging to the Union, only federally administered former States that became divided into military districts whose inhabitants were treated primarily as citizens of the United States rather than citizens of a State. The problem with the initial administration of these former rebel States was with President Andrew Johnson's lack of consultation with Congress on his administration plans.

- A. The first chapter of the Constitution defines citizenship in order to prevent states from recognising newly liberated slaves. In time, the Southern states rendered this irrelevant.
- B. In the first article of the Constitution, the concept of state citizenship is defined so that states comprehend the necessity of recognising such citizens.
- C. The first section begins with a definition of citizenship to prevent states from refusing to recognise newly liberated slaves. After the South's surrender, this became irrelevant.
- D. The first article explains what citizenship is and prohibits states from recognising newly liberated slaves. After the South's surrender, this became irrelevant.

Q. 18. Given below is a short paragraph and a set of four options. Read the paragraph and select the best summary for the paragraph.

Our group – me, my friend, a couple in their 20s, and a father and his two kids – begin the session in Zone One: a field in which we learn how to balance and lean. Our instructor, Kieran Richards, is on his third season at Segway Unleashed. He got into Segway after a couple of seasons of sphering, where he met Ben, who introduced him to the harder stuff. Confounding my notions of fleece, Kieran is a laid-back skater who says he falls off the Segways all the time, but only because he's trying to do tricks on them, which even he admits can be foolish. Leaning, he says to the group, is the key to everything. "Be consistent with your leaning," he tells us. "Don't be too aggressive with your leaning." Usain Bolt has made his life a whole lot easier, because people didn't really think you could fall off a Segway, and then suddenly, a video went around the world proving that you could, and how. Poor Song Tao, I think. Once a noble cameraman, now a "how not to" punchline in an off-road Segway experience on a farm in Surrey. Kieran says that people only fall off when they catch their wheels, like Tao did, or when they get too cocky.

- A. Beginners may find Segways perplexing unless they learn how to balance and lean forward/backward. A person can easily injure himself if he does not master these skills quickly.
- B. Segways can be complicated if you do not learn how to balance and sway. A person can easily stumble if they have not learned how to lean correctly.

- C. Usain Bolt has demonstrated that Segways are essential tools. However, until one learns how to recline, there is always the possibility of embarrassing oneself.
- D. Segways are difficult for everyone unless they learn how to thrust forward. It is possible to embarrass oneself and become the subject of a viral video if this is not swiftly learned.

Q. 19. Given below is a short paragraph and a set of four options. Read the paragraph and select the best summary for the paragraph.

However, there are good explanations for why the world has come to believe that oil is now significantly less valuable than it once was. On the supply side of the ledger, we have gas, which is more plentiful than anyone could have thought only a few years ago thanks to the fracking boom, and other fossil fuels that can often substitute for oil. Meanwhile, developments on the demand side have been even more rapid, with a significant downturn in the resource-intensive emerging countries, most notably debt-laden China. Neither the fracking revolution nor the Chinese flu can be stopped at this point. All of this points to the possibility that current low oil prices will persist for some time.

- A. The significant drop in worldwide oil prices can be attributed to both demand and supply factors.
- B. Oil prices have been falling as demand has slowed because of the slowdown of resource-intensive economies, and supply has been restricted because of the availability of alternative resources.
- C. Lower oil prices are a result of the fracking boom limiting oil supplies to debt-ridden China.
- D. Worldwide oil prices have dropped dramatically due to the fracking boom on the demand side and the Chinese flu on the supply side.

Q. 20. Given below is a short paragraph and a set of four options. Read the paragraph and select the option that best completes the paragraph.

But as Edward Jay Epstein uncovered, the idea that diamonds make a good investment is a false one. Diamonds, he argued, are nearly impossible to sell once bought because “any gain from the appreciation of the diamonds will probably be lost in selling them.” He recounted one test conducted by a British magazine: the editor bought diamonds in 1970 and tried to sell them in 1978, but could not sell them for a price anywhere close to the one he had originally paid. Epstein also wrote of a wealthy woman who tried to resell a diamond ring she had bought for \$100,000 from Tiffany & Co. in New York City. After shopping the jewel around in vain, she gave up. (_____)

- A. According to Epstein, the issue with selling diamonds is that vendors, not buyers, determine the price.
- B. According to Epstein, buying diamonds has the advantage that suppliers, not buyers, choose the price.
- C. According to Epstein, buying diamonds has the advantage that consumers, not sellers, determine the price.
- D. According to Epstein, the price of diamond sales is determined by buyers rather than sellers.

Q. 21. Given below is a short paragraph and a set of four options. Read the paragraph and select the option that best completes the paragraph.

In much of Asia and Europe, engineers are protected by a technology known in the United States as positive train control, or P.T.C. Connected by digital radio waves or GPS signals, P.T.C. transponders in the track maintain constant contact with computers in the cabs of oncoming trains. If the transponders determine a train is traveling too fast, the locomotive’s brakes are triggered automatically. Amtrak has

been working on its own in-house version of P.T.C., called the Advanced Civil Speed Enforcement System, or ACSES, for almost a decade. But owing to insufficient funding and a row with the F.C.C., which Amtrak said had been slow to approve the use of the requisite radio bandwidth, its actual implementation has been piecemeal.(_____)

- A. PTC would also be quite helpful in this circumstance.
- B. Nevertheless, PTC would be worthless in this circumstance.
- C. Frankford Junction and other significant stretches of the Northeast Corridor were not operational at the time of the accident.
- D. Frankford Junction and a sizable stretch of the Northeast Corridor were operational at the time of the accident.

Direction for questions 22 to 24: In the following questions, rearrange the four sentences in order to form a meaningful paragraph.

TITA

Q. 22.

1. The generic medicine policy of the government was aimed at making it affordable for the poor patients to purchase drugs that were previously out of bounds for them
2. The central government is of the view that the private hospitals are charging more for the drugs but no arrangement has been made to sell the generic drugs at the private hospitals
3. The policy says that all the government hospitals in all the states in the country will have fair price shops for drugs so that the patients can get the required medicine
4. However, it is also true that most of the states have not been able to open as many stores as required under this policy thereby depriving a lot of people from the drugs under their financial limits.

TITA

Q. 23.

1. In the recent judgment the Supreme Court has observed that a new authority needs to be created in order to formulate a policy regarding the sharing of water between the warring states
2. The Cauvery water dispute has been going on for years in India with the main issue being the distribution of water among all the states that are situated in the basin of the river
3. The solution described by the apex court is a tried and tested route as well in the past and there has been limited success and that is why it seems the court has given the order of constituting a committee in this regard
4. It is not an isolated matter since most of the states in India are facing this hurdle to decide regarding the sharing of water and even India and other countries are also facing this problem. Many water experts have been appointed in this regard but nothing fruitful has been achieved by the governments in the country and also across the border to bring the matter to a logical conclusion

TITA

Q. 24.

1. And the unlucky victim's pupils glaze over, turning red and watery as the viewers
2. Outside, there are creatures who will kill you with a gaze; we, the audience, never see them ourselves, but we catch glimpses of their presence: the leaves rustle and the birds squawk.
3. At the start of Susanne Bier's apocalyptic thriller Bird Box, Sandra Bullock's face fills the screen, daring the camera to break eye contact.

4. Her Mallory is stern and commanding – Bullock’s in drill sergeant mode, not America’s sweetheart – and she doesn’t care about sounding kind.

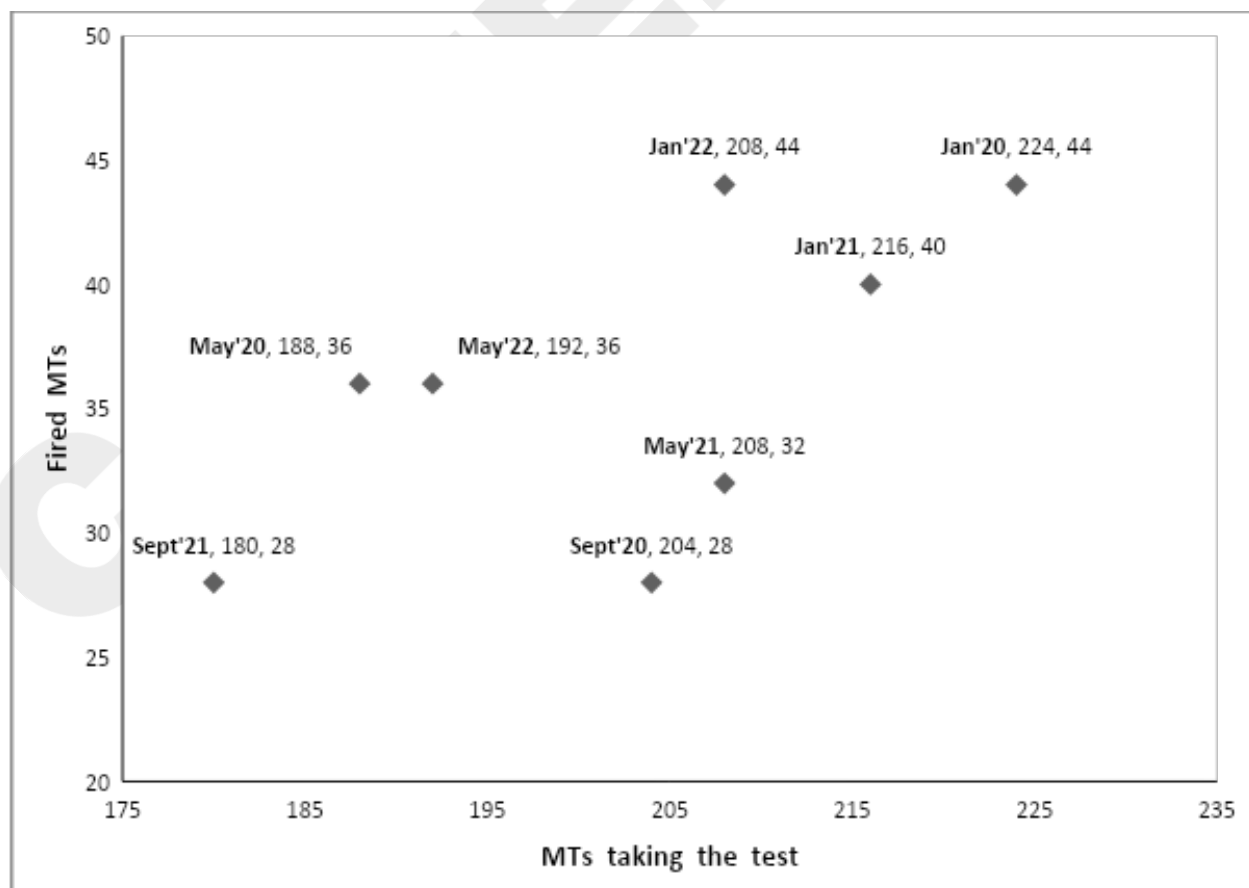
Section - 2 - Data Interpretation and Logical Reasoning

Directions for questions 25 to 29 :

M/s Deloitte Touche Tohmatsu Limited, one of the top four audit and accounting firms in the world with headquarters at London, UK, and with an operational presence in 153 countries, hires Management Trainees (MT) from all the premier management institutes of India thrice every year, in the months of January, May and September.

Each new group of Management Trainees (MT) have to go through a four month rigorous training schedule, after which they have to pass through a test consisting of a written assessment and a case-analysis. The top hundred ranked Management Trainees (MT) based on the performance in the test are confirmed as Management Executives (ME). The rest are given the opportunity of undergoing the training for four months one more time along with the next batch of Management Trainees (MT) and then passing through the subsequent test consisting of the written assessment and case-analysis. The Management Trainee (MT) who fails to get confirmed as a Management Executive (ME) the second time is fired.

The scatter-graph below depicts the number of Management Trainees (MT) at Deloitte taking the tests from January 2020 till May 2022, and the vis-à-vis hired Management Trainees (MT) at Deloitte who were fired :



It is also known that for the month of September 2019 at Deloitte, 96 hired Management Trainees (MT) failed to be confirmed as a Management Executive (ME) the first time, and that 36 hired Management Trainees (MT) were fired.

Q 25. In which of the months given in the options was the maximum number of Management Trainees (MT) hired ?

- A) January 2021
- B) January 2020
- C) September 2020
- D) January 2022

Q. 26 (TITA)

What was the maximum number of Management Trainees (MT) who failed to be confirmed as a Management Executive (ME) the first time in the above mentioned months ?

Q 27 (TITA)

In how many four month cycles from January 2020 to January 2022 were less than 120 new Management Trainees (MT) hired ?

Q.28 (TITA)

If 112 new Management Trainees (MT) were hired in May 2022, how many Management Trainees (MT) could be expected to appear in the test in September 2022 ?

Q. 29 In which test did the minimum number of Management Trainees (MT) get confirmed as a Management Executive (ME) in the second attempt ?

- A) September 2020
- B) May 2021
- C) January 2021
- D) January 2022

Directions for questions 30 to 34:

Six sticks of equal lengths were kept in the vertical position in an empty flower-vase, to be arranged at the six corners of a regular hexagon. The two ends of each of the sticks were of different colours.

The top ends of the sticks were one of each of the following colours – Red, Cyan, Pink, Brown, Black and Green. The bottom ends were one of each of the following colours – Blue, Yellow, White, Orange, Purple and Grey. Both the sets of colours mentioned were in no particular order.

It was also known that :

- a) The stick with the red colour was opposite to the stick with the blue colour
- b) There were exactly two sticks whose both ends had colours whose names started with the same letter
- c) The stick with the grey colour was adjacent to the stick with the white colour
- d) The stick with the cyan colour was adjacent to both the sticks with the brown colour and the one with the blue colour
- e) The stick with the purple colour was adjacent to both the sticks with the grey colour and the one with the green colour
- f) The stick with the white colour was opposite to the stick with the green colour

Q. 30 What was the colour of the bottom end of the stick having brown colour at the top end ?

- A) White
- B) Yellow
- C) Black
- D) Grey

Q.31 What was the colour of the top end of the stick having grey colour at the bottom end ?

- A) Green
- B) Red
- C) Blue
- D) Cyan

Q. 32 What was the colour of the bottom end of the stick opposite the stick with blue colour at the bottom end ?

- A) Black
- B) Brown
- C) Grey
- D) Cannot be determined

Q. 33 What was the colour of the bottom end of the stick opposite the stick with brown colour at the top end ?

- A) Orange
- B) Yellow
- C) Black
- D) Cannot be determined

Q. 34 If the stick with the yellow colour at the bottom was opposite to the stick with pink at the top, then which of the following colours was adjacent to the stick with the blue colour at the bottom ?

- A) Purple
- B) Grey
- C) Orange
- D) White

Directions for questions 35 to 39 :

In the tertiary manufacturing plant of M/S Rantaxy Pharmaceuticals Ltd at Sirmour, thirteen–fourteenth of the management employees were either M.Pharm or MBA degree holders, with MBAs being four-ninth of the number of M. Pharms. Out of them the gender ratio was eight by five in favour of men. Of the women seventy percent were M. Pharms and only 15 were MBAs. No management employee held both an M. Pharm and an MBA degree. The number of men and women management employees who were neither an M. Pharm nor an MBA were in the ratio of 3 : 7.

From the data provided above, answer the questions below :

Q.35 (TITA)

How many male management employees in the tertiary manufacturing plant of M/S Ranbaxy Pharmaceuticals Ltd at Sirmour were neither an MBA nor an M Pharm ?

Q36 (TITA)

What was the total number of lady management employees of M/S Ranbaxy Pharmaceuticals Ltd with an M Pharm degree at the Sirmour plant ?

Q. 37 (TITA)

What was the total strength of the management employees of M/S Ranbaxy Pharmaceuticals Ltd at the Sirmour plant ?

Q 38 The number of lady management employees of M/S Ranbaxy Pharmaceuticals Ltd at the Sirmour plant with an MBA degree, was what percent of the gentlemen there with an M Pharm degree ?

- A) 35.50%
- B) 32.75%
- C) 30.30%
- D) 27.27%

Q. 39

What was the gender ratio of the management employees of M/S Ranbaxy Pharmaceuticals Ltd at the Sirmour plant of M/S Ranbaxy Pharmaceuticals Ltd ?

- A) 8 : 5 in favour of men
- B) 83 : 57 in favour of men
- C) 8 : 5 in favour of women
- D) 87 : 53 in favour of women

Directions for questions 40 to 45 :

In the recent past in Kolkata, abduction of primary-school children, which was unheard of before, suddenly was on the rise. The Police Commissioner of Kolkata IPS Mr Vineet Kumar Goyal, instructed all the schools in Kolkata to take steps to increase the security of their students during the school hours.

St Xavier's School, Kolkata, already had a security system in place. However, the management, after a survey, decided to beef up the security at Gate D on Short Street, which was rather a secluded area. The management took the decision that there must be two guards guarding Gate D each day of the week from Monday to Saturday. The security agency they did business with sent five top security guards named Ambar, Biplab, Chandan, Dinesh and Ekram for the job.

However, they had some constraints while performing their duty :

- a) None of the guards worked for three consecutive days in a week
- b) Ambar did not work on Monday, Tuesday, and Wednesday
- c) Biplab and Dinesh both had a service gun, and hence never worked on the same day
- d) Biplab worked on alternate days and he worked with Ambar on Friday

- e) Ekram worked for the maximum number of days in a week amongst all the five guards
- f) Both Biplab and Dinesh worked for an odd number of days during the week
- g) Two particular guards out of the five worked for the same number of days in a week
- h) Each of the rest three guards worked for a distinct number of days

Q. 40 If Ekram worked with one particular guard twice during a week, then which guard worked on the same day as Dinesh ?

- A) Chandan
- B) Ekram
- C) Ambar
- D) Cannot be determined

Q. 41 If Ambar worked on a Thursday, which guard did he accompany on that day ?

- A) Dinesh
- B) Ekram
- C) Biplab
- D) Chandan

Q. 42 Which of the following statements could never be true ?

- A) Chandan and Ekram can work together on Thursday
- B) Biplab and Chandan can work together on Wednesday
- C) Chandan and Dinesh can work together on Thursday
- D) Ambar and Ekram can work together on Saturday

Q. 43 If Ekram worked with a different guard every time during the week, then which of the two guards definitely worked on Thursday ?

- A) Ambar and Ekram
- B) Dinesh and Ekram
- C) Chandan and Ekram
- D) Cannot be determined

Q. 44 Who is the one guard that Ekram never could work with, had he worked with one particular guard twice during a week ?

- A) Ambar
- B) Chandan
- C) Dinesh
- D) Biplab

Section - 3 - Quantitative Aptitude

Q. 45 (TITA)

A motorist embarks on a drive consisting of city and non-city driving conditions after filling up his petrol tank. He uses 12% of his petrol to cover 18% of his total journey in non-city driving conditions. He knows he has to cover another 24% of his total journey in non-city driving conditions. What should be the percentage decrease (rounded till one decimal place) in his fuel efficiency for city driving over non-city driving, so that he just completes the entire journey without a refill ?

Q. 46 If x and y are natural numbers, and if $1/x + 1/y < 2$, which of the options mentioned below is definitely true ?

- A) $xy > 1$
- B) $x/y + y/x < 1$
- C) $(x + y) > 4$
- D) $(x - y)^2 < 0$

Q. 47 A shopkeeper bought 120 trousers at Rs 2500 each, and sold them for a special scheme of 1 trouser free with every 4 trousers purchased at Rs x per trouser. He sold 105 trousers by this scheme. The rest of the trousers were slightly damaged, and he was forced to sell them for 1 trouser free with every 2 trousers purchased at two-third of the price per undamaged trouser. He found that he had incurred a profit of Rs $6x$ overall. Find the value of x ?

- A) Rs 3975.60
- B) Rs 3128.30
- C) Rs 3543.20
- D) Rs 3591.80

Q. 48 (TITA)

Levis, while manufacturing two batches of jeans, discovered that due to raw material calculation errors the second batch had turned out to be slightly lower in quality than the perfect quality control it strictly maintained in production. The CEO decided that rather than discarding the material produced by the second batch it would be better if it was sold at a subsidy for the section of consumers who could not afford Levis Jeans in general. His team found that if the first batch were sold at a 40% profit and the second at a 60% rebate, then they would remain at par. However if the first batch were sold at a 20% profit and the second one at a 20% rebate, then they would gain a total of 6 million USD. What was the total production cost (in million USD) of both the batches of jeans ?

Q. 49 Fresh fish contains 59% water by weight, while sun-dried fish contains 5% water by weight. A fisherman caught fresh fish, added salt in the ratio of 4 : 1, and prepared the sun-dried salted fish weighing 150 kg. How many kg of fish had the fisherman caught ?

- A) 432.70
- B) 316.25
- C) 237.50

D) 170.50

Q. 50 (TITA)

Capt. Archibald Haddock wanted to give up drinking in the next 40 days. So he purchased a 750 ml bottle of Loch Lomond whisky. He drank 2.5% of the contents of the bottle and replaced it with water. Next day he drank 5% of the contents of the bottle and replaced it with water. On the third day he drank 7.5% of the contents of the bottle and replaced it with water. Like this on the 40th day he drank 100% of the contents of the bottle and stopped drinking. Find out how much volume of water (in ml) Capt. Haddock had to drink with the whisky to give up drinking ?

Q. 51 A 30 litre solution of sugar had 45% sugar in it. It was mixed with a 25 litre solution of sugar having $x\%$ sugar, where $40 \leq x \leq 50$. The sugar concentration in the resulting mixture is $y\%$. Which of the following is not a possible value of y ?

- A) $42 \frac{10}{11}$
- B) $47 \frac{4}{11}$
- C) $45 \frac{2}{11}$
- D) 46

Q. 52 (TITA)

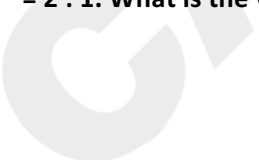
The distance that the apple which had fallen on Sir Issac Newton's head travelling under free fall, varied directly with the square of the time for which it had fallen. It had travelled 21 feet in the fourth second of travel. Find the total distance it had travelled (in feet) in the first four seconds of travel ?

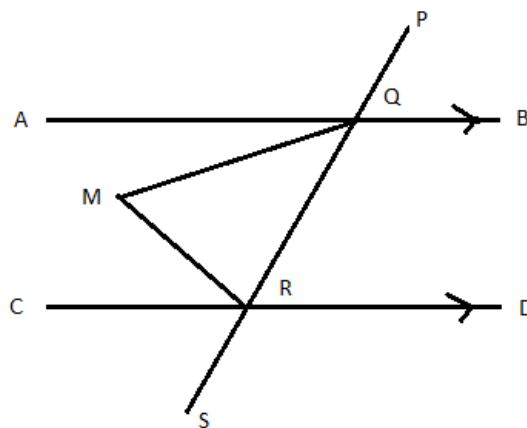
Q. 53 In a bag there are coins of three denominations of Re 1, Rs 2 and Rs 5. The first two are in the ratio of 2 : 3 and the last two in the ratio of 4 : 5. If the total number of coins in the bag is less than 100, the total value of coins in the bag can be Rs. _____. Fill in the blank.

- A) 107
- B) 214
- C) 321
- D) Cannot be determined

Q. 54 (TITA)

In the diagram below, AB is $\parallel$ to CD. $\angle AQM : \angle MQS = 1 : 3$ and $\angle CRM : \angle MRP = 2 : 3$. Also $\angle BQS : \angle QRD = 2 : 1$. What is the value of the reflex $\angle QMR$ (in degrees) ?





Q. 55

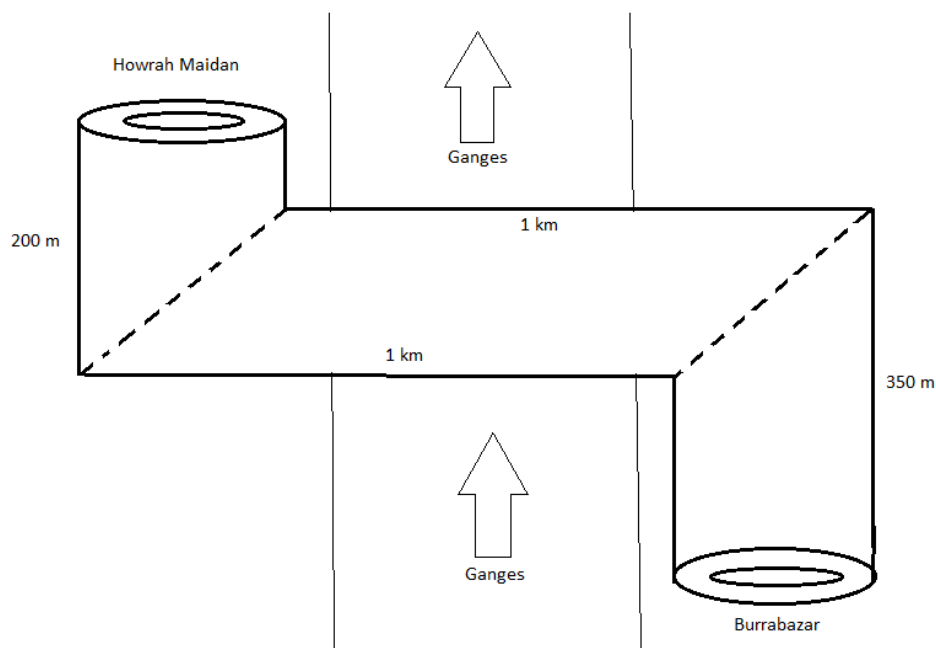
The mid-points of all the sides of a regular hexagon are joined to form another hexagon. The area of the outer hexagon divided by the area of the inner hexagon is equal to _____ ?

- A) 6.00
- B) 3.20
- C) 2.00
- D) 1.33

Q. 56

The diagram below shows the schematic plan of the Kolkata Metro-railway tunnel below the river Ganges, from the Howrah Maidan to the Burrabazar stations. The cylindrical shaped tunnel has a uniform outer diameter of 15 m. The thickness of the uniform concrete layer making up the tunnel is 0.5 m. The other dimensions are as depicted in the schematic diagram. What would be the volume of concrete used (in cubic m, rounded to the nearest integer) to construct the tunnel from the Howrah Maidan station to the Burrabazar station ? Assume π to be 3.14.

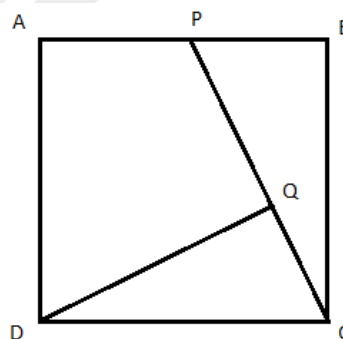
CAREERS360



- A) 30724
- B) 31356
- C) 32675
- D) 34944

Q. 57

In the diagram given below ABCD is a square, where PC of length 81 m is a line cutting AB at P. DQ of length 64 m is $\perp$ to PC. What is the nearest integral value of the length of the diagonal of the square ABCD (in m) ?



- A) 122
- B) 118
- C) 102
- D) 98

Q. 58 The Egyptian government found that the famous pyramid at Giza, a national icon for Egypt, was in a bad state due to the erosion of the desert sand and the heat. They decided to repair and restore the pyramid to its former glory. The measurements of the inspection team found that the pyramid had an external rectangular base of 80 m by 60 m, and a height of 43 m. They decided to totally colour the external surface of the pyramid with sand-resistant and heat-resistant white paint. If each sq m required 1 liter of paint and the cost of each kilo-liter of the chosen paint was 1500 Egyptian pounds, what would be the expense of the government for the project (in Egyptian pounds), neglecting any other expense ? (All dimensions of the pyramid were calculated by the inspection team to the nearest integer)

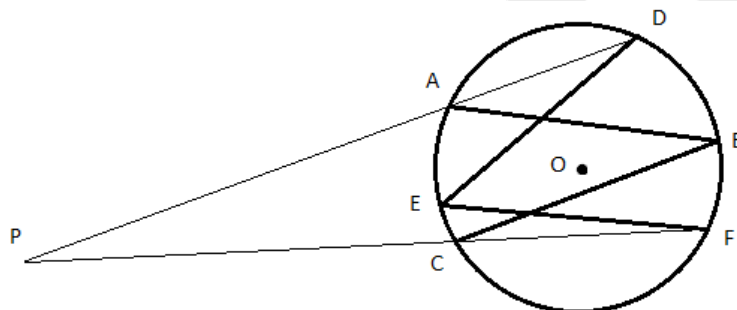
- A) 20380
- B) 11500
- C) 14780
- D) 17760

Q. 59 A regular octagon ABCDEFGH has the length of the principal diagonal as $2\sqrt{2} + \sqrt{2}$ m. Find the area of the regular octagon (in sq m) ?

- A) $4(1 + \sqrt{2})$
- B) $3(\sqrt{2} - 1)$
- C) $2\sqrt{2}(1 + \sqrt{2})$
- D) $5\sqrt{2}$

Q. 60 (TITA)

In the diagram below AB, BC, DE and EF are chords of a circle with centre O. $\angle ABC = 30^\circ$ and $\angle DEF = 45^\circ$. DA and FC are extended to meet at P. What is the value of $\angle DPF$ (in degrees) ?



Q. 61 (TITA)

Mr Mogambo invested a sum of money in the narcotics manufacturing business of his friend Mr Shakaal at a fixed rate of compound interest per annum and interest compounded annually. The investment yielded Mr Mogambo an interest of Rs 2,01,600 in the second year and Rs 2,25,792 in the third year. Find the possible number of factors of the amount invested by Mr Mogambo in the business of his friend Mr Shakaal ?

Q. 62

Mr Rocky Balboa and Mr Apollo Creed were joint winners in the world heavyweight boxing championship finals in 1976 and divided the prize money equally between them. While Mr Balboa invested the amount at simple interest, Mr Creed did so at compound interest, interest compounded annually. Both the rate of interests was of the same magnitude per annum. In the next two years, while Mr Balboa earned an interest of 1.6 million dollars, Mr Creed earned 1.7 million dollars interest. What was the prize money (in million dollars) in the world heavyweight boxing championship finals in 1976 ?

- A) 3.2
- B) 6.4
- C) 12.8
- D) 25.6

Q. 63 (TITA)

The average of 34 numbers is 53. A few numbers from the set of natural numbers from 47 to 89 is included to create a new average greater than 58. What is the minimum number of natural numbers to be included from the set to fulfil the criteria ?

Q. 64 In 2001, the average age of a family of 7 members was 36 years. In 2010 a family member expired and a child was born to the family. In 2018 another family member expired merely a week later after the marriage of the younger son of the family to his bride of age 27 years. It was found that the average age of the family in 2021 was 43 years. Out of the options provided, which could have been the individual age of the two family members when they expired in 2010 and 2018 respectively ?

- A) 68 & 50
- B) 74 & 52
- C) 82 & 40
- D) 84 & 43

Q. 65 A cocktail shaker has 120 ml of sherry-martini, a cocktail consisting of Amontillado sherry, Smirnoff vodka and Lillet-blanc in the ratio of 2 : 3 : 5. The bar-tender removes 20 ml from the mixture and replaces it with Lillet-blanc. He repeats this one more time. Find the final ratio of sherry, vodka and Lillet-blanc in the sherry-martini ?

- A) 13 : 18 : 48
- B) 10 : 15 : 47
- C) 14 : 21 : 37
- D) None of the above

Q. 66 During the annual sports meet on 25th January 1983, at St Xavier's School, Durgapur, two big jerricans were arranged by the P.T. Sir Mr Shantimoy Biswas for the refreshment purposes of the students participating. One of the jerricans was filled with 20 litres of freshly extracted pure orange juice, while the other was filled with 20 litres of cold drinking water mixed with Electoral ORS powder. Sir Biswas took a 2-litre mug and transferred one mug of orange juice from the first jerrican to the second. He then moved the same amount from the second jerrican to the first. He repeated the whole process one more time, and the two different drinks were ready. The drink in the first jerrican became such a hit among the students that it was named the Shanti-Punch, and the participation in the school sports rose considerably in the subsequent years to be able to have the Shanti-punch. What was the final concentration of pure orange juice in the Shanti-Punch ?

- A) 100/121
- B) 109/121
- C) 101/121
- D) 10/11

Answer Key - Mock Test 1

Section - Verbal Ability & Reading Comprehension

1 - D, 2- C, 3- B, 4 -B, 5-C, 6-D, 7- D, 8-C, 9- B, 10-C, 11-C, 12-C, 13-B, 14-D, 15-C, 16-C, 17-C, 18-B, 19-B, 20-D, 21-C, 22- 1342, 23- 2413, 24- 3421

Section - Data Interpretation & Logical Reasoning

25 -D, 26- 96, 27-2, 28-168, 29-D, 30-A, 31-B, 32-C, 33-D, 34-C, 35-3, 36-35, 37-140, 38-D, 39-B, 40-A, 41-B, 42-C, 43-D, 44-C

Section - Quantitative Aptitude

45 - 46.3, 46- A, 47-C, 48- 150, 49-C, 50-14625, 51-B, 52-48, 53-D, 54- 297, 55-D, 56-D, 57-C, 58-B, 59-A, 60-15, 61-84, 62-C, 63-6, 64-A, 65-B, 66-C

Solutions - Mock Test 1

Section - Verbal Ability & Reading Comprehension

1. D

The last sentence of the passage is an adverse observation that emphasises the challenges of Indian media and how it could resort to censorship to suppress information in the future.

2. C

The question at hand needs an in-depth review of the choices that are available. There are a number of likely answer options, particularly options A and C. Both assessments are true, but answer choice C provides a more precise account of the author's purpose. This option investigates the passage from every conceivable angle and highlights each of the points of the passage. This makes this the best choice possible.

3. B

The question explicitly demands an explanation of this line. This is best illustrated by option B. The other alternatives commit the mistake of including information that cannot be justified by this line.

4.B

A watchdog is a protector or defender. Consequently, the accurate response is option B.

5. C

What is the author of the passage attempting to accomplish? Well, he explains the double standard applied to pets and farm animals, how maltreatment is perpetrated against farm animals, and the need to rectify this approach. Where does this sentiment originate? In option C, this is exemplified flawlessly.

6. D

The concept underlying this query is straightforward: if the practice is widespread, it should be legalised. The first and second statements are predicated on this principle.

7. D

The passage is about the unfair treatment of particular animals, and answer choice D reflects this precisely. This passage highlights how farm animals are being treated unfairly and on the other hand, the kind of treatment pet animals get. This disparity is highlighted best by option D.

8. C

The author of the passage is unequivocally in favour of improving the living conditions and treatment of farm animals. He wants a reduction in the cruelty shown to them and explains the reasons for this. One of these causes is the excessive consumption of meat by humans and the justification that it provides for our treatment of animals. Clearly, option C addresses these issues, and the author would concur with this evaluation. The other choices are opposite to the author's perspective.

9. B

You must comprehend the definitions of the terms 'veneration' and 'posterity' in order to determine the correct response. This phrase means:

A sense of profound respect for someone or something; veneration

Posterity: Each succeeding generation

Extending this meaning to the query at hand, we can conclude that option (b) is the correct response.

10. C

For the provided question, please read the line that follows the given context. When his writings are used in a critical and more exacting manner, such as when evaluating a business for our own enterprise, we discover their true value and strength. These lines explain how his work was intended to be consumed by his colleagues and how they gained tremendous knowledge from it.

11. C

In the provided scenario, let us examine the available options:

Option (a): contradicts the passage; the passage by Maupertuis demonstrates that others had similar ideas.

Option (b) is incorrect because these authors had not completely grasped the concept of evolution

Option (c) is appropriate because it illustrates how these generations made their own share of contribution to the concept of evolution.

Option (d): is a clever option that mutilates a portion of the sentence provided in the passage; however, this does not make it the correct option, as it commits the error of using the word 'only', which renders it inaccurate.

12. C

Logically, this is the simplest issue for this passage. The only difficulty in this question is vocabulary usage. (A), (B), and (D) are positive answer choices that align with the author's sentiment (who plainly praises Darwin). Option (c) is a negative response option. Pejorative is defined as 'expressing disapproval,' and this sentiment is not seen in the context at hand.

13. B

In this instance, options (b) and (c) should be causing you confusion. Are they not identical? In actuality, they are not. The example of Infusorian contributes to the establishment of Weismann's theory and demonstrates that cells are actively dividing and reproducing. This is consistent with Weismann's theory but does not explicitly contradict Darwin's.

14. D

The finest tone in this case is represented by answer choice (d), which reflects the author's scientific and example-based approach. The author is not simply making a statement or following a logical progression; rather, he is analysing theories and providing a solid foundation for his recommendations.

15. C

In this instance, you must provide a conclusion in addition to those provided in the passage. This implies that the conclusion provided in the passage cannot be repeated. This is achieved via option (c). Even though option (b) is also factually accurate, it is already mentioned in the passage and can therefore be ruled out.

16. C

In this instance, the primary purpose of the passage is to assist the reader comprehend how cell division works and how it must be understood. The author does not introduce anything new, point out any scientific fallacies, or indicate that this is a controversial topic. Keeping in mind the moderate nature of the passage, we can confidently determine that option (c) is the correct response.

17. C

The key ideas explained in the passage are the beginning of the first section as defining citizenship so that states can't refuse recognition of newly freed slaves and that this was no longer relevant after the south surrendered. These points are mentioned correctly in option 3 only.

18. B

The passage emphasises the necessity of maintaining a consistent lean on Segways and the occurrence of accidents when someone leans too aggressively. Consequently, option 2 is the best option.

19. B

Choice A does not provide adequate detail.

Choice B is the most accurate representation of the text.

Choice C is skewed, as supply has not been constrained by the fracking boom.

The fracking boom affected supply, while China's decreased demand affects demand, making Option D unrealistic.

20. D

The text discusses how challenging it is to turn a profit on diamond investments and concludes by noting how challenging it is to sell the stones. Therefore, since the paragraph discusses a disadvantage rather than an advantage, options 2 and 3 are ruled out. Option 1 is ruled out because, as stated in the option, it would be simple to sell diamonds if sellers were in charge of setting the price. As a result, option 4 is the best one.

21. C

The fragmented application of PTC is discussed in the conclusion of the passage. This is consistent with option 3, which also acknowledges that some of the corridor wasn't online.

22. 1342

Exp: Statement 1 is the first sentence of the passage since it is about the context of the whole passage - The generic medicine policy. Statement 3 comes after that since it explains what comes under that policy - having fair price shops for drugs. statement 4 is the next sentence since it explains that in reality the plan to have fair price shops has failed to some extent. Statement 2 is the last sentence in the passage as it moves away from opening fair price shops and talks about the condition in private hospitals

23. 2413

Exp: Statement 2 is the first sentence of the passage as it is about the context of the passage. Statement 4 will be the next sentence as it explains the issue in detail, talks about the situation of various other states along with countries in this regard and explains the status of various previous committees in this issue. Statement 1 comes after that with the recent order of the SC being described in this regard. Statement 3 is the note of optimism by the author regarding the success of the new scheme to resolve the issue for good and again mentions the judgement of the Supreme Court, i.e., the apex court

24. 3421

This is a tough question. The passage is about Sandra Bullock's new movie Bird Box. Obviously statement 3 will open. 4 follows as 'her Mallory is stern and commanding' talks about her character. From statement 2 the description of the movie starts. 2 is followed by 1 which has the connecting word AND. Hence, the correct order is 3421.

Section - Data Interpretation & Logical Reasoning

25.D

Tabulating the data given in the scatter graph, we get :

Test in the month of	Total MT test takers (A)	Total MTs fired (B)	Total second time test taker MTs (C)	Total MTs selected as MEs (D)	Total new test taker MTs (E = A - C)	MTs eligible to retake test after 4 months (C = A - B - D)
Sept 2019		36		100		96
Jan 2020	224	44		100		
May 2020	188	36		100		
Sept 2020	204	28		100		
Jan 2021	216	40		100		
May 2021	208	32		100		
Sept 2021	180	28		100		
Jan 2022	208	44		100		
May 2022	192	36		100		

Now, for every test, 100 Management Trainees (MT) get confirmed as Management Executives (ME). Thus in September 2019, 100 MTs get confirmed as MEs. Also in the month of September 2019, 96 hired MTs failed to be confirmed as a ME the first time, and 36 hired MTs were fired. So, 96 MTs would retake the test in January 2020. Also 36 MTs failed the test the second time. Hence total MTs taking the test in September 2019 = $100 + 96 + 36 = 232$.

The above 96 MTs retook the test for the second time out of the total 224 who took the test in January 2020. Thus the remaining $224 - 96 = 128$ were the first time test takers in January 2020, who must have been hired as MTs in September 2019.

In January 2020, 100 MTs again get confirmed as MEs and 44 MTs get fired. $224 - 100 - 44 = 80$. Thus 80 MTs would retake the test in May 2020.

The above 80 MTs retook the test for the second time out of the total 188 who took the test in May 2020. Thus the remaining $188 - 80 = 108$ were the first time test takers in May 2020, who must have been hired as MTs in January 2020.

Continuing in this fashion till May 2022, we can find out the data as tabulated below :

Test in the month of	Total MT test takers (A)	Total MTs fired (B)	Total second time test taker MTs (C)	Total MTs selected as MEs (D)	Total new test taker MTs (E = A - C)	MTs eligible to retake test after 4 months (C = A - B - D)
Sept 2019	232	36	X	100	X	96
Jan 2020	224	44	96	100	128	80
May 2020	188	36	80	100	108	52
Sept 2020	204	28	52	100	152	76
Jan 2021	216	40	76	100	140	76
May 2021	208	32	76	100	132	76
Sept 2021	180	28	76	100	104	52
Jan 2022	208	44	52	100	156	64
May 2022	192	36	64	100	128	56

From the column of Total new test taker MTs, we can conclude that the number of Management Trainees (MT) hired were as follows :

- a) January 2020 – 128,
- b) May 2020 – 108,
- c) September 2020 – 152,
- d) January 2021 – 140,
- e) May 2021 – 132,
- f) September 2021 – 104,
- g) January 2022 – 156, and
- h) May 2022 – 128.

Hence, the maximum number of Management Trainees (MT) was hired in January 2022 (156).

26. 96

We already know that :

Test in the month of	Total MT test takers (A)	Total MTs fired (B)	Total second time test taker MTs (C)	Total MTs selected as MEs (D)	Total new test taker MTs (E = A - C)	MTs eligible to retake test after 4 months (C = A - B - D)
Sept 2019	232	36	X	100	X	96
Jan 2020	224	44	96	100	128	80
May 2020	188	36	80	100	108	52
Sept 2020	204	28	52	100	152	76
Jan 2021	216	40	76	100	140	76
May 2021	208	32	76	100	132	76
Sept 2021	180	28	76	100	104	52

Jan 2022	208	44	52	100	156	64
May 2022	192	36	64	100	128	56

From the column of MTs eligible to retake test after 4 months, we can conclude that the number of Management Trainees (MT) who failed to be confirmed as a Management Executive (ME) the first time in the above mentioned months were as follows :

- a) September 2019 – 96,
- b) January 2020 – 80,
- c) May 2020 – 52,
- d) September 2020 – 76,
- e) January 2021 – 76,
- f) May 2021 – 76,
- g) September 2021 – 52,
- h) January 2022 – 64, and
- i) May 2022 – 56.

Hence, the maximum number of Management Trainees (MT) who failed to be confirmed as a Management Executive (ME) the first time in the above mentioned months was 96 (September 2019)

27. 2

We already know that :

Test in the month of	Total MT test takers (A)	Total MTs fired (B)	Total second time test taker MTs (C)	Total MTs selected as MEs (D)	Total new test taker MTs (E = A - C)	MTs eligible to retake test after 4 months (C = A - B - D)
Sept 2019	232	36	X	100	X	96
Jan 2020	224	44	96	100	128	80
May 2020	188	36	80	100	108	52
Sept 2020	204	28	52	100	152	76
Jan 2021	216	40	76	100	140	76
May 2021	208	32	76	100	132	76
Sept 2021	180	28	76	100	104	52
Jan 2022	208	44	52	100	156	64
May 2022	192	36	64	100	128	56

From the column of Total new test taker MTs, we can conclude that the number of Management Trainees (MT) hired were as follows :

- a) January 2020 – 128,
- b) May 2020 – 108,
- c) September 2020 – 152,
- d) January 2021 – 140,
- e) May 2021 – 132,
- f) September 2021 – 104,
- g) January 2022 – 156, and
- h) May 2022 – 128.

Hence, less than 120 new Management Trainees (MT) were hired twice in May 2020 (108) and September 2021 (104).

28. 168

We already know that :

Test in the month of	Total MT test takers (A)	Total MTs fired (B)	Total second time test taker MTs (C)	Total MTs selected as MEs (D)	Total new test taker MTs (E = A - C)	MTs eligible to retake test after 4 months (C = A - B - D)
Sept 2019	232	36	X	100	X	96
Jan 2020	224	44	96	100	128	80
May 2020	188	36	80	100	108	52
Sept 2020	204	28	52	100	152	76
Jan 2021	216	40	76	100	140	76
May 2021	208	32	76	100	132	76
Sept 2021	180	28	76	100	104	52
Jan 2022	208	44	52	100	156	64
May 2022	192	36	64	100	128	56

In May 2022, 56 MTs became eligible to take the test for the second time after four months.

Hence, if total 112 new Management Trainees (MT) were hired in May 2022, then the number of Management Trainees (MT) that could be expected to appear in the test in September 2022 = $112 + 56 = 168$

29. D

Test in the month of	Total MT test takers (A)	Total MTs fired (B)	Total second time test taker MTs (C)	Total MTs selected as MEs (D)	Total new test taker MTs (E = A - C)	MTs eligible to retake test after 4 months (C = A - B - D)
Sept 2019	232	36	X	100	X	96
Jan 2020	224	44	96	100	128	80
May 2020	188	36	80	100	108	52
Sept 2020	204	28	52	100	152	76
Jan 2021	216	40	76	100	140	76
May 2021	208	32	76	100	132	76
Sept 2021	180	28	76	100	104	52
Jan 2022	208	44	52	100	156	64
May 2022	192	36	64	100	128	56

Number of Management Trainees (MT) who got confirmed as a Management Executive (ME) in the second attempt
 = Number of Management Trainees (MT) who were second time test takers – Number of Management Trainees (MT) who got fired.

So, the number of Management Trainees (MT) who got confirmed as a Management Executive (ME) in the second attempt were as follows :

- a) January 2020 : $96 - 44 = 52$,
- b) May 2020 : $80 - 36 = 44$,
- c) September 2020 : $52 - 28 = 24$,
- d) January 2021 : $76 - 40 = 36$,
- e) May 2021 : $76 - 32 = 44$,
- f) September 2021 : $76 - 28 = 48$,
- g) January 2022 : $52 - 44 = 8$, and
- h) May 2022 : $64 - 36 = 28$.

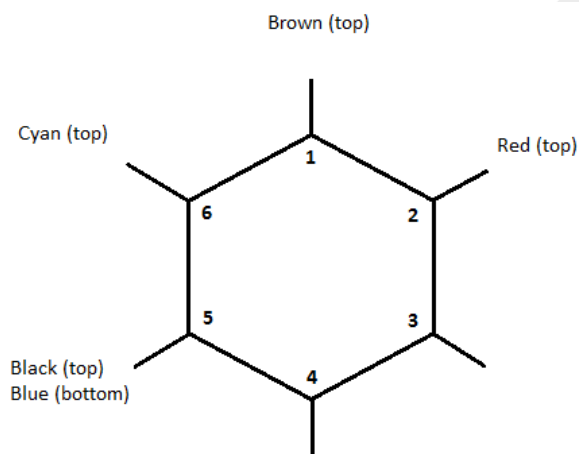
Hence, the minimum number of Management Trainees (MT) who got confirmed as a Management Executive (ME) in the second attempt was in January 2022 (8)

30.A

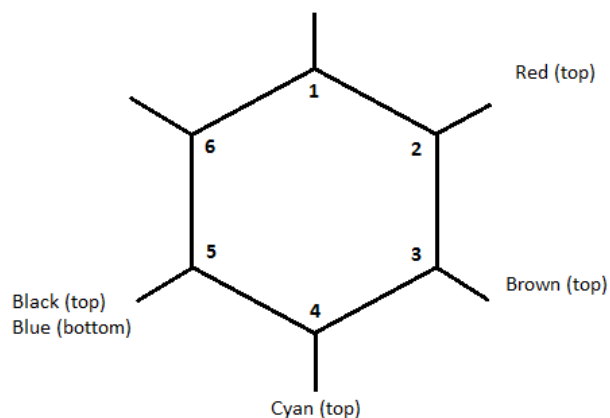
From (b) we know that there were exactly two sticks whose both ends had colours whose names started with the same letter.

The only two possible combinations could be (i) Pink (top) and Purple (bottom) and (ii) Black (top) and Blue (bottom)

From (a) and (d), we could get two cases of arrangement of the sticks as shown below :



Case : 1

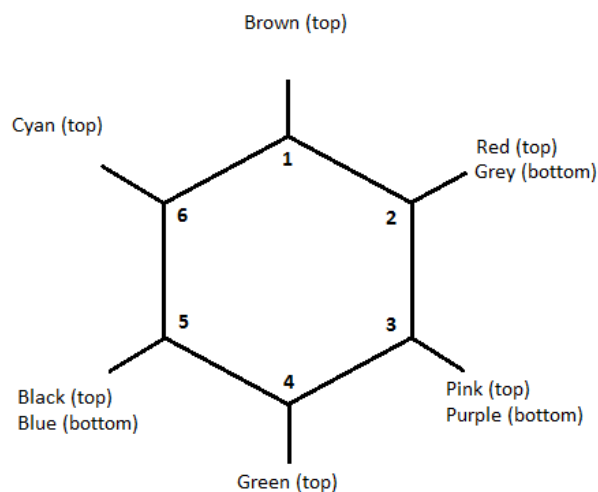
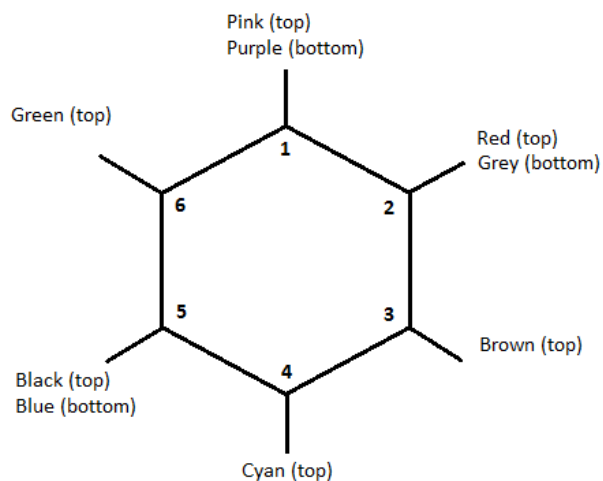


Case : 2

Point (e) says that the stick with the purple colour was adjacent to both the sticks with the grey colour and the one with the green colour

Green was the colour of the top of a stick, while purple and grey were colours of the bottom of two different sticks. The purple bottomed stick had pink as the colour of the top. That meant that the stick with pink colour at the top was adjacent to the sticks with green at the top and grey at the bottom.

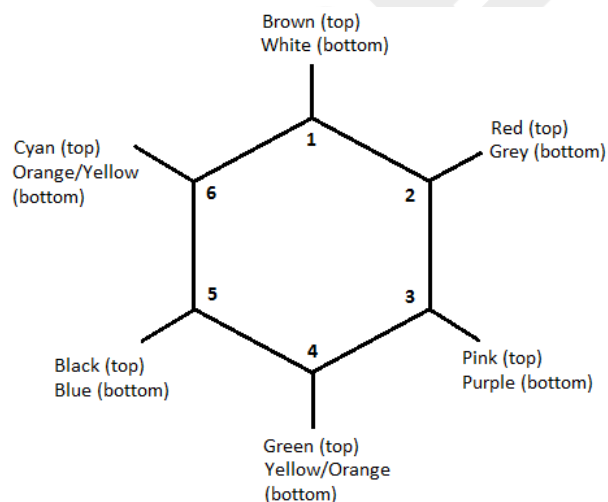
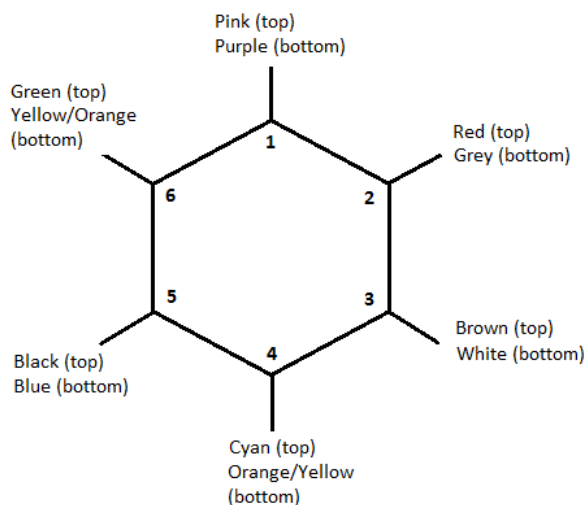
Hence, the two cases of arrangement of the sticks change to as shown below :

**Case : 1****Case : 2**

Now, from (c) we get to know that the stick with the grey colour was adjacent to the stick with the white colour. White was the colour of a bottom end. So in both the cases white had to be the colour of the bottom end of the stick with brown colour at the top.

Hence the colours of orange or yellow could either be the bottom colours of the sticks with top painted cyan and green respectively, or vice versa.

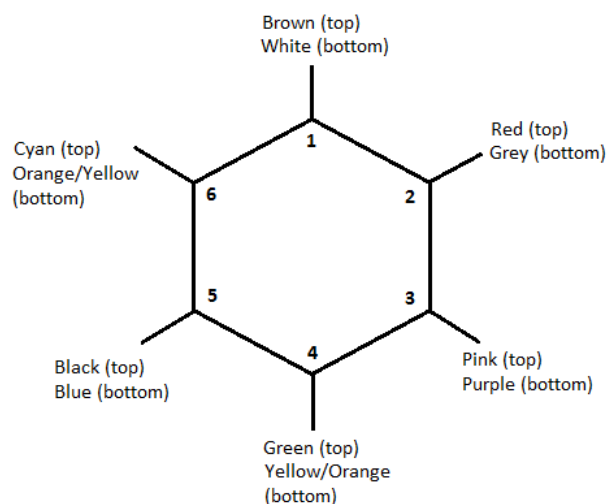
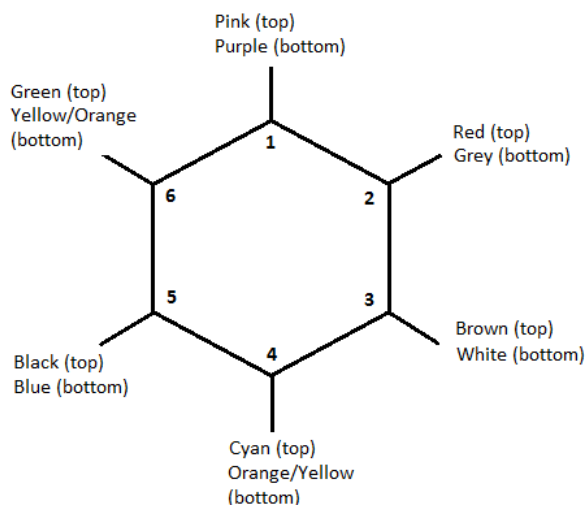
Hence, the final two cases of arrangements possible are as given below :

**Case : 1****Case : 2**

Hence, the colour of the bottom end of the stick having brown colour at the top end is white.

31.B

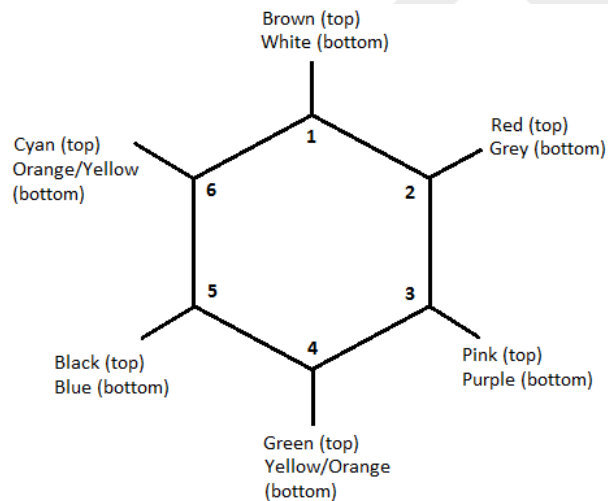
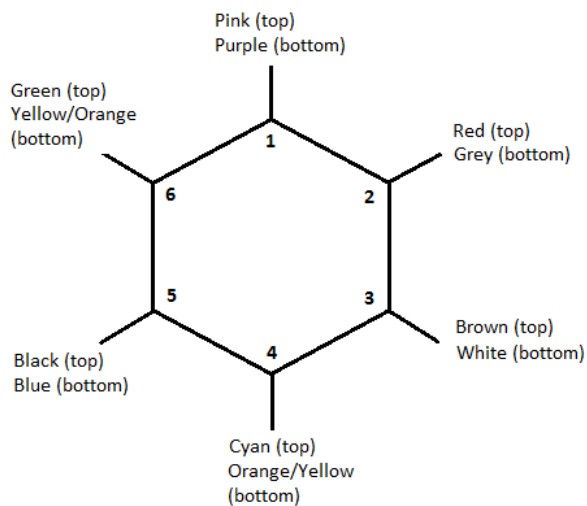
The final two cases of arrangements possible are as given below :

**Case : 1****Case : 2**

Hence, the colour of the top end of the stick having grey colour at the bottom end is red

32. C

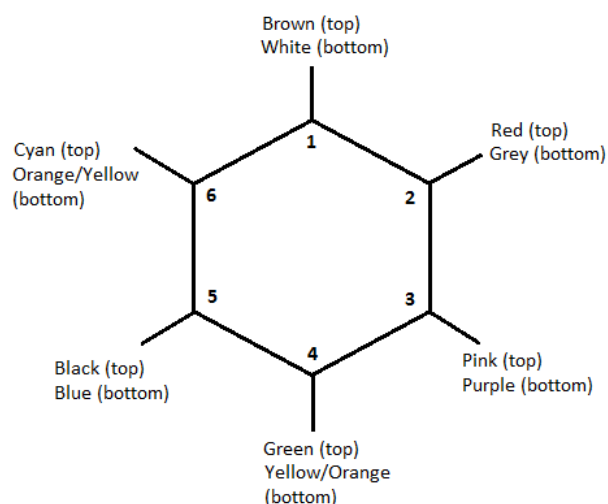
The final two cases of arrangements possible are as given below :

**Case : 1****Case : 2**

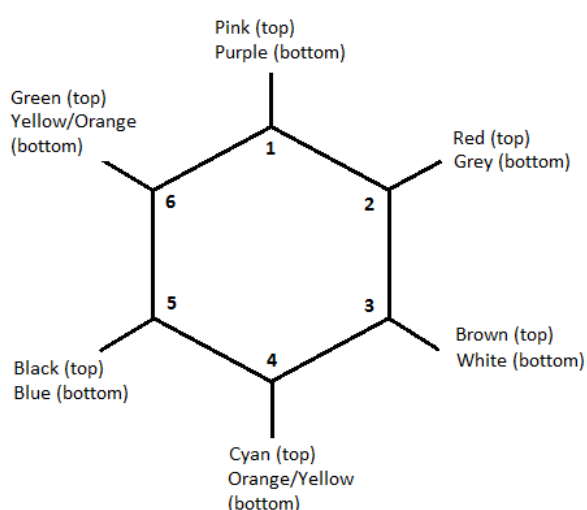
Hence, the colour of the bottom end of the stick opposite the stick with blue colour at the bottom end is grey

33.D

The final two cases of arrangements possible are as given below :



Case : 1



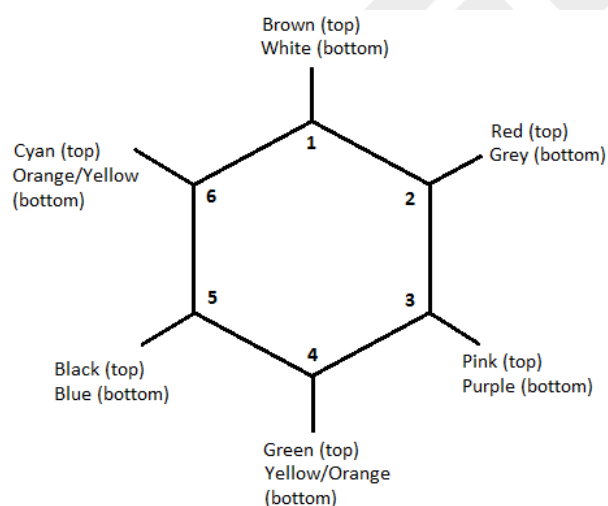
Case : 2

Hence, the colour of the bottom end of the stick opposite the stick with brown colour at the top end could be either orange or yellow.

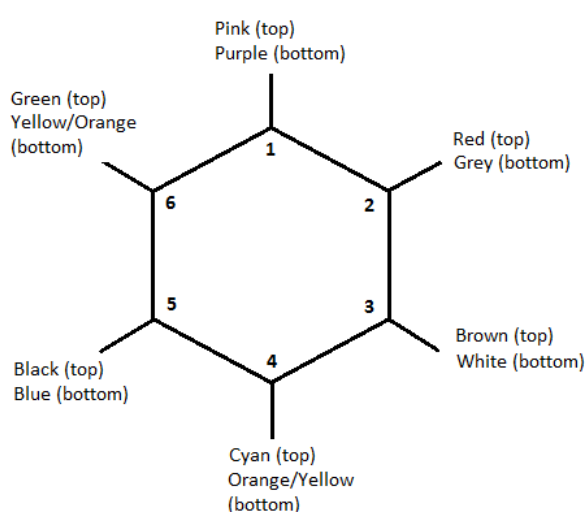
Hence the answer cannot be determined

34. C

The final two cases of arrangements possible are as given below :



Case : 1



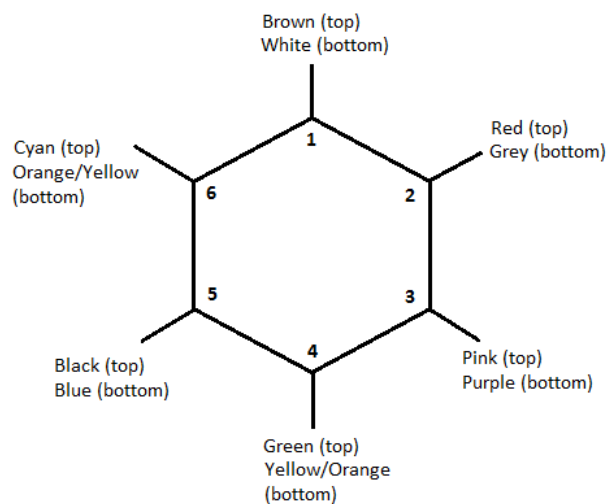
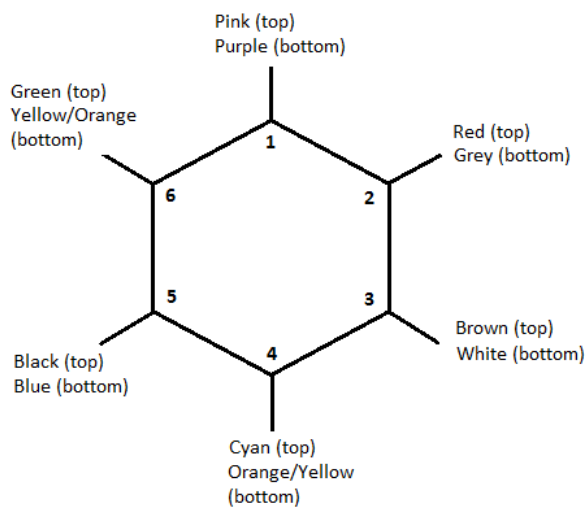
Case : 2

Hence, the colour of the bottom end of the stick opposite the stick with brown colour at the top end could be either orange or yellow.

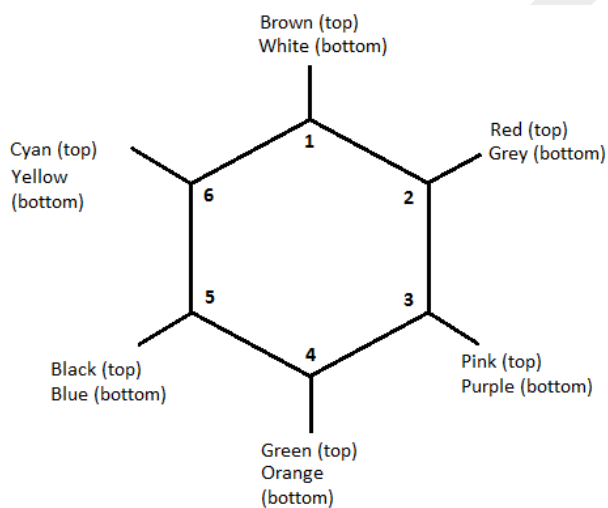
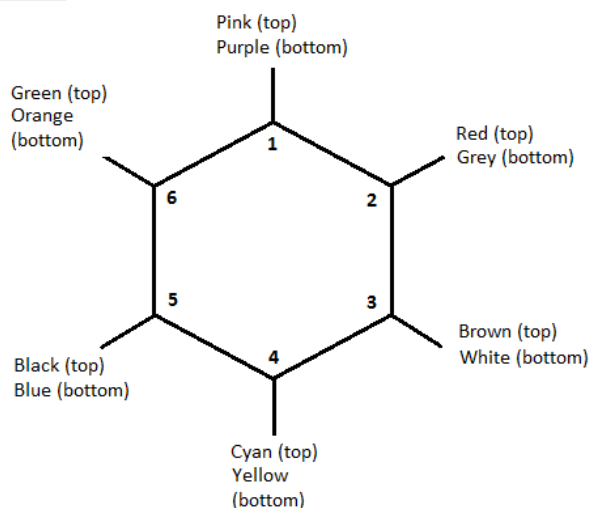
Hence the answer cannot be determined

35.C

The final two cases of arrangements possible are as given below :

**Case : 1****Case : 2**

If the stick with the yellow colour at the bottom was opposite to the stick with pink colour at the top, then the arrangements would become :

**Case : 1****Case : 2**

Hence, out of the options, the colour adjacent to the stick with the blue colour at the bottom would be orange

36. 3

a) Let the total number of management employees of M/S Ranbaxy Pharmaceuticals Ltd at the Sirmour plant be 1400k

Hence, the management employees with either an M Pharm or MBA degree = $(1400k \times 13)/14 = 1300k$, and the ones with neither = 100k

b) MBAs were $4/9$ th of M. Pharms, that is ratio of M Pharms to that of MBAs was 9 : 4

Hence, management employees with an M Pharm = $(1300k \times 9)/13 = 900k$,
and management employees with an MBA = $(1300k \times 4)/13 = 400k$

c) The gender ratio of the management employees with either an M Pharm or MBA degree was 8 : 5 in favour of men

Hence men : women = 8 : 5

Thus, gentlemen management employees with either an M Pharm or MBA = $(1300k \times 8)/13 = 800k$,
and lady management employees with either an M Pharm or MBA = $(1300k \times 5)/13 = 500k$

d) Of the lady management employees 70% were M Pharms and only 15 were MBAs

Hence, lady management employees with an M Pharm = $(500k \times 70)/100 = 350k$,

and the same with an MBA = $(500k \times 30)/100 = 150k$

Hence gentlemen management employees with an M Pharm = $900k - 350k = 550k$,

and gentlemen management employees with an MBA = $400k - 150k = 250k$

e) Also, as per data given, $150k = 15$ employees

or, $10k = 1$ employee ----- (A)

f) The number of men and women management employees who were neither an M Pharm nor an MBA were in the ratio of 3 : 7

Hence, number of gentlemen management employees who were neither an M Pharm nor an MBA = $(100k \times 3)/10 = 30k$,

and number of lady management employees who were neither an M Pharm nor an MBA = $(100k \times 7)/10 = 70k$

g) From (A) we can find the exact count of the following employees of M/S Ranbaxy Pharmaceuticals Ltd at the Sirmour plant :

- 1) Total number of management employees = $1400k = 140$
- 2) Management employees with either an M Pharm or MBA degree = $1300k = 130$
- 3) Management employees with neither an M Pharm nor MBA degree = $100k = 10$
- 4) Lady management employees with an M Pharm = $350k = 35$
- 5) Lady management employees with an MBA = $150k = 15$
- 6) Gentlemen management employees with an M Pharm = $550k = 55$
- 7) Gentlemen management employees with an MBA = $250k = 25$
- 8) Lady management employees who were neither an M Pharm nor an MBA = $70k = 7$
- 9) Gentlemen management employees who were neither an M Pharm nor an MBA = $30k = 3$

Hence, gentlemen management employees who were neither an M Pharm nor an MBA = $30k = 3$

36. 35

We already know that :

- 1) Total number of management employees = $1400k = 140$
- 2) Management employees with either an M Pharm or MBA degree = $1300k = 130$
- 3) Management employees with neither an M Pharm nor MBA degree = $100k = 10$
- 4) Lady management employees with an M Pharm = $350k = 35$
- 5) Lady management employees with an MBA = $150k = 15$
- 6) Gentlemen management employees with an M Pharm = $550k = 55$
- 7) Gentlemen management employees with an MBA = $250k = 25$
- 8) Lady management employees who were neither an M Pharm nor an MBA = $70k = 7$
- 9) Gentlemen management employees who were neither an M Pharm nor an MBA = $30k = 3$

Hence, lady management employees with an M Pharm degree = $350k = 35$

37. 140

We already know that :

- 1) Total number of management employees = $1400k = 140$
- 2) Management employees with either an M Pharm or MBA degree = $1300k = 130$
- 3) Management employees with neither an M Pharm nor MBA degree = $100k = 10$
- 4) Lady management employees with an M Pharm = $350k = 35$
- 5) Lady management employees with an MBA = $150k = 15$
- 6) Gentlemen management employees with an M Pharm = $550k = 55$
- 7) Gentlemen management employees with an MBA = $250k = 25$
- 8) Lady management employees who were neither an M Pharm nor an MBA = $70k = 7$
- 9) Gentlemen management employees who were neither an M Pharm nor an MBA = $30k = 3$

Hence, the total number of management employees of M/S Ranbaxy Pharmaceuticals Ltd at the Sirmour plant = $1400k = 140$

38. D

We already know that :

- 1) Total number of management employees = $1400k = 140$
- 2) Management employees with either an M Pharm or MBA degree = $1300k = 130$
- 3) Management employees with neither an M Pharm nor MBA degree = $100k = 10$
- 4) Lady management employees with an M Pharm = $350k = 35$
- 5) Lady management employees with an MBA = $150k = 15$
- 6) Gentlemen management employees with an M Pharm = $550k = 55$
- 7) Gentlemen management employees with an MBA = $250k = 25$
- 8) Lady management employees who were neither an M Pharm nor an MBA = $70k = 7$
- 9) Gentlemen management employees who were neither an M Pharm nor an MBA = $30k = 3$

Lady management employees with an MBA degree = $150k = 15$

Gentlemen management employees with an M Pharm degree = $550k = 55$

Hence, percentage = $(15/35) \times 100 = 27.27\%$

39. B

We already know that :

- 1) Total number of management employees = $1400k = 140$
- 2) Management employees with either an M Pharm or MBA degree = $1300k = 130$
- 3) Management employees with neither an M Pharm nor MBA degree = $100k = 10$
- 4) Lady management employees with an M Pharm = $350k = 35$
- 5) Lady management employees with an MBA = $150k = 15$
- 6) Gentlemen management employees with an M Pharm = $550k = 55$
- 7) Gentlemen management employees with an MBA = $250k = 25$
- 8) Lady management employees who were neither an M Pharm nor an MBA = $70k = 7$
- 9) Gentlemen management employees who were neither an M Pharm nor an MBA = $30k = 3$

Gentlemen management employees with either an M Pharm or MBA degree = $800k = 80$

Gentlemen management employees who were neither an M Pharm nor an MBA = $30k = 3$

Total gentlemen management employees = $80+3 = 83$

Lady management employees with either an M Pharm or MBA degree = $500k = 50$

Lady management employees who were neither an M Pharm nor an MBA = $70k = 7$

Total lady management employees = $50+7 = 57$

Hence, gender ratio of the management employees of M/S Ranbaxy Pharmaceuticals Ltd at the Sirmour plant

= 83 : 57 in favour of men

40. A

There are in total $6 \times 2 = 12$ guard shifts required.

That can be only fulfilled along with all the constraints given if Ekram does 4 shifts, Biplab does 3 shifts, Ambar and Chandan does 2 each, and Dinesh does 1 shift, as $4+3+2+2+1 = 12$

Given below are all the possible situations of shift combinations.

The left hand table A represents Ekram working with one particular guard twice a week, and there are two possible cases which satisfy all the constraints

The right hand table B represents Ekram working with a different guard every time during the week, and here too there are two possible cases which satisfy all the constraints

A	Case 1	Case 2
Monday	Biplab, Ekram	Biplab, Ekram
Tuesday	Dinesh, Chandan	Dinesh, Chandan
Wednesday	Biplab, Ekram	Biplab, Ekram
Thursday	Ekram, Chandan	Ambar, Ekram
Friday	Ambar, Biplab	Ambar, Biplab
Saturday	Ambar, Ekram	Ekram, Chandan

B	Case 1	Case 2
Monday	Biplab, Ekram	Biplab, Ekram
Tuesday	Ekram, Chandan/Dinesh	Ekram, Chandan/Dinesh
Wednesday	Biplab, Chandan	Biplab, Chandan
Thursday	Ambar, Ekram	Ekram, Chandan/Dinesh
Friday	Ambar, Biplab	Ambar, Biplab
Saturday	Ekram, Chandan/Dinesh	Ambar, Ekram

Hence, from Table A, which represents Ekram working with one particular guard twice a week, Chandan works on the same day as Dinesh in either of the two possible cases.

41. B

We know that all the possible situations of shift combinations as per the constraints are as follows :

A	Case 1	Case 2
Monday	Biplab, Ekram	Biplab, Ekram
Tuesday	Dinesh, Chandan	Dinesh, Chandan
Wednesday	Biplab, Ekram	Biplab, Ekram
Thursday	Ekram, Chandan	Ambar, Ekram
Friday	Ambar, Biplab	Ambar, Biplab
Saturday	Ambar, Ekram	Ekram, Chandan

B	Case 1	Case 2
Monday	Biplab, Ekram	Biplab, Ekram
Tuesday	Ekram, Chandan/Dinesh	Ekram, Chandan/Dinesh
Wednesday	Biplab, Chandan	Biplab, Chandan
Thursday	Ambar, Ekram	Ekram, Chandan/Dinesh
Friday	Ambar, Biplab	Ambar, Biplab
Saturday	Ekram, Chandan/Dinesh	Ambar, Ekram

Hence, from both the tables and their individual two cases each, we can see that if Ambar worked on a Thursday, he always accompanied Ekram.

42. C

We know that all the possible situations of shift combinations as per the constraints are as follows :

A	Case 1	Case 2
Monday	Biplab, Ekram	Biplab, Ekram
Tuesday	Dinesh, Chandan	Dinesh, Chandan
Wednesday	Biplab, Ekram	Biplab, Ekram
Thursday	Ekram, Chandan	Ambar, Ekram
Friday	Ambar, Biplab	Ambar, Biplab
Saturday	Ambar, Ekram	Ekram, Chandan

B	Case 1	Case 2
Monday	Biplab, Ekram	Biplab, Ekram
Tuesday	Ekram, Chandan/Dinesh	Ekram, Chandan/Dinesh
Wednesday	Biplab, Chandan	Biplab, Chandan
Thursday	Ambar, Ekram	Ekram, Chandan/Dinesh
Friday	Ambar, Biplab	Ambar, Biplab
Saturday	Ekram, Chandan/Dinesh	Ambar, Ekram

Either from Table A or Table B, and their individual two cases each, it can be seen that Chandan and Dinesh could never work together on a Thursday.

43. D

We know that all the possible situations of shift combinations as per the constraints are as follows :

A	Case 1	Case 2
Monday	Biplab, Ekram	Biplab, Ekram
Tuesday	Dinesh, Chandan	Dinesh, Chandan
Wednesday	Biplab, Ekram	Biplab, Ekram
Thursday	Ekram, Chandan	Ambar, Ekram
Friday	Ambar, Biplab	Ambar, Biplab
Saturday	Ambar, Ekram	Ekram, Chandan

B	Case 1	Case 2
Monday	Biplab, Ekram	Biplab, Ekram
Tuesday	Ekram, Chandan/Dinesh	Ekram, Chandan/Dinesh
Wednesday	Biplab, Chandan	Biplab, Chandan
Thursday	Ambar, Ekram	Ekram, Chandan/Dinesh
Friday	Ambar, Biplab	Ambar, Biplab
Saturday	Ekram, Chandan/Dinesh	Ambar, Ekram

From Table B, which represents Ekram working with a different guard every time during the week, we can see on Wednesday, either Ambar and Ekram, or Ekram and Chandan, or Ekram and Dinesh could work together.

Hence, the answer cannot be determined

44. C

We know that all the possible situations of shift combinations as per the constraints are as follows :

A	Case 1	Case 2
Monday	Biplab, Ekram	Biplab, Ekram

B	Case 1	Case 2
Monday	Biplab, Ekram	Biplab, Ekram

Tuesday	Dinesh, Chandan	Dinesh, Chandan
Wednesday	Biplab, Ekram	Biplab, Ekram
Thursday	Ekram, Chandan	Ambar, Ekram
Friday	Ambar, Biplab	Ambar, Biplab
Saturday	Ambar, Ekram	Ekram, Chandan

Tuesday	Ekram, Chandan/Dinesh	Ekram, Chandan/Dinesh
Wednesday	Biplab, Chandan	Biplab, Chandan
Thursday	Ambar, Ekram	Ekram, Chandan/Dinesh
Friday	Ambar, Biplab	Ambar, Biplab
Saturday	Ekram, Chandan/Dinesh	Ambar, Ekram

Hence, from Table A, which represents Ekram working with one particular guard twice a week, we can see that Ekram could never work with Dinesh in either of the two possible cases

Section - Quantitative Aptitude

45. 46.3

For 18% non-city journey, petrol consumption = 12%

So for total (18% + 24% = 42%) non-city journey, petrol consumption = $\{(12 \times 42)/18\} = 28\%$.

City journey left = 100% – 42% = 58%.

Petrol left = 100% – 28% = 72%.

Fuel efficiency in non-city driving = $18/12 = 3/2$.

Fuel efficiency in city driving = $58/72 = 29/36$.

Hence, percentage decrease in fuel efficiency = $\{(3/2 - 29/36) / 3/2\} \times 100\% = 1250/27\% = 46.3\%$

46. A

A 2)

Correct Option : A) $x \cdot y > 1$

The square of any number, negative or positive, is positive. Hence option D cannot ever be true.

If say for example, $x = 2$ and $y = 1$, then x and y are natural numbers, and $1/x + 1/y = 1.5$, which is < 2 . But $(x + y) = 3$, which is not > 4 . So option C is not definitely true.

If say for example, $x = 2$ and $y = 1$, then x and y are natural numbers, and $1/x + 1/y = 1$, which is < 2 . But $x/y + y/x = 2.5$, which is not < 1 . So option B is not definitely true.

The arithmetic mean of $1/x$ and $1/y = (1/x + 1/y)/2$

But it is given $1/x + 1/y < 2$

So $(1/x + 1/y)/2 < 1$

or, the arithmetic mean of $1/x$ and $1/y$ is < 1

The geometric mean of $1/x$ and $1/y = \sqrt{(1/x) \cdot (1/y)} = 1/\sqrt{xy}$

But arithmetic mean of any two numbers is always $\geq$ the geometric mean of the numbers

Hence,

The arithmetic mean of $1/x$ and $1/y \geq$ the geometric mean of $1/x$ and $1/y$

or, the geometric mean of $1/x$ and $1/y$ is also < 1

or, $1/\sqrt{xy} < 1$

or, $1/xy < 1$

or, $xy > 1$

Hence option A is definitely true

47. C

Profit on sales of 5 trousers as per original scheme = Rs $(4x - 2500 \times 5)$

So total profit as per this scheme = $(105/5) \times (4x - 2500 \times 5) = 84x - 105 \times 2500$

Profit on sales of 3 trousers as per damaged trouser scheme = $(2 \times 2x/3 - 2500 \times 3)$

So total profit as per this scheme = $(15/3) \times (2 \times 2x/3 - 2500 \times 3) = 20x/3 - 15 \times 2500$.

But total profit = $6x$.

So $6x = (84x - 105 \times 2500) + (20x/3 - 15 \times 2500)$ or, $84.67x = 120 \times 2500$ or, $x = 3543.20$

Hence, value of x = Rs 3513.20

48. 150

If the production costs of the 1st and 2nd batches are x and y ,
then $0.4x = 0.6y$ or $x : y = 3 : 2$.

Let $x = 300k$ and $y = 200k$

20% of 300k – 20% of 200k = 6 million USD

or, $60k - 40k = 6$ million USD

or, $100k = 30$ million USD.

Hence, total production cost = $500k = 150$ million US

49.C

Let the catch be of x kg.

So salt added = $x/5$ kg.

Now since water in fresh fish is 59% of weight, actual flesh in fresh fish is 41% of weight = $41x/100$ kg.
In sun-dried salted fish, salt present is $x/5$ kgs too.

Now since water in sun-dried fish is 5% of weight, actual flesh in sun-dried fish is 95% of weight
= $(150 - x/5) \times 95/100$ kg
= $(142.5 - 19x/100)$ kg.

But the actual flesh of the fish must be the same in both cases.

So $142.5 - 19x/100 = 41x/100$ or, $x = 237.50$ kg.

Hence, $x = 237.50$ kg

50. 14625

Amt of liquid Capt Archibald Haddock drank in the 40 days = $750 (2.5\% + 5\% + 7.5\% + \dots + 100\%)$
= $750 \times 2.5\% \times (1+2+3+\dots+40)$
= $750 \times (2.5/100) \times 820$
= 15375 ml

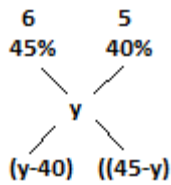
Out of this 750 ml was Loch Lomond whisky.

Hence, water drank by Capt Haddock with the whisky to give up drinking = $15375 - 750 = 14625$ ml

51. B

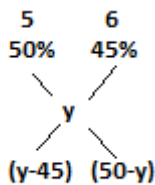
Let us consider the two extremities of the range of $x\%$ one by one.

$x = 40\%$:



$$\text{or, } (y-40)/(45-y) = 6/5 \text{ or, } y = 42 \text{ \& } 8/11$$

$x = 50\%$



$$\text{or, } (y-45)/(50-y) = 5/6 \text{ or, } y = 47 \text{ \& } 3/11$$

So, $42 \text{ \& } 8/11 \leq y \leq 47 \text{ \& } 3/11$.

Only $47 \text{ \& } 4/11$ lies outside the range.

Hence, $47 \text{ \& } 4/11$ is not a possible value of y .

52. 48

Distance = $k * \text{time}^2$

So distance travelled by the apple in the fourth second of travel would be $k*4^2 - k*3^2$, which is 21 feet

$$\text{So, } k*4^2 - k*3^2 = 21$$

$$\text{or, } k = 3$$

Hence, total distance it had travelled in the first four seconds of travel

$$= k*4^2$$

$$= 3*16$$

$$= 48 \text{ feet}$$

53.D

In terms of number of coins, Re 1 : Rs 2 = 2 : 3 and Rs 2 : Rs 5 = 4 : 5.

Hence Re 1 : Rs 2 : Rs 5 = 8 : 12 : 15.

Total number of coins = $8+12+15 = 35$ units.

Thus the only integral possibilities below 100 coins in total are 35 coins or 70 coins.

If the total is 35, then Re 1 = 8 coins, Rs 2 = 12 coins and Rs 5 = 15 coins. Value = $8+24+75 = \text{Rs } 107$

If the total is 75, then Re 1 = 16 coins, Rs 2 = 24 coins and Rs 5 = 30 coins. Value = $16 + 48 + 150 =$ Rs 214

Both are there in the options.

Hence, the content of the blank cannot be determined.

54. 297

As AB is $\parallel$ to CD, $\angle BQS + \angle QRD = 180^\circ$ (interior opposite angles)

But $\angle BQS : \angle QRP = 2 : 1$

Thus, $\angle BQS = (2 \cdot 180^\circ) / 3 = 120^\circ$, and $\angle QRD = (1 \cdot 180^\circ) / 3 = 60^\circ$

Thus $\angle AQS = \text{alternate } \angle QRD = 60^\circ$, and $\angle PRC = \text{alternate } \angle BQS = 120^\circ$

$\angle AQM : \angle MQS = 1 : 3$

Thus $\angle MQS = (3 \cdot 60^\circ) / 4 = 45^\circ$

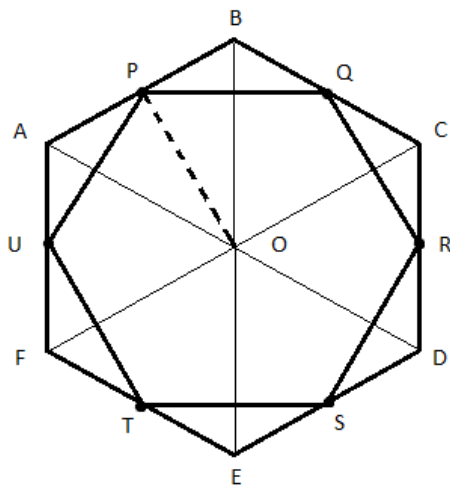
$\angle CRM : \angle MRP = 2 : 3$

Thus $\angle MRP = (3 \cdot 120^\circ) / 5 = 72^\circ$

So, $\angle QMR = 180^\circ - (\angle MQS + \angle MRP) = 180^\circ - (45^\circ + 72^\circ) = 63^\circ$

Hence, the value of the reflex $\angle QMR = 360^\circ - 63^\circ = 297^\circ$

55. D



Let ABCDEF be the original outer regular hexagon of side a (say). Let P, Q, R, S, T and U be the mid-points of the sides of ABCDEF. Hence the inner regular hexagon is PQRSTU.

Let the principal diagonals of the original outer regular hexagon ABCDEF intersect at O.

Thus $\triangle ABO$ is an equilateral triangle of side a

P is the mid-point of AB.

Length of $OP = (\sqrt{3}/2) \cdot a = \sqrt{3}a/2$, which is half of the principal diagonal of regular hexagon PQRSTU, and thus equal to the side of the hexagon PQRSTU

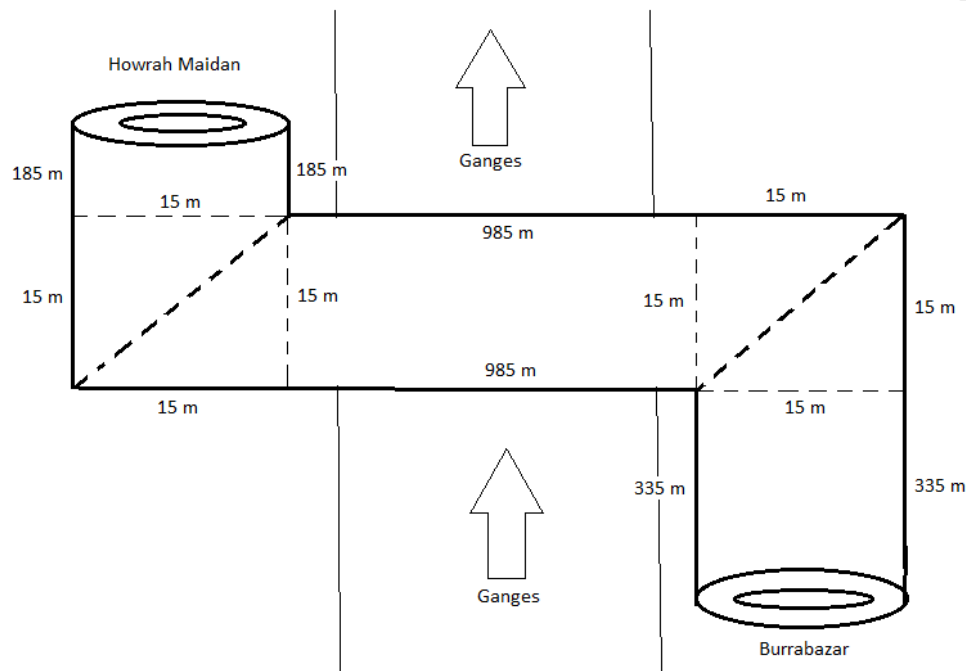
$$\begin{aligned} & (\text{Area of the outer hexagon ABCDEF}) / (\text{Area of the inner hexagon PQRSTU}) \\ &= (\text{Side of the hexagon ABCDEF})^2 / (\text{Side of the hexagon PQRSTU})^2 \\ &= a^2 / (\sqrt{3}a/2)^2 \end{aligned}$$

$$\begin{aligned}
 &= a^2 / (3a^2/4) \\
 &= 4/3 \\
 &= 1.33
 \end{aligned}$$

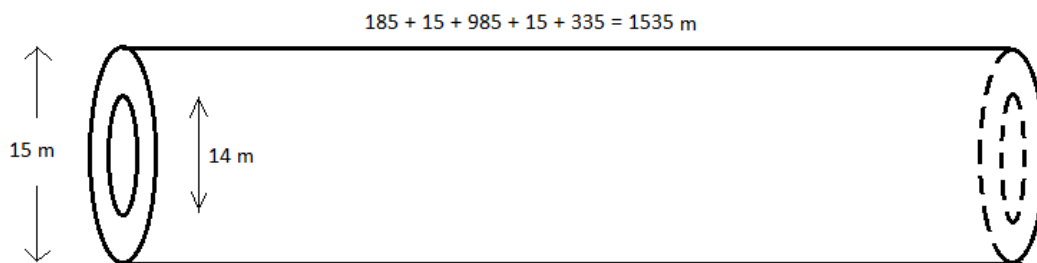
Hence, the area of the outer hexagon ABCDEF divided by the area of the inner hexagon PQRSTU = 1.33

56. D

Because the cylindrical shaped tunnel has a uniform outer diameter of 15 m, we can analyze the schematic diagram as follows :



Thus, the basic dimensions of the tunnel from Howrah Maidan to Burrabazar can be visualized as below :



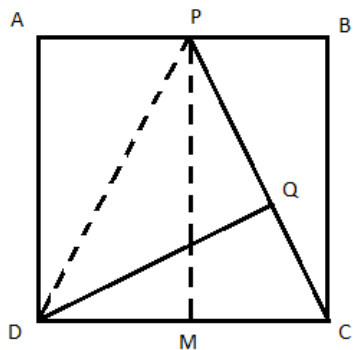
Thus, the volume of the outer cylindrical portion = $\pi \times (15/2)^2 \times 1535 = 3.14 \times (15/2)^2 \times 1535 = 271119.38$ cubic m

The volume of the inner hollow cylindrical portion = $\pi \times (14/2)^2 \times 1535 = 3.14 \times (14/2)^2 \times 1535 = 236175.10$ cubic m

Hence, the volume of concrete used to construct the tunnel from the Howrah Maidan station to the Burrabazar station

$$\begin{aligned}
 &= 271119.38 - 236175.10 \\
 &= 34944.28 \\
 &= 34,944 \text{ cubic m}
 \end{aligned}$$

57. C



Let us join PD and drop a $\perp$ PM from P on DC

$$\text{Area of } \triangle DPC = (1/2) * PC * DQ = (1/2) * 81 * 64 = 81 * 32 = 2592 \text{ sq m}$$

Now because AD, BC and PM are $\perp$ to the same straight line DC, hence $AD \parallel BC \parallel PM$

Thus PD is the diagonal of the rectangle APMD and PC is the diagonal of the rectangle PBCM

So area of $\triangle DPA$ = area of $\triangle DPM$, and area of $\triangle CPB$ = area of $\triangle CPM$

Thus area of $\triangle DPA$ + area of $\triangle CPB$ = area of $\triangle DPM$ + area of $\triangle CPM$ = area of $\triangle DPC$ = 2592 sq m

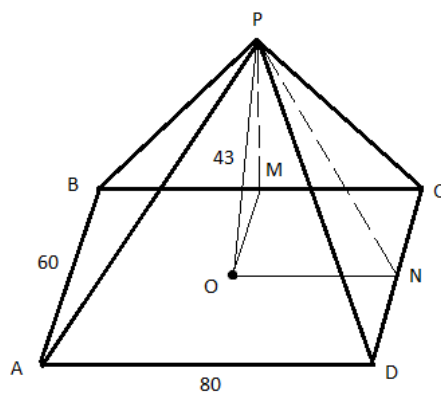
Hence, area of square ABCD = $2 * (\text{Area of } \triangle DPC) = 2 * 2592 \text{ sq m}$

Now, area of a square = $(1/2) * (\text{diagonal})^2$

$$\text{Thus } (1/2) * (\text{diagonal})^2 = 2 * 2592$$

$$\text{or, Diagonal of square ABCD} = \sqrt{4 * 2592} = 2 * 50.91 = 101.82 \sim 102 \text{ m}$$

58. B



The pyramid at Giza is as shown above in the diagram, with external rectangular base ABCD of 80 m by 60 m, and height PO of 43 m.

O is the point of intersection of the diagonals of the rectangle ABCD

M and N are the mid points of the sides BC and CD. So $OM = 60/2 = 30$ m and $ON = 80/2 = 40$ m

PM and PN are the slant heights of the pyramid ABCD

Thus slant height PM of the pyramid = $\sqrt{(30^2 + 43^2)} = \sqrt{(900 + 1849)} = \sqrt{2749} = 52.43$ m = 52 m

Also slant height PN of the pyramid = $\sqrt{(40^2 + 43^2)} = \sqrt{(1600 + 1849)} = \sqrt{3449} = 58.73$ m = 59 m

Thus the surface area of the slanted parts of the pyramid = $(BC \cdot PM) + (DC \cdot PN)$

= $(80 \cdot 52) + (60 \cdot 59)$

= $4160 + 3540$

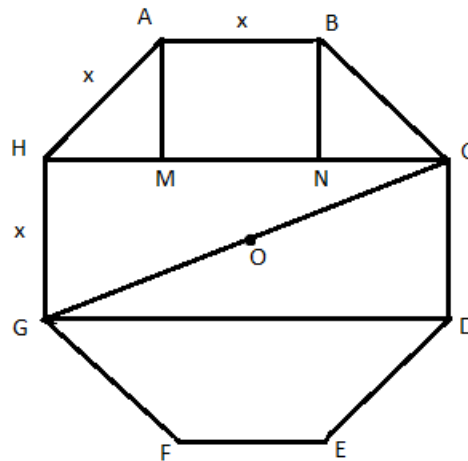
= 7700 sq m

Thus the number of litres of sand-resistant and heat-resistant white paint required to paint 7700 sq m =

$7700 \cdot 1 = 7700$ liter

Hence, the expense of the government for the project, neglecting any other expense = $(7700/1000) \cdot 1500$
= 11500 Egyptian pounds

59. A



Let the regular octagon ABCDEFGH of equal sides x m (say) be constructed as above

Let O be the circum-centre of the octagon. Hence GC can be considered as our principal diagonal

Let us also construct the secondary diagonals HC and GD

Let two perpendiculars AM and BN be constructed on secondary diagonal HC

The principal diagonal (in this case GC) divides the regular octagon ABCDEFGH into two equal areas

Because the circum-circle of the octagon passes through the vertices of $\triangle GHC$, and the circum-centre O is the mid-point of GC,

Thus $\triangle GHC$ is a right-angled triangle with $\angle GHC$ being 90°

The value of one of the eight equal exterior angles of a regular octagon = $360^\circ/8 = 45^\circ$

Thus the value of one of the eight equal interior angles of a regular octagon = $180^\circ - 45^\circ = 135^\circ$

Thus $\angle GHA = 135^\circ$

$\angle GHC = 90^\circ$

$$\text{So, } \angle CHA = 135^\circ - 90^\circ = 45^\circ$$

In $\triangle HMA$, $\angle CMA = 90^\circ$ as per construction

Thus $\angle HAM$ is also $= 45^\circ$

So $\triangle HMA$ is a right angled isosceles triangle, with the hypotenuse $HA = x$ m

$$\text{So } HM = AM = x/\sqrt{2} \text{ m}$$

Similarly, $\triangle CNB$ is a right angled isosceles triangle, with the hypotenuse $CB = x$ m and $CN = BN = x/\sqrt{2}$ m

In quadrilateral $AMNB$, $AM = BN = x/\sqrt{2}$, and $\angle AMN = \angle BNM = 90^\circ$

So $AMNB$ is a rectangle, and $AB = MN = x$ m

$$\text{Hence } HC = (HM + MN + NC) = (x/\sqrt{2} + x + x/\sqrt{2}) = (x\sqrt{2} + x) \text{ m}$$

Also $HG = x$ m, and $\triangle GHC$ is a right-angled triangle with $\angle GHC$ being 90°

Thus, by Pythagoras Theorem,

$$GC^2 = HC^2 + HG^2$$

$$\text{or, } GC^2 = (x\sqrt{2} + x)^2 + x^2 = (2x^2 + 2x^2\sqrt{2} + x^2) + x^2$$

$$\text{or, } GC^2 = 2x^2(2 + \sqrt{2})$$

But principal diagonal $GC = 2\sqrt{2 + \sqrt{2}}$ m

Thus,

$$\{2\sqrt{2 + \sqrt{2}}\}^2 = 2x^2(2 + \sqrt{2})$$

$$\text{or, } \{4(2 + \sqrt{2})\}^2 = 2x^2(2 + \sqrt{2})$$

$$\text{or, } 4(2 + \sqrt{2}) = 2x^2(2 + \sqrt{2})$$

$$\text{or, } x^2 = 2$$

$$\text{or, } x = \sqrt{2}$$

Thus $HG = x = \sqrt{2}$ m, and $HC = (x\sqrt{2} + x) = (2 + \sqrt{2})$ m

$$\text{So area of rectangle } AMNB = HG \cdot HC = \sqrt{2} \cdot (2 + \sqrt{2}) = 2(1 + \sqrt{2}) \text{ sq m}$$

Also $AM = x/\sqrt{2} = 1$ m, and $AB = x = \sqrt{2}$ m

Area of isosceles trapezium $ABCH = (1/2) \cdot (AB + HC) \cdot AM$ which is also equal to the area of isosceles trapezium $DEFG$

$$= (1/2) \cdot \{(\sqrt{2}) + (2 + \sqrt{2})\} \cdot (1)$$

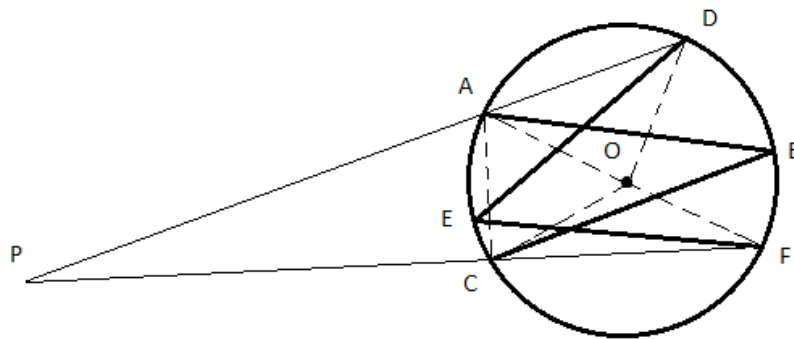
$$= (1 + \sqrt{2}) \text{ sq m}$$

Hence, the area of the regular octagon $ABCDEFGH = 2 \cdot \text{Area of isosceles trapezium } ABCH + \text{Area of rectangle } AMNB$

$$= 2 \cdot (1 + \sqrt{2}) + 2(1 + \sqrt{2})$$

$$= 4(1 + \sqrt{2}) \text{ sq m}$$

60. 15



Let us join AO, CO, AC, DO and FO

Since $\angle ABC = 30^\circ$, so $\angle AOC = 60^\circ$

But $AO = CO = \text{radius of the same circle.}$

So $\angle OAC = \angle OCA = 60^\circ$

Since $\angle DEF = 45^\circ$, so $\angle DOF = 90^\circ$

In $\triangle AOD$, $DO = AO = \text{radius of the same circle.}$

So $\angle OAD = \angle ODA = x^\circ$ (say)

Thus $\angle AOD = (180^\circ - 2x)$

In $\triangle COF$, $CO = FO = \text{radius of the same circle.}$

So $\angle OCF = \angle OFC = y^\circ$ (say)

Thus $\angle COF = (180^\circ - 2y)$

So, $60^\circ + (180^\circ - 2x) + 90^\circ + (180^\circ - 2y) = 360^\circ$

or, $2(x + y) = 150^\circ$

or, $(x + y) = 75^\circ$

Hence $\angle DAC + \angle FCA = (\angle OAD + \angle OAC) + (\angle OCF + \angle OCA) = 75^\circ + 60^\circ + 60^\circ = 195^\circ$

Thus, $\angle CAP + \angle ACP = (180^\circ - \angle DAC) + (180^\circ - \angle FCA) = 360^\circ - 195^\circ = 165^\circ$

Hence, the value of $\angle DPF = \text{the value of } \angle APC = 180^\circ - (\angle CAP + \angle ACP) = 180^\circ - 165^\circ = 15^\circ$

61. 84

Let rate be $r\%$ per annum, and principal be Rs P.

$$\text{So } P(1 + r/100)^2 - P(1 + r/100)^1 = 201600$$

$$\text{or, } P(1 + r/100)(r/100) = 201600$$

$$\text{Also } P(1 + r/100)^3 - P(1 + r/100)^2 = 225792$$

$$\text{or, } P(1 + r/100)^2(r/100) = 225792$$

Dividing both the equations,

$$(1 + r/100) = 225792/201600$$

$$\text{or, } r/100 = 24192/201600$$

$$\text{or, } r = 12\% \text{ per annum}$$

$$\text{So } 1.12^2P - 1.12P = 201600$$

or, $0.1344P = 201600$

or, $P = \text{Rs } 15 \text{ lakhs.}$

$$15 \text{ lakhs} = 3^1 * 5^1 * 2^5 * 5^5 = 2^5 * 3^1 * 5^6$$

Hence possible number of factors = $(5+1)*(1+1)*(6+1) = 84$

62. C

Let each one's share of prize money be P and the common rate of interest $r\%$ per annum

So Interest of Mr Balboa per year = $1.6/2 = 0.8$ million dollars

Interest of Mr Creed in 1st year = 0.8 million dollars

So interest of Mr Creed in 2nd year = $1.7 - 0.8 = 0.9$ million dollars

Hence $1.7 - 1.6 = (0.8*r*1)/100$

or, $0.1 = (0.8*r*1)/100$

or $r = 12.5\%$ per annum

So $0.8 = (P*12.5*1)/100$

or, $P = 6.4$ million dollars

Hence total prize money of the finals = 12.8 million dollars

63. 6

Assuming new average to be just 58 , total negative deviation = $(58 - 53)*34 = 170$

Since the negative deviation has to be compensated by the minimum possible numbers from the set, so I have to choose the largest numbers.

So $(89-53) + (88-53) + (87-53) + \dots$ must be just greater than 170 (as my actual average needs to be greater than 58),

ie $36+35+34+\dots$ must be just greater than 170 .

It happens till $36+35+34+\dots+32$ which is exactly equal to 170 , making average exactly equal to 58 .

But to make the average greater than 58 , I need one more, and hence 6 numbers at the minimum must be selected from the set.

64. A

If the average in 2001 is 36 , then in 2021 the average must be $36+20 = 56$ yrs

But actually it is 43 yrs, that is a deficit of $(56-43) = 13$ years

Throughout the 20 year period, at the end of every year the total members of the family were 7 .

Hence deficit in years = $7*13 = 91$ years.

But the bride got added to the family at 27 years of age.

So total deficit created by the expiry of the 2 members of the family was = $91 + 27 = 118$ years.

Out of the options only the first one's total comes to 118 years.

Hence the correct option is option A

65. B

Amount of Amontillado sherry, Smirnoff vodka and Lillet-blanc in 120 ml of sherry-martini
= 24, 36 and 60 ml resp

After removing 20 ml mixture, amount of Amontillado sherry, Smirnoff vodka and Lillet-blanc in 100 ml of sherry-martini

= $24 \times (100/120)$, $36 \times (100/120)$, and $60 \times (100/120)$ ml resp

= 20, 30 and 50 ml resp

Amount of Amontillado sherry, Smirnoff vodka and Lillet-blanc in 120 ml of sherry-martini after adding 20 ml of Lillet-blanc = 20, 30 and 70 ml resp.

After again removing 20 ml mixture, amount of Amontillado sherry, Smirnoff vodka and Lillet-blanc in 100 ml of sherry-martini = $20 \times (100/120)$, $30 \times (100/120)$ and $70 \times (100/120)$ ml resp

= $100/6$, 25 and $350/6$ ml resp.

Amount of Amontillado sherry, Smirnoff vodka and Lillet-blanc in 120 ml of sherry-martini after again adding 20 ml of Lillet-blanc = $100/6$, 25 and $470/6$ ml resp

Hence final ratio = $100/6 : 25 : 470/6$

= 100 : 150 : 470

= 10 : 15 : 47

66. C

Orange Juice (J)	<--- Jerrican --->	Electral Water (W)
(Original content)		
J : W = 20 : 0		J : W = 0 : 20
1)	2 lit ----> (J = 2) ---->	
J = 18 lit, W = 0 lit		J = 2 lit, W = 20 lit
2)	<---- 2 lit <---- (J = 2/11, W = 20/11)	
J = 200/11 lit, W = 20/11 lit		J = 20/11 lit, W = 200/11 lit

3	2 lit ---->
)	(J = 20/11, W = 2/11) ----
	>
J = 180/11 lit, W = 18/11 lit	J = 40/11 lit, W = 202/11 lit

4	<---- 2 lit
)	<---- (J = 40/121, W =
	202/121)
J = 2020/121 lit, W =	
400/121 lit	

Final ratio of pure orange juice and water in the first jerrican
 = 2020/121 : 400/121
 = 101 : 20

Hence concentration of pure orange juice in Shanti-Punch = 101/121

MOCK TEST - 2

Section - 1 - Verbal Ability and Reading Comprehension

Directions for Questions 1 to 4: Read the passage given below and answer the questions with the most appropriate choice.

Passage 1

Marxism attempts to capture the spirit of globalisation in terms of the cyclic nature of the capitalist world-economy, best described in terms of Kondratieff cycles. The earlier Kondratieff cycle began in 1945 and had two components: the A-phase, or economic expansion that went from 1945 to 1967-73, followed by the B-phase, or the downward swing. Starting during the 1980s, the period of economic expansion of the present cycle ended in 2008 and now we are witnessing the B-phase, or the downward swing. The capitalist world-system goes through periodic cycles of equilibrium-disequilibrium. Once equilibrium is disturbed, counter-movements are generated to restore equilibrium. The counter-movements travel some distance before a new equilibrium is restored. The moving equilibrium generates secular trends. One characteristic of secular trends is that they do not continue forever, but soon hit asymptotes. At this point, the system goes into a 'terminal crisis', or has the potential to create a new structure. Which route the system will take depends on secular trends and choices made for getting on top of the systemic forces.

One secular trend was increasing wage levels as a percentage of production costs, which was reduced during the 1980s by three factors: (a) modernisation of production processes that helped to break up and relocate production processes, (b) advances in information technology that permitted segregation of service components for outsourcing, and (c) increasing capital flows in the global secondary and tertiary circuits to allow the west to continue its debt-driven consumption. The vehicle was the multinational corporation, which, operating as a 'globally-integrated enterprise', made 'work flow to the place where it will be done best'. As a result, dual positive outcomes were generated for all nations in the following ways.

First, intra-industry trade increased. Trade between nations happens in two ways: inter-industry and intra-industry. Inter-industry trade, based on Ricardo's theory of comparative advantage, takes place between dissimilar economies and is advantageous to one partner. On the other hand, intra-industry trade occurs between similar economies, is based on Krugman's model of competitive advantage of nations, and leads to convergence of incomes. In intra-industry, domestic and international firms compete to manufacture similar products.

Second, demand from the west led to direct, indirect and induced effects. The direct effect is the initial immediate effect of the demand on output, employment or income. To meet this additional output, the IT sector buys additional inputs from other industries, pays additional salaries or imports additional goods, and such changes in output, employment and income are the indirect effects. Another round is the induced effect: the increase in household incomes and spending caused by the direct and indirect effects. Modernisation of technology permitted production processes to be split and located in different parts of the world, benefiting China, mainly. On the other hand, outsourcing of services due to advances in information technology was advantageous to India because service outsourcing, unlike free trade earlier, had the potential to equalise wages without physical movement of people to the west. India and

China benefited. The developed world also benefited because secondary and tertiary circuits of capital enabled increased debt-driven consumption and production.

Q. 1. The author of the passage is predominantly concerned with:

- A. shedding light on the rapid development of China and India.
- B. exhibiting how the West has failed by shifting its labour to India and China.
- C. distinguishing between the Western and Eastern worlds.
- D. demonstrating how India and China gained advantages from a particular business cycle.

Q. 2. The author emphasises in the first paragraph:

- A. the cyclical character of a certain market operation.
- B. The emergence of systemic forces in a certain market operation
- C. how equilibrium is attained in a certain market operation.
- D. the inevitability of Kondratieff cycles in a certain market operation

Q. 3. Which of the following is correct based on the information provided in the passage?

- I. The outcomes of intra-industry trade are more extensive than those of inter-industry trade.
- II. Advancement of technology aided China.
- III. The development of IT aided India.

- 1. I & II only
- 2. II & III only
- 3. I & III only
- 4. All of the above

Q. 4. Which of the following can be inferred from the passage?

- A. It was likely that during 1985 to 1990, we witnessed an A-phase in terms of Kondratieff cycles.
- B. A part of the nature of the capitalist system is to have trends where growth moves in a certain direction for some period of time, before changing direction.
- C. Intra-industry leads to a situation where competition between domestic and international firms to make similar products can lead to parity in incomes between different nations.
- D. All of the above

Directions for Questions 5 to 8: Read the passage given below and answer the questions with the most appropriate choice.

Passage 2

The French Enlightenment of the eighteenth century, and especially of French materialism, was not only a struggle against the existing political institutions and against the existing religion and theology, but equally an open and outspoken campaign against all metaphysics, especially that of Descartes, Malebranche, Spinoza, and Leibnitz. Metaphysics was confronted with philosophy, just as Feuerbach, in his first decisive stand against Hegel, opposed sober philosophy to drunken speculation. The metaphysics of the seventeenth century, which was driven from the field by the French Enlightenment, and especially by the French materialism, of the eighteenth century, experienced its victorious and opulent restoration in the German philosophy, and particularly in the speculative German philosophy, of the nineteenth century.

After Hegel had combined it in an ingenious manner with all subsequent metaphysics and with German idealism, and founded a universal realm of metaphysics, the attack on speculative metaphysics and on all metaphysics was once again synonymous, as in the eighteenth century, with an attack on theology. Metaphysics succumbed for good and all to materialism, which itself was now perfected by the work of speculation and coincided with humanism. French and English socialism and communism represented materialism which coincided with humanism in the practical sphere, just as Feuerbach represented it in the theoretical sphere.

There are two tendencies of French materialism, one of which derives its origin from Descartes and the other from Locke. The latter is pre-eminently an element in French culture and merges directly into socialism. The former, viz., the mechanical materialism, is absorbed in French natural science. The French materialism which derives directly from Descartes does not concern us particularly, any more than the French school of Newton and French natural science generally. Only this much needs to be said. In his physics Descartes invested matter with self-creative power, and he conceived mechanical movement to be its vital act. He separated his physics completely from his metaphysics. Within his physics matter is the only substance, the only basis of being and perceiving. Mechanical French materialism absorbed the physics of Descartes, while rejecting his metaphysics. His pupils were anti-metaphysicians by profession, that is to say, they were physicians.

Q. 5. The principal objective of the author of the passage is:

- A. to emphasise the significance of French materialism in society.
- B. to identify the historical roots of a philosophical movement.
- C. to expose the ridicule French materialism endured in its early phases
- D. to emphasise the foundation, origin, and essential components of French materialism.

Q. 6. From the information given in the passage, infer the author's position on metaphysics.

- A. He is a devoted adherent of metaphysics.
- B. He maintains indifferent views concerning metaphysics.
- C. The mixture of theology and metaphysics does not concern him.
- D. He is not a fan of metaphysics and may favour other schools of thought.

Q. 7. According to the author of the passage, Descartes:

- A. was capable of creating self-moving matter.
- B. could identify the metaphysical properties of matter.
- C. could differentiate between matter and its physical properties and metaphysics.
- D. was incapable of comprehending the self-creative power of physics.

Q. 8. According to the information given in the passage, it can be inferred that:

- A. The metaphysics of Descartes was effectively immaterial when it came to French materialism.
- B. The pupils of Descartes effectively did immaterial work in the field of metaphysics.
- C. The metaphysics of French materialism chose to sidestep the metaphysics of Descartes since it was based only on physical matter.
- D. French materialism of the time chose to go with Locke since he avoided mechanical materialism and gave importance to socialism, something Descartes missed out on in his conception of mechanical movement and physical matter.

Directions for Questions 9 to 12: Read the passage given below and answer the questions with the most appropriate choice.

Passage 3

Here is the first line of a long mantra: naipaul-rushdie-zadie-kureishi-monica... Each bead of this mantra is significant and makes some sense. Some beads might even contain powerful, perhaps even immortal, magic. But this interminable mantra, as a whole, is nothing but mumbo-jumbo mumbled by a West that wants to be radical without feeling seriously inconvenienced.

After a very short period of looking around, the West has increasingly turned its gaze onto itself in recent years. There it stands in front of gilded mirrors, gazing at itself in admiration. What it sees is no longer the whiteness it saw in the far past. What it sees now is multi-hued, variously dressed, many voiced. For, the Western self, particularly in literary and cultural circles, has long accepted the fact of being creolized. Even the opponents of multiculturalism cannot see themselves as snow white. When the West gazes into its mirrors, it sees its own new post-war multicultural self. It sees Salman Rushdie, V.S. Naipaul, Hari Kunzru, Zadie Smith. And it likes to pretend that it is seeing the Other.

How convenient to look at an Other who speaks one's own language! No, I am not accusing Rushdie and Naipaul of bland mimicry or of consciously catering to Western opinions. These, and many others like them, are excellent writers, and people of much independence of thought and posture. One or two of them might even be great writers. And yet, they belong to a tradition that is less uncomfortable for the cultured Western reader and critic to face up to. If they present difference, they present just a different aspect of the West.

Choice of language, of course, is one hammer used to strike at such authors. I refuse to take up that hammer. What if they write in English or French? Only a dishonest critic would use that forced/free choice to dismiss the work of a writer, for — as Sujata Bhatt puts it in one of her poems — what language has not been the language of the oppressor? And, by the same token, what language cannot be used to resist, at least to a degree, the commands of the oppressor? Yet, while I grant them their languages and I even grant them greatness in those languages, I repeat my observation: they are a reflection of the new post-war multi-cultural West. They are the mirror images that make the liberal West feel comfortable with itself, because it feels that in gazing on them (and their works) it is reading and championing the Other.

They are not the Other. They are not even different, really. They are the West today.

They are the West in two very obvious ways. Many of them, like Hari Kunzru, Hanif Kureishi or Zadie Smith, were born or brought up from childhood in the West. To read them as Indian or Caribbean writers is to do them an injustice. They should be read — as Hari Kunzru and some others have rightly indicated — as belonging to the nation in which they grew up. Secondly, even postcolonial writers who went Westward Ho! at a relatively mature age rode very different wagons. Some were brought there and put to school in England, USA or France by rich parents. Some won prestigious scholarships: their departures were caused not by unemployment or poverty but by recognition granted them by the colonial or ex-colonial centre. These are not immigrants who come as cheap labour and survive cheaply. They are not even like immigrants — and there are (less visible) African, Indian or Caribbean writers who belong to this category (as do I) — who move to the West for personal reasons, and then struggle up the professional chain, selling newspapers, washing dishes, painting houses until they have a degree (or a new degree) that enables them to enter (or re-enter) the professional middle classes.

Q. 9. The passage's central idea can be described as:

- A. The pervasive notion of injustice in western society and how the west is able to shape writers to its own specifications.
- B. The empty notions of multiculturalism that the west preaches and how these are exposed by the type of writers/writings that obtain acceptance in the west.
- C. The obstacles that a writer's choice of language places in his or her path and how these obstacles shape a writer's ambitions.
- D. The insignificance accorded by the west to genuine multicultural voices and the manner in which it promotes authors who serve its interests.

Q. 10. The author takes the following viewpoint towards authors such as Salman Rushdie, V.S. Naipaul, Hari Kunzru, and Zadie Smith:

- A. biased and judgmental
- B. impartial and apathetic
- C. concerned and scrutinising
- D. objective and courteous
- E.

Q. 11. The meaning of the following line '*For, the Western self, particularly in literary and cultural circles, has long accepted the fact of being creolized*' is:

- A. The West views itself as the world's saviour and believes it can be the world's torchbearer in creating a multicultural literary and cultural circuit.
- B. The West ceased to be bound by the constraints of the past and is able to assert itself to be the sole region in the world where a genuinely multicultural language is spoken.
- C. The West has embraced its past and realised that it has the power to replace fossilised views of the past with much more dynamic ones in the present.
- D. The West views itself as an integration of multiple cultures, having given up its earlier notion of being an essentially white society (particularly in its literary and cultural circles).

Q. 12. According to the views expressed by the author of the passage all of the following can be inferred EXCEPT:

- A. The choice of language an author writes in cannot be used as a tool to rip into his work.
- B. The language of the oppressor can be used to resist the same as well.
- C. There are some authors that the liberal West feels comfortable to engage with.
- D. The possibility of Naipaul, Rushdie, Zadie, Kureishi, and Monica all being great is improbable.

Directions for Questions 13 to 16: Read the passage given below and answer the questions with the most appropriate choice.

Passage 4

Since the purchaser of such a product of mental skill possesses the full use and value of his single copy, he is the complete and free owner of that one copy, although the author of the work or the inventor of the apparatus remains the owner of the general method of multiplying such products. The author or inventor has not disposed directly of the general method, but may reserve it for his private utterance. The justification of the right of the author or inventor cannot be sought in his arbitrarily making it a condition, when he disposes of a copy, that the possibility of bringing out other copies shall not belong to the

purchaser, but shall remain in his own hands. The first question is whether the separation of the object from the power to reproduce, which goes with the object, is allowable in thought, and does not destroy full and free possession. Does it depend upon the arbitrary choice of the first producer to reserve to himself the power to reproduce or dispose of the product of his mind? Or, on the other hand, may he count it of no value, and give it freely with each separate copy? Now there is this peculiarity about this power, that through it the object becomes not merely a possession, but a means of wealth. This new feature is a special kind of external use, and is different and separate from the use to which the object was directly appointed. It is not, as it is called, an *accessio naturalis* as are *foetura*. Hence as the distinction occurs in the sphere of external use, which is naturally capable of being divided, the reservation of one part, while another is being disposed of, is not the retention of an ownership without *utile*. The primary and most important claim of trade and commerce is to give them surety against highway robbery. In the same way the primary though merely negative demand of the sciences and arts is to insure the workers in these fields against larceny, and give their property protection. But in the case of a mental product the intention is that others should comprehend it, and make its imagination, memory, and thought their own. Learning is not merely the treasuring up of words in the memory; it is through thinking that the thoughts of others are seized, and this after-thinking is real learning. Now that which is learned becomes in turn something which can be disposed of; and the external expression of this material may easily assume a form different from the form into which the original thinker threw his work. Thus those who have worked over the material a second time may regard as their own possession whatever money they may be able to extract from their work, and may contend that they have a right to reproduce it. In the transmission of the sciences in general, and especially in teaching positive science, church doctrine, or jurisprudence, are found the adoption and repetition of thoughts which are already established and expressed. This is largely the case with writings composed for the same purpose. It is not possible to state accurately, and establish explicitly by law and right, just how far the new form, which accrues through repeated expression, should transmute the scientific treasure or the thoughts of others, who are still in external possession, into a special mental possession of the person who re-constructs them; how far, in other words, a repetition of an author's work should be called a plagiarism. Hence plagiarism must be a question of honour, and should be refrained from on that score. Laws against reprinting protect the property of author and publisher in a very definite but, indeed, limited measure. The ease with which one can intentionally alter the form or insert slight modifications into a large work on science or a comprehensive theory which is the work of another, and further, the great difficulty, when discoursing on what one has received, of abiding by the letter of the author, introduce, in addition to the special purposes requiring such a repetition, an endless variety of changes, which stamp upon the foreign article the more or less superficial impression of something which is one's own. The hundreds of compendiums, abridgments, compilations, arithmetics, geometries, religious tracts, every venture of a critical journal, an annual, or a cyclopaedia, keep on repeating under the same or an altered title, although each may be maintained to be something new and unique. Yet the profit which the work promised the author or inventor in the first place may be wiped out, or the purpose of both author and imitator may be defeated, or one may be ruined.

Q. 13. Paraphrase the line: 'the reservation of one part, while another is being disposed of, is not the retention of an ownership without *utile*.'

- A. In some cases where the author retains the right to publish and distribute a work, the definition of utility changes.
- B. The definition of ownership is altered when the author retains the right to reproduce a work but grants external use of a portion.
- C. The author has the right to retain a portion of the ownership, or the utilitarian value, of the work he has created.
- D. The author decides whether or not to retain any rights to the work he has created.

Q. 14. As used in the context, 'larceny means'

- A. pointing out flaws in the work of another
- B. plagiarising or stealing the work of another
- C. taking ideas or concepts from the work of another
- D. expanding on the work of another while maintaining one's own sense of individuality in the process.

Q 15. When the author says, '*The primary and most important claim of trade and commerce is to give them surety against highway robbery*', he is highlighting the fact that:

- A. Writers and inventors who travel on roads run the risk of having their property stolen, and they should take every effort to protect themselves against this possibility.
- B. Writers and inventors should be informed of the brazen looting that will be committed against their works, and they should take measures on their own to prevent such acts from occurring.
- C. Authors and inventors should be protected against the unauthorised use of their creations by having provisions made in the way that their works are traded. This will prevent infringement.
- D. Authors and inventors are defenceless against the theft of their creations, and the role that business and commerce can play in preventing such manipulations is, at most, limited to that of a rearguard.

Q. 16. According to the author of the passage, why must one refrain from identifying an action as plagiarism?

- A. as it is difficult to combat.
- B. as it is difficult to understand.
- C. as it is difficult to detect.
- D. as it is difficult to assess.

Directions for questions 17 to 19: In the following questions, rearrange the five sentences in order to form a meaningful paragraph.

Q. 17 TITA

- A. The main objective behind this is to ensure that proper waste management is done and no harmful elements are getting mixed in the air because of the waste disposal process
- D. The government has mandated that there should be a separate arrangement for disposal of solid waste and the liquid waste and also the radioactive waste so that proper disposal can be obtained
- C. The government has started a ranking process among the cities in which marks are allotted to this aspect and cities are given encouragement if they have done commendable work in this area
- D. The solid waste management process in India has undergone a sea change since the launch of the Swachh Bharat Mission by the government in October 2014 in which there was a special component on this

TITA

Q. 18.

1. However, it is also used as a weapon by the central government to control the states so that the political parties at the state level can be controlled and given the impression that centre can take over the party

2. It takes place because there may not be any clear majority in the Parliament or the state assemblies and that is why fresh election needs to be conducted which takes time and in the meantime, the President is given the responsibility to take care of the general administration
3. The form of President rule is there in the Indian constitution because of the circumstances in which there is no government in the state or even at the centre even after the election
4. This is something that should not be encouraged in the long run since the provision of the rule of the President was kept in the constitution in order to take care of emergency situations and not for wielding influence over the states

TITA

Q. 19.

1. It is a wake-up call for these companies which have already calculated the amount of loss they will make out of the distribution network and the transmission losses
2. It means these companies are not very interested in addressing the issue of this loss but they are simply adding the costs into the losses made by the company
3. The distribution losses suffered by the power distribution companies in the country have reached a level from where it is eating a lot into the actual profits of the companies
4. This is the attitude of most of the public sector companies in India since they know they have the cushion of the government behind them to fall back on whenever required

Q. 20. Given below is a short paragraph and a set of four options. Read the paragraph and select the best summary for the paragraph.

Even though there were no longer any refugees in Budapest, the propaganda only served to strengthen the volunteers' bond to the extent that they continued to meet even when there were no longer any refugees in the city. She now watches CNN and Al-Jazeera instead of Hungarian television, said Eva, a psychologist in her forties who was dressed in an elegant red dress. She stated that no matter what they did, the refugees reciprocated with gratitude and insights into other cultures. Eva remarked with a chuckle that she had become a genuine Middle East expert. She acknowledged that she was in the minority in Hungary and that few people outside of the cities shared her views. She explained that the government did not provide for the refugees in parks and train stations because it anticipated that they would become filthy and, yes, begin to odour, and that people would be afraid of them, particularly young men at night. Even her 16-year-old son muttered when she took in a Syrian family who had been on the road for three days, and he checked to make sure they hadn't stolen anything.

- A. Volunteers were so united that they no longer watched Hungarian television but rather CNN and Al Jazeera.
- B. Volunteers were unified in assisting refugees to remain in parks and residences.
- C. As a result of government propaganda, volunteers realised they were in the minority when it came to assisting refugees.
- D. Volunteers had attempted to assist refugees to the best of their abilities by coalescing against the government and its policies.

Q. 21. Given below is a short paragraph and a set of four options. Read the paragraph and select the best summary for the paragraph.

Contrary to the perception that handwriting is a trivial talent, handwriting is significant for a variety of reasons. One entails the concept of mental resources, which I have mentioned in several other columns in relation to reading, mathematics, and writing. In the same way that laboured word decoding can impair reading comprehension and a lack of automatic recall can reduce the mental resources available for learning advanced computational algorithms in mathematics, laboured handwriting depletes the

mental resources required for higher-level writing skills such as attention to content, elaboration of details, and organisation of ideas. As handwriting is a fundamental skill used in virtually all content areas and language arts classes for taking notes, taking exams, and completing classroom work and homework, poor handwriting can have a pervasive impact on academic performance. In addition, when handwriting is perceived as difficult and time-consuming, motivation to write may decrease significantly, leading to a lack of practice that may exacerbate writing difficulties.

- A. Handwriting is an essential skill for success in a variety of activities, as a lack of writing results in a lack of practice in writing.
- B. Handwriting is an essential skill for success in a variety of tasks, as laboured handwriting leaves insufficient mental capacity for other high-level tasks.
- C. Poor penmanship leaves insufficient mental capacity for other high-level tasks, making handwriting a crucial skill for success in a variety of situations.
- D. Handwriting is an essential skill for a variety of daily activities, such as mastering complex computational algorithms.

Q. 22. Given below is a short paragraph and a set of four options. Read the paragraph and select the best summary for the paragraph.

Having too little to accomplish is significantly less inspiring than staying occupied with meaningful work. Modern workers aren't frightened of taking on tough assignments. Most people are eager to broaden their experience by taking on new roles and responsibilities. More autonomy in completing key activities is warranted as a natural extension of increased responsibilities.

- A. More job autonomy and diversity enhances employee morale.
- B. Many employees go above and beyond the call of duty to stave off ennui.
- C. Modern workers expect greater autonomy than ever before.
- D. Traditional office employment used to be less demanding.

Q. 23. Given below is a short paragraph and a set of four options. Read the paragraph and select the option that best completes the paragraph.

Passengers' parkas flap in the cool wind as the rugged hillscape gradually reveals castles both ruined and restored. The ridges of the gorge rise above us, unblemished by any modern building, thanks to a strict code that holds the tide of contemporary Germany back, out of sight from this romantic river escape. Tortured green vineyards climb steep hillsides, and turreted towns grab friendly bits of shoreline. Trains streak like arrows along both shores. Bright green and red buoys battle the current, keeping the cautious parade of barges and sightseeing boats off the many reefs. The sheer bulk of history that has poured through this river valley rouses any romantic soul. It was here that the ancient Romans decided to call it an empire and draw the line that defined their vast holdings — separating barbarians from the civilized world. It was here that Prussian General von Bluecher used an innovative pontoon bridge to cross the Rhine and flank Napoleon's forces (on their way back from a disastrous Russian campaign).

(_____)

- A. It is here that three pontoon bridges cross the river.
- B. It is here that the riverbed is littered with jagged rocks and the water is relatively shallow.
- C. It was here that a major flood occurred in 1996, killing off most of the vegetation further down the river.

- D. And it was also along the Rhine where U.S. General George S. Patton's troops found a bridge still standing at Remagen to bring the Second World War into Hitler's heartland.

Q. 24. Given below is a short paragraph and a set of four options. Read the paragraph and select the option that best completes the paragraph.

The last example will reflect on how one of life's most complicated questions can be easily answered using a Venn diagram. Choosing a dream job is something that has stumped most college graduates, but with a single Venn diagram, this thought process can be simplified to a great extent. First, single out the factors which matter in choosing a dream job, such as things that you love to do, things you're good at, and finally, earning potential. Though most of us dream of being a celebrity and coming on TV, not everyone is gifted with acting skills, and that career path may not be the most viable.

(_____)

- A. Instead, you should pick a career path that you are skilled at and enjoy doing in addition to having a possibility of financial rewards.
- B. Instead, it would be wise to pick a career path that combines your weaknesses, your passions, and your hopes for financial success.
- C. Choose a career path instead that takes advantage of your skills, interests, and abilities while also providing adequate financial security.
- D. The better option would be to pick a field in which you excel, which you enjoy, and which also offers the possibility of financial gain.

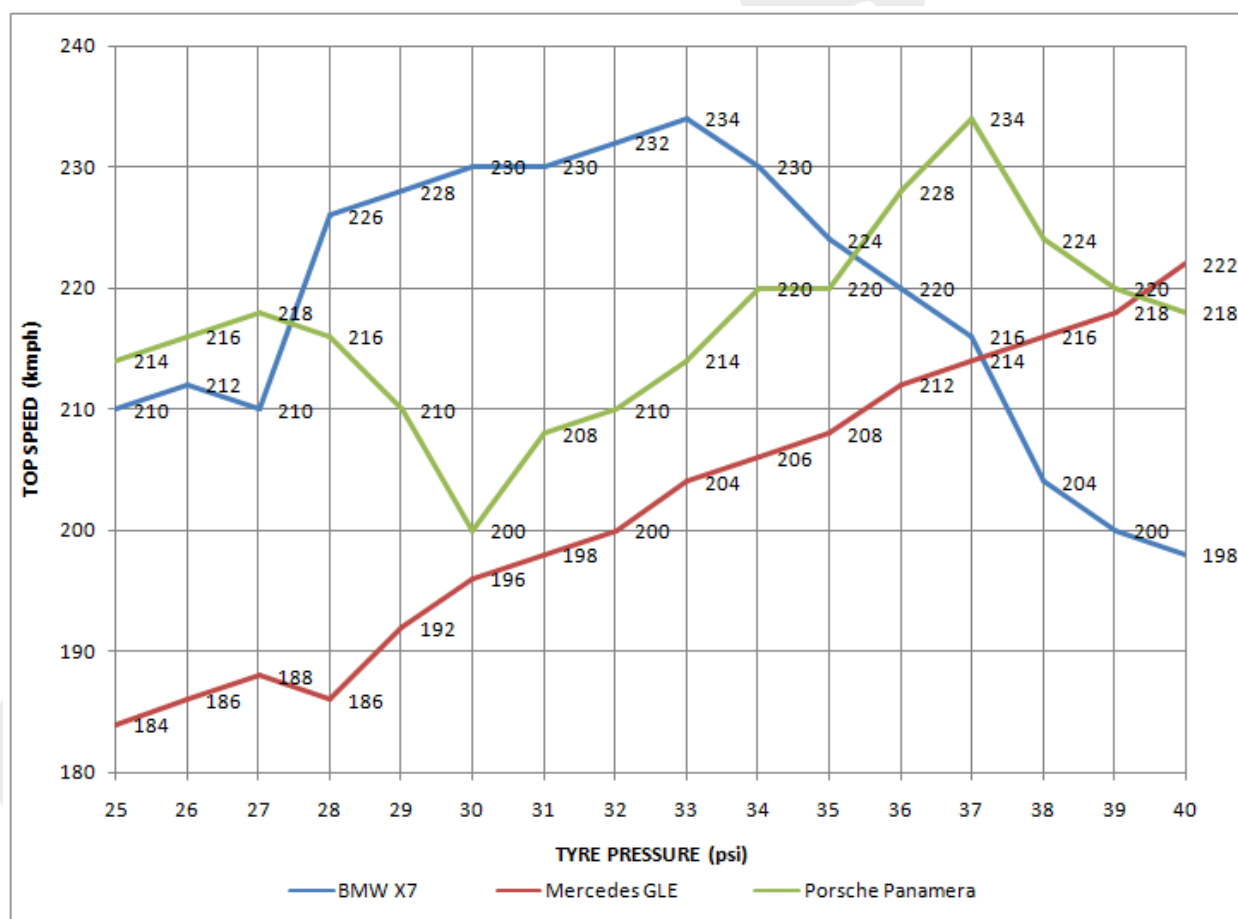
Section - 2 - Data Interpretation and Logical Reasoning

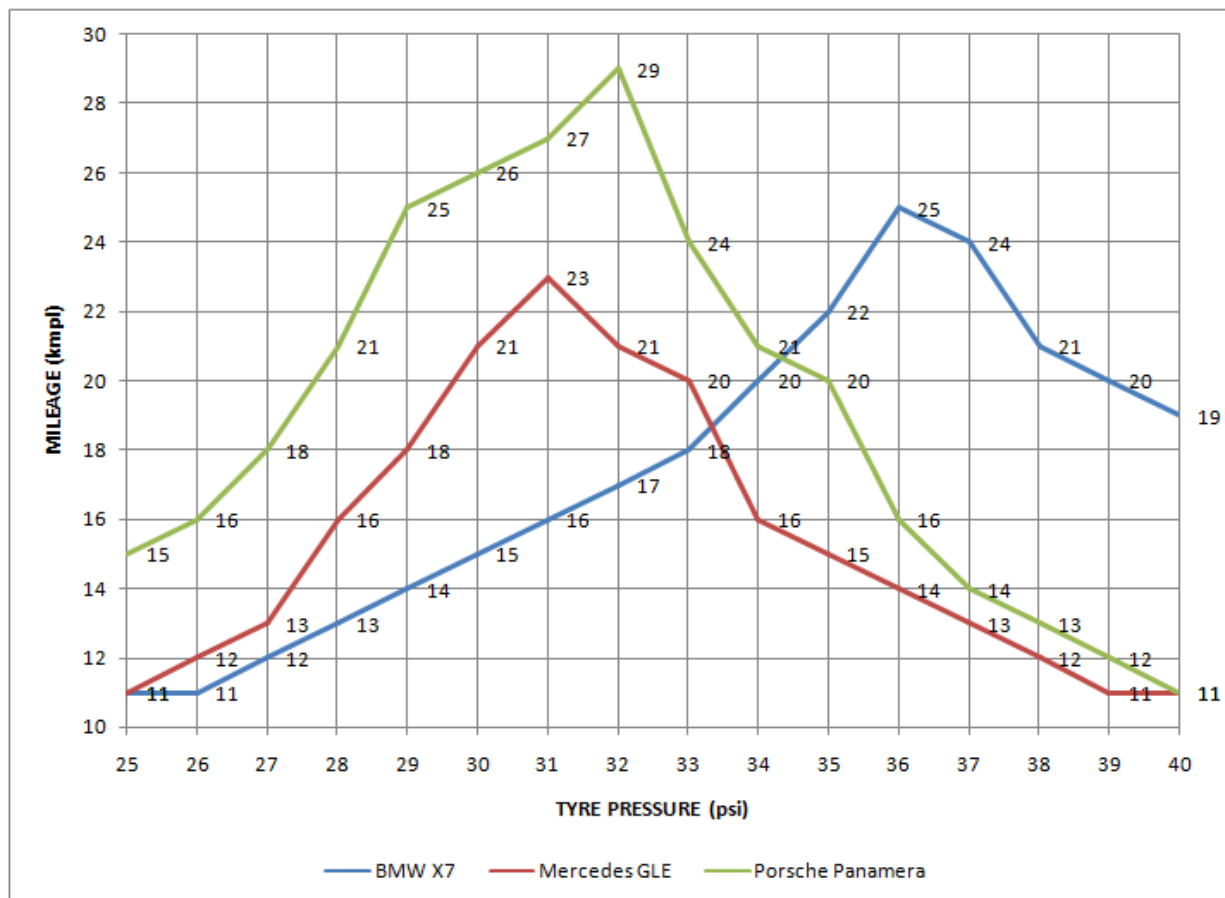
Directions for questions 25 to 28 :

Mr Sonu Sood owned three cars – a BMW X7, a Mercedes GLE, and a Porsche Panamera. One day, he was studying the effect of tyre pressures (psi) of his cars on the top speed (kmph) that each car can reach, and the mileage (kmpl) – mileage being the distance that a car can travel using one liter of fuel – of each car.

The tyre pressure of any car should be at least 25 psi and at most 40 psi.

The first graph below provides the top speed that each car can reach for different tyre pressures. The second graph provides the mileage of each car for different tyre pressures





Q 25.

Mr Sood wanted to set the same tyre pressure on all his cars. If he wanted all his cars to be able to reach a top speed of at least 200 kmph and have a mileage of at least 16 kmpl, which of the following could be the tyre pressure of his cars ?

- A) 30 psi
- B) 31 psi
- C) 32 psi
- D) 35 psi

Q. 26

If Mr Sood wanted to reach a top speed of at least 220 kmph and wanted to travel 50 km using at most 2 liters of petrol, which of the following combinations of car and tyre pressure had he to use ?

- A) Porsche Panamera, 37 psi
- B) Porsche Panamera, 32 psi

- C) Mercedes GLE, 40 psi
- D) BMW X7, 36 psi

Q. 27

If, during a journey in his Porsche Panamera, Mr Sood planned to maintain an average speed of at least 216 kmph for two hours, what was the minimum fuel that his car would consume during the two hours, assuming that his chauffeur could set the tyre pressure (in psi) accurately up-to one decimal place ?

- A) 18.8 litres
- B) 19.4 litres
- C) 20.5 litres
- D) 21.9 litres

Q 28 (TITA)

If Mr Sood wanted to travel 40 km using at most 2 litres of fuel, what was the maximum speed (in kmph) that he could reach using any of the three cars ?

Directions for questions 28 to 32:

Two friends Moloy and Niloy passed out from the Purulia Institute of Science and Technology with B.Tech degrees in Mechanical Engineering, but even after a year placement was hard to find. So they decided to take the challenge head-on, came down to Kolkata, rented a garage space on Park Street, and having an affinity towards making people enjoy good food, started their firm named 'B.Tech Bread-Omlette Wala'.

They started with three items on the menu. One was the French Toast which could be prepared in 3 minutes. The second was the Egg Tortillas which took 15 minutes to prepare. Any one of Moloy and Niloy could prepare any one of them at a time. The third was the Egg Bhurji with French Fries. This however was prepared on an automated fryer which could prepare 3 servings at a time and took 5 minutes irrespective of the number of servings equal to or below 3. The fryer did not need anyone to attend to it, and the time to put in the raw ingredients could be neglected. So one could tend to the preparation of other items while the Egg Bhurji with French Fries were being prepared.

They wanted to serve the orders as early as possible after the order was given. The individual items in any order were served as and when all the items were ready, and the order was then considered closed. None of the items on the menu were prepared in advance in anticipation of future orders.

On the first day, 3 groups of customers came in and ordered at 6.00 pm, 6.10 pm, and 6.13 pm. The first order was for a plate of Egg Tortillas, two plates of French Toast, and three plates of Egg Bhurji with French Fries. The second order was for a plate of French Toast and two plates of Egg Bhurji with French Fries. The third order was for a plate of Egg Tortilla and a plate of Egg Bhurji with French Fries.

On the backdrop of the above information answer the questions given :

Q 29 Assuming that the next customer's order could only be attended to when the previous customer's order was closed, at what time would the first customer's order be considered closed ?

- A) 6.15 pm

- B) 6.17 pm
- C) 6.18 pm
- D) 6.20 pm

Q. 30

Assuming that the next customer's order could only be attended to when the previous customer's order was closed, at what time would the third customer's order be considered closed ?

- A) 6.28 pm
- B) 6.35 pm
- C) 6.38 pm
- D) 6.45 pm

Q. 31

Suppose Moloy and Niloy had decided to process multiple orders at the same time, however strictly prioritising a first come first serve basis, when would the second customer's order be considered closed ?

- A) 6.20 pm
- B) 6.18 pm
- C) 6.15 pm
- D) 6.12 pm

Q 32 Suppose Moloy and Niloy had decided to process multiple orders at the same time, however strictly prioritising a first come first serve basis, when would the third customer's order be considered closed ?

- A) 6.22 pm
- B) 6.25 pm
- C) 6.28 pm
- D) 6.30 pm

Q 33 A fourth customer comes in and orders two plates of French Toast at 6.24 pm. Suppose Moloy and Niloy had decided to process multiple orders at the same time, however strictly prioritising a first come first serve basis. For exactly how many minutes would one of the friends be idle from 6.00 pm till serving the last customer, assuming that the four customers were the only ones to have come in within the period being discussed ?

- A) 9
- B) 13
- C) 18
- D) 21

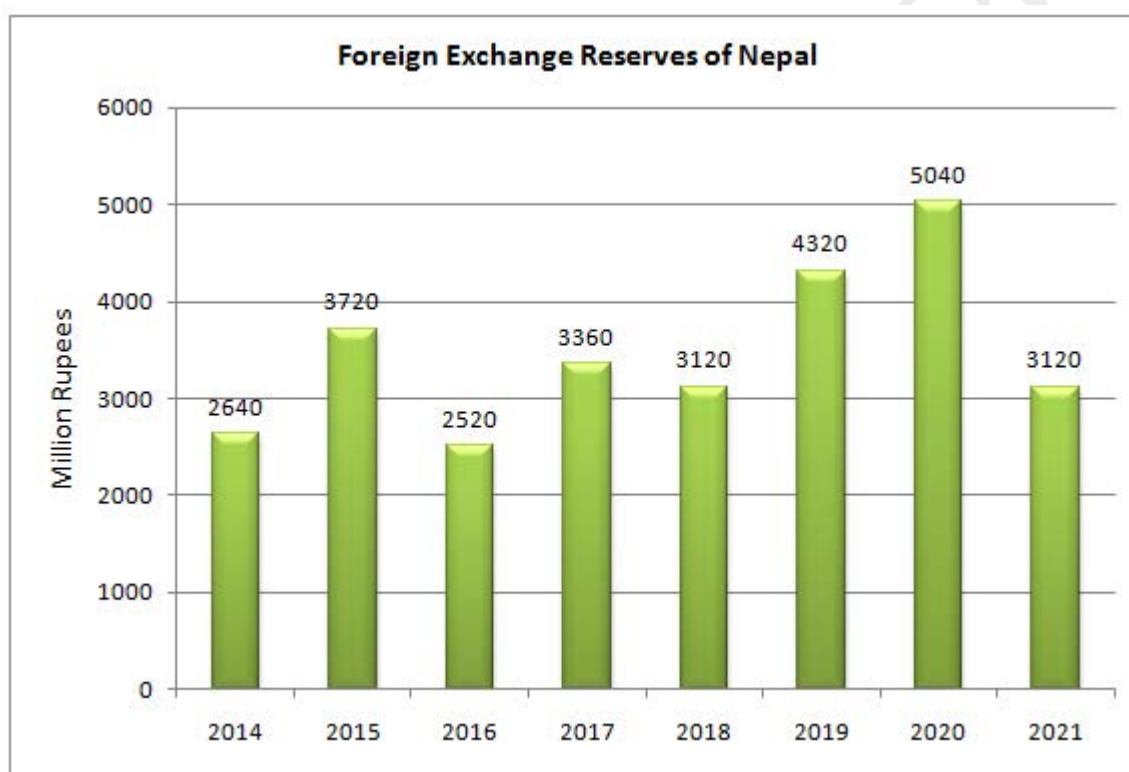
Q. 34 Had Niloy been absent on that day, and assuming that the next customer's order could only be attended to when the previous customer's order was closed, at what time would the fourth customer's order (refer to the previous question) be considered closed ?

- A) 6.38 pm
- B) 6.42 pm

- C) 6.47 pm
D) 6.49 pm

Directions for questions 35 to 39 :

The bar-graph given below shows the foreign exchange reserves of Nepal (in million Rupees) from 2014 to 2021. Answer the following questions based on the graph :



Q. 35 (TITA)

What was the percentage increase (rounded to the nearest integer, if deemed necessary) in the foreign exchange reserves in 2020 over 2016 ?

Q. 36 (TITA)

The foreign exchange reserves in 2020 was how many times (rounded to one decimal place) of that in 2017 ?

Q. 37 (TITA)

For which year, the percentage increase of foreign exchange reserves over the previous year was the highest ?

Q. 38 (TITA)

What was the percentage (rounded to one decimal place) of decrease of foreign exchange reserves over the previous year for 2021 ?

Q. 39 (TITA)

The foreign exchange reserves in 2019 was approximately what percent (rounded to the nearest integer) of the average foreign exchange reserves over the period under review ?

Directions for questions 40 to 44 :

In a family, there are eight members, J to Q, belonging to three generations, all being graduates. Each member is a graduate in a different subject among Biology, Mathematics, Physics, English, Bengali, History, Geography and Pharmacology, in any order. There are three married couples, with each couple having at least one child. O is not the father of K. The member who is a graduate in Bengali is the maternal grand-parent of the member who is a graduate in Physics, and the paternal grandfather of M, who is a graduate in Biology. P and Q are siblings. P is a male and is a graduate in History. L's son-in-law is married to the member who is a graduate in English and has a daughter K. L, N, and Q are of the same gender. The member who is a graduate in Mathematics, and the member who is a graduate in Pharmacology belong to the same generation. The member who is a graduate in Mathematics is a female.

Q. 40

How is the member who is a graduate in Mathematics related to the member who is a graduate in Geography ?

- A) Brother
- B) Daughter
- C) Son
- D) Daughter-in-law

Q.41

What subject is Q a graduate in ?

- A) Mathematics
- B) History
- C) English
- D) Biology

Q. 42

How is K related to Q?

- A) Cousin
- B) Daughter
- C) Sister
- D) Son

Q. 43 Who is a graduate in Geography ?

- A) L

- B) K
- C) P
- D) N

Q. 44 How is the member who is a graduate in Biology related to the member who is a graduate in Pharmacology ?

- A) Daughter
- B) Nephew
- C) Sister-in-law
- D) Cannot be determined

CAREERS360

Section - 3 - Quantitative Aptitude

Q 45 (TITA)

Mr Krishnan Iyer (MA), a coconut-water seller at Mandwa, invested Rs 5000 on the first day of every year for 6 consecutive years in the hawala racket of gangster Mr Vijay Deenanath Chavan at a rate of 10% per annum compound interest, interest compounded annually. If $(1.1)^6 = 1.772$, what is the total value of Mr Krishnan Iyer's investment (in Rs) after 6 years since the first investment ?

Q. 46 (TITA)

General Erwin Rommel was leading an armada of five armoured tanks towards Tunisia, intending to engage in chemical warfare to gain absolute Nazi control over the HQ of North Africa. Each tank contained one cylinder of toxic chemical liquid to be launched at the centre of Tunisia. All the cylinders were of equal capacity. However, instead of having equal amounts of the toxic chemical liquid, they were filled in the ratio of 3 : 4 : 5 : 6 : 7 with the liquid. The total quantity of the chemical liquid in the five cylinders was three-fifth of the total capacity of the cylinders. How many of the five cylinders were at least half full with the toxic chemical liquid ?

Q. 47 Agro giant Keventers, packages and sells frozen peas in two different packages. The smaller package has an MRP (maximum retail price) at 33.33% of the MRP of the larger one. However it was found that the MRP per unit of peas in the larger packet is 5% less than the same unit of peas in the smaller one. What percent of the larger package is the weight of the smaller package of peas ?

- A) 37.50
- B) 33.33
- C) 31.67
- D) 27.50

Q. 48 A marathon runner embarks on a marathon consisting of a pleasant as well as a hot and humid running condition. He fills up his water bottle at the beginning of the race. He drinks 12% of his water while covering 18% of the total race in hot and humid running conditions. He knows he has to cover another 24% of the total race in similar conditions. What should be the percentage decrease in his water consumption during pleasant conditions over the hot and humid conditions, so that he just completes the entire race without a refill of the water bottle ?

- A) 29.70
- B) 38.20
- C) 45.00
- D) 46.30

Q. 49 (TITA)

On a table there are 8 identical tea-cups, 7 identical coffee-mugs and 5 distinct wine-glasses. In how many ways can a person select at least 1 item from the table ?

Q 50 (TITA)

Eight fair dice were thrown simultaneously. In how many ways can the total of all of them show 42 points?

Q 51 Producer Mr K. C. Bokadia has fallen on hard times due to the loss his film production house had to take due to lockdowns. He thus sold off his Rolls Royce and Mercedes cars, with the selling price of his Rolls Royce being 50% more than the Mercedes. Moreover the cost price of the Rolls Royce was 45% more than the selling price of the Mercedes, while the selling price of the Rolls Royce was 25% more than the cost price of the Mercedes. What was the profit percentage of Mr Bokadia on making the sales ?

- A) 5.67%
- B) -5.67%
- C) 7.55%
- D) -7.55%

Q. 52 (TITA)

A group of 28 ladies assembled for a kitty party and a rummy game at Mrs Mangeshkar's house, with cash with them. Due to some urgent work cropping up, some of the ladies with a total of Rs 21,000 in cash left. But seven other ladies with Rs 4,000 cash average joined the group. Strangely it was observed that the average cash with the ladies in the present group remained unchanged. If the ladies who had left re-joined the group, the average cash with all the ladies finally in the group became Rs 3600. Find the average amount of cash money (in Rs) with the initial 28 ladies who had assembled at the house of Mrs Mangeshkar ?

Q. 53 (TITA)

M/S Beard Brothers, a retail garment seller, orders eighty units of Moustache Jeans from the distributor and marks each for Rs 5,750. Sixty four of the jeans are sold at the marked price, which earned a 48% profit above the retailer's cost from the distributor. To sell the remaining sixteen jeans, the retailer has to substantially discount the marked price, and each is sold at a price that represents a 2% loss below the retailer's cost. What was M/S Beard Brothers' profit as a percent of the retailer's initial cost for the eighty units of Moustache jeans ?

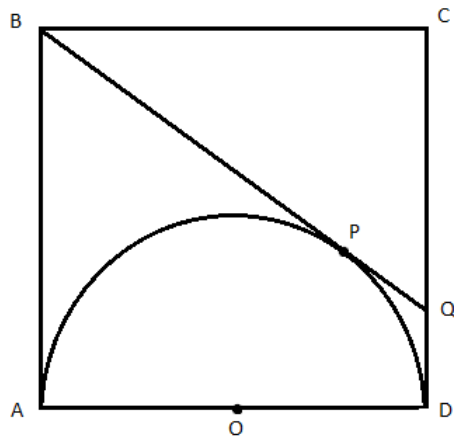
Q 54 Find the remainder when $59^{73^{51}}$ is divided by 37 ?

- A) 17
- B) 22
- C) 29
- D) 36

Q 55 If $(x - y)^2 + x^2 = 25$, such that x and y are integers and $x \geq 0$, find the number of solutions of (x,y)?

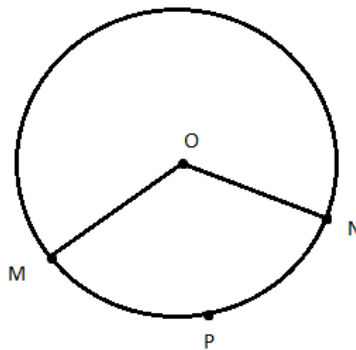
- A) 16
- B) 9
- C) 3
- D) No possible solution

Q 56 In the diagram below, ABCD is a square of length 20 m. APD is a semi-circle with centre O, which is also the mid-point of AD. BPQ is the tangent from point B on the semi-circle at point P. Find the area of the circum-circle of $\triangle BCQ$ (in sq m) ?



- A) 156.25π
- B) 175.25π
- C) 192.25π
- D) 226.25π

Q 57 The diagram given below is that of a circle with centre O. M and N are two points on the circumference such that $\angle MON = 120^\circ$. P is a point on minor arc MN such that the length of arc MP : arc NP = 8 : 7. An ant standing at point O wants to reach point P, but only by walking along the circumference of the circle or the radii OM and ON. The ant also does not walk along the same stretch twice. What is the ratio (to the nearest integer) of the summation and the difference of the length of the longest and shortest route the ant can take to do so ? (Assume π to be 3.14)



- A) 213 : 84
- B) 186 : 97
- C) 173 : 101
- D) 164 : 113

Q 58 In the physics class the teacher wanted to show the refraction of light into VIBGYOR and hence brought a triangular prism to the class. The side of the prism was an equilateral triangle of side 12 cm, while the length was of 20 cm. In the class the teacher asked a student to paint the sides of the prism with black paint to render it opaque, leaving two circles of diameter 7 cm on the centres of two of the rectangular faces for light to pass through. Find the area of the prism, accurate to the nearest integer (in sq cm), that the teacher wanted the student to paint ? Assume π to be $\frac{22}{7}$ and $\sqrt{3}$ to be 1.732.

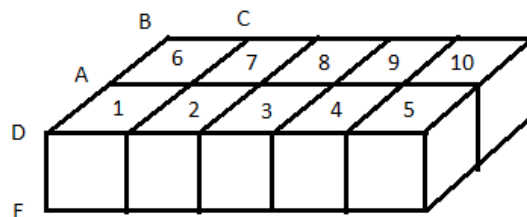
- A) 876
- B) 867
- C) 768
- D) 687

Q 59 When the pyramid at Giza in Egypt was investigated, it was measured that the pyramid had an external rectangular base of 80 m by 60 m, and a height of 43 m. When the door to the pyramid was opened, it was found that a passage of breadth 1 m and height 1 m went on for 30 m before leading to the tomb of the Pharaoh which was a hollow of the shape of a cuboid, of dimensions 5 m by 3 m by 2 m. Beside the tomb of the pharaoh were two hollow cylindrical tombs of his two queens, each of radius 2 m and height 3.5 m. The rest of the pyramid was solid. If the weight of the stone blocks used for the pyramid was 1 tonne per 8 cubic m, and all were transported by boat along the Nile river, how many tonnes of stone were transported along the Nile to construct the pyramid of Giza, assuming that the exact quantity of stones required had been transported ? Assume π to be $22/7$.

- A) 12385
- B) 11058
- C) 9538
- D) 8587

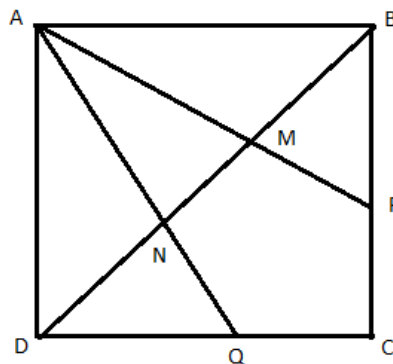
Q 60 (TITA)

In the diagram below, ten identical small cuboids are arranged to form a large cuboid. The length of each small cuboid = $AB = DA = 3$ m, the breadth of each small cuboid = $BC = 2$ m and the height of each small cuboid = $DE = 1$ m. Three identical small cuboids are placed exactly one on top of the other on the small cuboid numbered 4. Two identical small cuboids are placed exactly on top of one another on cuboid numbered 3. One identical cuboid is placed exactly on cuboid numbered 9. What is the total surface area of the whole structure (in sq m), assuming that the whole arrangement is placed on a flat surface ?



Q 61

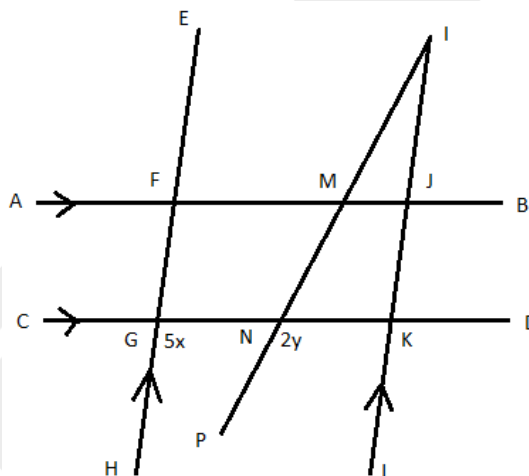
In the diagram below, ABCD is a square of side $2\sqrt{3}$ m. P and Q are points on the sides DC and BC such that $DQ = BP = 2$ m. AP and AQ intersect the diagonal of the square BD at M and N respectively. Find the area of the pentagon CPMNQ (in sq m) ?



- A) $2\sqrt{3}$
- B) $3\sqrt{3}$
- C) $6\sqrt{3}$
- D) $(4 + 6\sqrt{3})$

Q 62

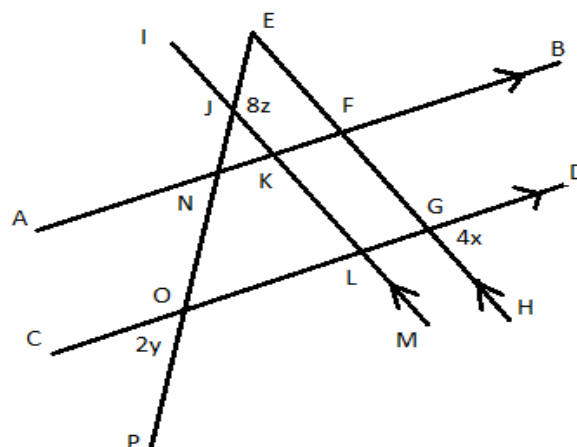
In the diagram below, $AB \parallel CD$ and $EH \parallel IL$. $IMNP$ is a transversal. $\angle HGD = 5x$, and $\angle PND = 2y$, where x and y both are of integral values, with $x \geq 20^\circ$ and $y \geq 60^\circ$. Find the minimum possible value of $\angle LIP$ under the consideration that all angles in the diagram are non-zero?



- A) 2°
- B) 3°
- C) 5°
- D) 8°

Q 63

In the diagram below, $AB \parallel CD$ and $EH \parallel IM$. $EINOP$ is a transversal intersecting both the sets of parallel lines. $\angle HGD = 4x$, $\angle COP = 2y$ and $\angle EJM = 8z$. If x , y and z are integral, $y > x > z > 0$, y is a multiple of 13 and z is $\leq 16^\circ$ and a multiple of 8, find out which of the options can be the average value of x , y and z ?



- A) 12.47°
- B) 16.47°
- C) 20.33°
- D) 24.33°

Q 64 (TITA)

You have been provided the following 9 digits of 5, 5, 6, 6, 6, 7, 7, 7 and 7. How many distinct four-digit numbers greater than 6000 can be formed using only the above 9 digits, with no repetition allowed ?

Q 65

One day Nadar-bhai typed a seven digit number on an HCL desktop with a keyboard having three faulty number keys. He noticed that 20016 got typed on the screen. In how many ways could Nadar-bhai have typed the seven digit number ?

- A) 2520
- B) 2150
- C) 1765
- D) 1635

Q 66

In a first-year common mathematics class in an engineering college in Kolkata, the Professor, due to some reason, wrote down all the numbers from 1 to 360 on the black-board and took a washroom break. Utilizing the opportunity, a very naughty but bright student rubbed off all the multiples of 2, 3 and 5 from the list. On entering the class, the Professor immediately understood what had happened, and quite angrily asked the class to add all the leftover numbers on the blackboard and tell him the answer immediately. The bright student promptly gave the answer. What was it ?

- A) 15050
- B) 17280
- C) 20310
- D) 22400

Answer Key - Mock Test 2

Section - Verbal Ability & Reading Comprehension

1 - D, 2-A, 3-D, 4-D, 5-D, 6-D, 7-C, 8-A, 9-B, 10-C, 11-D, 12-A, 13-B, 14-B, 15-C, 16-C, 17- 4213, 18- 3214, 19-3124, 20-C, 21-B, 22-A, 23-D, 24-C

Section - Data Interpretation & logical Reasoning

25-C, 26-D, 27-A, 28- 230, 29-A, 30-B, 31-C, 32-D, 33-B, 34-C, 35- 100, 36-1.5, 37- 2015, 38- 38.1, 39- 124, 40-D, 41-C, 42-B, 43-A, 44-D

Section - Quantitative Aptitude

45- 42460, 46-3, 47-C, 48-D, 49-2303, 50-1708, 51-B, 52-3500, 53-38, 54-B, 55-C, 56-A, 57-B, 58-C, 59-D, 60-136, 61-A, 62-B, 63-C, 64-51, 65-A, 66-B

Solutions - Mock Test 2

Section - Verbal Ability & Reading Comprehension

1. D

This query has answer choices that are partially correct (options A to C), but only answer choice D provides the complete answer. It is the only alternative that provides us with a comprehensive picture and pinpoints the author's intended meaning.

2. A

First, the certain market operation talked about here is nothing else but the capitalistic market forces. The first paragraph focuses on capitalistic markets and the forces that function within them. In the paragraph, he emphasises all aspects of the capitalistic system and how one should anticipate them, as opposed to focusing on a single aspect (as in alternatives B through D). The other options either emphasise one aspect or alter the implication of the passage (such as option D). Consequently, option A is the best response to the query.

3. D

Statement I can be inferred from the lines: *First, intra-industry trade increased. Trade between nations happens in two ways: inter-industry and intra-industry. Inter-industry trade, based on Ricardo's theory of comparative advantage, takes place between dissimilar economies and is advantageous to one partner. On the other hand, intra-industry trade occurs between similar economies, is based on Krugman's model of competitive advantage of nations, and leads to convergence of incomes. In intra-industry, domestic and international firms compete to manufacture similar products.*

Statement II and III can be inferred from the lines: *Modernisation of technology permitted production processes to be split and located in different parts of the world, benefiting China, mainly. On the other hand, outsourcing of services due to advances in information technology was advantageous to India*

because service outsourcing, unlike free trade earlier, had the potential to equalise wages without physical movement of people to the west.

4. D

Option A can be inferred from the lines: Starting during the 1980s, the period of economic expansion of the present cycle ended in 2008 and now we are witnessing the B-phase, or the downward swing. Remember, the given date range falls in the range of 1980s to 2008, and hence, this was a period of economic expansion.

For Option B, you need to understand what a secular trend is. A secular trend or market is one that is likely to continue moving in the same general direction for the foreseeable future. Secular trends are contrasted with cyclical trends, which are affected by the boom and bust swings of the market.

Option B can be derived from the lines: The capitalist world-system goes through periodic cycles of equilibrium-disequilibrium. Once equilibrium is disturbed, counter-movements are generated to restore equilibrium. The counter-movements travel some distance before a new equilibrium is restored. The moving equilibrium generates secular trends. One characteristic of secular trends is that they do not continue forever, but soon hit asymptotes.

Option C can be derived from the lines: On the other hand, intra-industry trade occurs between similar economies, is based on Krugman's model of competitive advantage of nations, and leads to convergence of incomes. In intra-industry, domestic and international firms compete to manufacture similar products.

Remember, option C does nothing else but reverse-states what is already mentioned above.

5. D

The passage provides some background information on the origins of French materialism. In the final paragraph, the basis of French materialism is introduced. In a sense, this is an introductory text on French materialism that offers no evaluation. Therefore, option D is the greatest option.

6. D

The author's perspective on metaphysics can be deduced from the following line: "Metaphysics succumbed for good and all to materialism, which was now perfected by speculation and coincided with humanism." Clearly, he views materialism as the superior option; therefore, option D is the correct response.

7. C

The answer to this query can be found in the following lines: "He completely separated his physics and metaphysics." In his physics, matter is the sole substance, the sole foundation of being and perception.

8. A

Refer to the paragraph: There are two tendencies of French materialism, one of which derives its origin from Descartes and the other from Locke. The latter is pre-eminently an element in French culture and merges directly into socialism. The former, viz., the mechanical materialism, is absorbed in French natural science. The French materialism which derives directly from Descartes does not concern us particularly, any more than the French school of Newton and French natural science generally. Only this much needs to be said. In his physics Descartes invested matter with self-creative power, and he conceived mechanical movement to be its vital act. He separated his physics completely from his metaphysics. Within his physics matter is the only substance, the only basis of being and perceiving. Mechanical French materialism absorbed the physics of Descartes, while rejecting his metaphysics. His pupils were anti-metaphysicians by profession, that is to say, they were physicians.

Option A can be derived from the lines: Mechanical French materialism absorbed the physics of Descartes, while rejecting his metaphysics.

Option B is incorrect. The line in the passage is: His pupils were anti-metaphysicians by profession, that is to say, they were physicians. This does not tell us anything about the work done by the pupils of Descartes being immaterial.

Option C is incorrect as it is not given that the metaphysics of Descartes was based on physical matter; his physics was.

Option D is too convoluted and incorrect in nature. It just picks on different parts of the passage without actually making any sense. It is a combination of random sentences from the passage but these sentiments find no mention in the passage. No such information is available about Locke in the passage.

9. B

The passage is a clear critique of the type of authors to whom the West attributes multicultural status and the emptiness of their claims. Option B precisely mirrors this thought. Option D is the only choice that comes near, but it is only partially accurate. It is possible that the West does not value genuine multicultural voices, but this sentiment is not reflected in the passage.

10. C

Clearly, the author is not a devotee of these authors, but his criticism pertains to the western genre as a whole, not to specific authors. This eliminates option A because it is too strong. Options B and D do not accurately reflect his obviously negative attitude towards these authors. This is accurately reflected in option C, which is a balanced answer that conveys the author's concern regarding the issue.

11. D

Creole means 'Of or relating to a language that arises from contact between two other languages and has features of both'.

When this definition is combined with the sentiments conveyed in the second paragraph, the answer becomes clear: choice D.

12. A

Option A is the incorrect inference. Refer to the lines: Choice of language, of course, is one hammer used to strike at such authors. I refuse to take up that hammer. What if they write in English or French? Only a dishonest critic would use that forced/free choice to dismiss the work of a writer, for — as Sujata Bhatt puts it in one of her poems — what language has not been the language of the oppressor? Remember, the author says the choice of language is a hammer that is used by some but it is one that should not be. The word 'cannot' is incorrect here. It can be used but should not be.

Option B can be derived from the lines: And, by the same token, what language cannot be used to resist, at least to a degree, the commands of the oppressor?

Option C can be derived from the lines: They are the mirror images that make the liberal West feel comfortable with itself, because it feels that in gazing on them (and their works) it is reading and championing the Other.

Option D can be derived from the lines: Here is the first line of a long mantra: naipaul-rushdie-zadie-kureishi-monica...How convenient to look at an Other who speaks one's own language! No, I am not accusing Rushdie and Naipaul of bland mimicry or of consciously catering to Western opinions. These, and many others like them, are excellent writers, and people of much independence of thought and posture. One or two of them might even be great writers.

Remember, he is mentioning all these authors in the same breath. And from his own observation, all of them cannot be great (they are placed at par at the start of the passage). Hence, this is a valid inference.

13. B

The answer to this query can be found in the following lines: "Therefore, as the distinction occurs in the sphere of external use, which is naturally divisible, the reservation of one portion while another is being disposed of is not the retention of an ownership without usefulness." When an author reserves certain

rights for himself, a clear distinction is made in the realm of external use, as stated explicitly. Consequently, option B is the accurate response.

14. B

The definition of larceny is "the act of taking something from someone else without their permission." The correct choice would be option B, given this information.

15. C

The author is attempting to make a point that authors' and inventors' words should be safeguarded, and that these terms should not be utilised arbitrarily or without providing any benefit to the original authors or inventors. Option C is the one that most accurately conveys this feeling.

16. C

The passage mentions that, *"It is not possible to state accurately, and establish explicitly by law and right, just how far the new form, which accrues through repeated expression, should transmute the scientific treasure or the thoughts of others, who are still in external possession, into a special mental possession of the person who re-constructs them; how far, in other words, a repetition of an author's work should be called a plagiarism"*. This clearly demonstrates how difficult it is to define plagiarism, as it cannot be determined to what extent an author's work constitutes plagiarism. This leads us directly to option C.

17. 4213

Statement 4 introduces the main theme of the passage and hence, it is the opening statement of the passage. Statement 2 begins with the step the government has taken to manage solid waste. Statement 1 follows as it gives the objective of taking the step. Statement 3 concludes the passage by showing how far the government has taken steps to make a clean India. This makes the proper sequence of sentences as 4-2-1-3

18. 3214

Statement 3 introduces the central theme of President Rule in the country in the absence of elected government. Statement 2 further illustrates this point by giving the details regarding this rule in the constitution. Statement 1 comes after that because it talks about the real-life use of the provision by the central government in practical cases. Statement 4 finishes off the passage by giving the warning regarding taking up the matter in the long run as this is something dangerous for the future of the democracy if the trend goes on. This makes the proper sequence of sentences as 3-2-1-4

19. 3124

Statement 3 is the generic opening sentence of the passage since it is about the main issue of the paragraph of the losses incurred by the power distribution companies. It is followed by statement 1 since it gives further details in the matter and statement 2 is the next sentence that talks about the implication of the attitude of these companies. Statement 4 comes after that with the generalization of the issue, thereby presenting the bigger picture.

20. C

The central theme of the passage is the unity of volunteers as a result of propaganda and the fact that, despite being a minority, they assisted refugees. Thus, option C is the proper answer.

Options A and B are incorrect because they omit the fact that volunteers were a minority and instead cite only specific examples.

Option D is incorrect because it fails to mention the function of the government in the passage.

21. B

The passage emphasises the significance of handwriting as a necessary talent for success in other high-level endeavours. This is best expressed by alternative B.

Option A is incorrect because it mentions only one example from the final sentence and does not summarise the remainder of the passage.

Option C is incorrect because the passage discusses laboured penmanship rather than poor handwriting, excluding school performance. Option D is incorrect because it only mentions one example and not the overall theme of the discussion

22. A

All the options given here revolve around the ideas mentioned in the passage but option A is the one that captures the essence of the passage. The other options are picking one point or the other but do not include both the aspects mentioned in option A. Hence, option A is the correct answer here.

23. D

A historical event is discussed in the final sentence, and the phrase "bulk of history" is used in the previous sentence. Therefore, the most likely final statement should be a pivotal moment in history. We need to continue with the sentiment of events which are being discussed here. The best answer is option D.

24. C

The options given for the last sentence are very similar to the third sentence of the paragraph. By matching the options with that, we come to option C as the correct choice.

Option A is ruled out as there is only a possibility of financial rewards, not a certainty.

Option B is ruled out as you would not do something you are weak at.

Option D is ruled out for a similar reason to option A: there is only a possibility of financial rewards, not a certainty.

Option C is the one sure-shot way of achieving financial success and being practical in a given situation.

Section - Data Interpretation & Logical reasoning

25. C

By observation, we can see from the second graph that for all three cars to have a mileage of more than 16 kmpl, the tyre pressure must be in the range of 31 to 34 psi for all the three

In the first graph, between 32 to 34 psi, all three cars had a top speed greater than 200 kmph

Hence, from the given options, only 32 psi satisfies both the top speed and the mileage criteria for all the three cars.

26. D

According to the question, the top speed must be 220 kmph and the mileage must be at least 25 kmpl.

Option A: For this combination, the top speed was 234 kmph and the mileage was 14 kmpl. Hence, this option does not satisfy

Option B: For this combination, the top speed was 210 kmph and the mileage was 29 kmpl. Hence, this option does not satisfy

Option C: For this combination, the top speed was 222 kmph and the mileage was 11 kmpl. Hence, this option does not satisfy too

Option D: For this combination, the top speed was 220 kmph and the mileage was 25 kmpl. Hence, this option satisfies

Thus if Mr Sood wanted to reach a top speed of at least 220 kmph and wanted to travel 50 km using at most 2 litres of petrol, he had to use a BMW X7 at 36 psi tyre pressure

27.D

The top speed of the Porsche Panamera must be at least 216 kmph, as given in the condition
Observing the first graph, this condition is satisfied for a tyre pressure in the range of 26 to 28 psi and 33.5 to 40 psi

Observing the second graph, the highest mileage in the range of 26 to 28 psi is 21 kmpl, and the highest mileage in the range of 33.5 to 40 psi is 23 kmpl

To ensure minimum fuel consumption, the highest mileage would be preferred by Mr Sood

Hence, to travel $216 \times 2 = 432$ km, the minimum fuel Mr Sood would need was $432/23 = 18.8$ litres of petrol.

28. 230

The preferred mileage of Mr Sood was at least $40/2 = 20$ kmpl

To attain at least 20 kmpl mileage, from the second and first graphs respectively :

For the BMW X7, the tyre pressure would be in the range of 34-39 psi and the top speed would be 230 kmph,

For the Porsche Panamera, the tyre pressure would be in the range of 28-35 psi and the top speed would be 220 kmph,

For the Mercedes GLE the tyre pressure would be in the range of 30-33 psi and the top speed would be 204 kmph.

Hence, the highest speed that Mr Sood could reach using any of the cars was 230 kmph.

29. A

The reasoning for all the situations is as below :

- The French Toast which could be prepared in 3 minutes.
- The Egg Tortilla took 15 minutes to prepare.
- Any one of Moloy and Niloy could prepare any one of them at a time.
- 3 servings of the Egg Bhurji with French Fries could be prepared at a time and took 5 minutes irrespective of the number of servings equal to or below 3.
- Since the fryer did not need anyone to attend to it, and the time to put in the raw ingredients could be neglected, one could tend to the preparation of other items while the Egg Bhurji with French Fries were being prepared.

Hence,

(A) A customer's order can be attended to only when the previous order closed							
Cust No	Order	Starting time	Serving time	Preparation of order ensuring minimum time			
				Moloy	Time ended	Niloy	Time ended
1	a) 1 Tortilla, b) 2 F Toast, c) 3 EB+FF at 6.00 pm	6.00 pm	6.15 pm	a) 1 Tortilla	6.15 pm	a) 2 F Toast b) 3 EB+FF	6.06 pm
2	a) 1 F Toast, b) 2 EB+FF at 6.10 pm	6.15 pm	6.20 pm			a) 1 F Toast b) 2 EB+FF	6.20 pm
3	a) 1 Tortilla, b) 1 EB+FF at 6.13 pm	6.20 pm	6.35 pm	a) 1 Tortilla b) 1 EB+FF	6.35 pm		

(B) Multiple orders can be processed at the same time with priority to first comers									
Cust No	Order	Starting time	Serving time	Preparation of order ensuring minimum time				Idle time	
				Moloy	Time ended	Niloy	Time ended	Moloy	Niloy
1	a) 1 Tortilla, b) 2 F Toast, c) 3 EB+FF at 6.00 pm	6.00 pm	6.15 pm	a) 1 Tortilla	6.15 pm	a) 2 F Toast b) 3 EB+FF	6.06 pm	0 mins	4 min
2	a) 1 F Toast, b) 2 EB+FF at 6.10 pm	6.10 pm	6.15 pm			a) 1 F Toast b) 2 EB+FF	6.15 pm	0 mins	0 min
3	a) 1 Tortilla, b) 1 EB+FF at 6.13 pm	6.15 pm	6.30 pm	a) 1 Tortilla b) 1 EB+FF	6.30 pm			0 mins	9 min
4	a) 2 F Toast at 6.24 pm	6.24 pm	6.30 pm			a) 2 F Toast	6.30 pm	0 mins	0 min

(C) A customer's order can be attended to only when the previous order closed (Niloy absent)							
Cust No	Order	Starting time	Serving time	Preparation of order ensuring minimum time			
				Moloy	Time ended	Niloy	Time ended
1	a) 1 Tortilla, b) 2 F Toast, c) 3 EB+FF at 6.00 pm	6.00 pm	6.21 pm	a) 1 Tortilla b) 2 F Toast c) 3 EB+FF	6.21 pm	Absent	
2	a) 1 F Toast, b) 2 EB+FF at 6.10 pm	6.21 pm	6.26 pm	a) 1 F Toast b) 2 EB+FF	6.26 pm	Absent	
3	a) 1 Tortilla, b) 1 EB+FF at 6.13 pm	6.26 pm	6.41 pm	a) 1 Tortilla b) 1 EB+FF	6.41 pm	Absent	
4	a) 2 F Toast at 6.24 pm	6.41 pm	6.47 pm	a) 2 F Toast	6.47 pm	Absent	

Hence, assuming that the next customer's order could only be attended to when the previous customer's order was closed, from the chart (A), the first customer's order would be considered closed at 6.15 pm

30. B

We already know that :

(A) A customer's order can be attended to only when the previous order closed							
Cust No	Order	Starting time	Serving time	Preparation of order ensuring minimum time			
				Moloy	Time ended	Niloy	Time ended
1	a) 1 Tortilla, b) 2 F Toast, c) 3 EB+FF at 6.00 pm	6.00 pm	6.15 pm	a) 1 Tortilla	6.15 pm	a) 2 F Toast b) 3 EB+FF	6.06 pm
2	a) 1 F Toast, b) 2 EB+FF at 6.10 pm	6.15 pm	6.20 pm			a) 1 F Toast b) 2 EB+FF	6.20 pm
3	a) 1 Tortilla, b) 1 EB+FF at 6.13 pm	6.20 pm	6.35 pm	a) 1 Tortilla b) 1 EB+FF	6.35 pm		

(B) Multiple orders can be processed at the same time with priority to first comers									
Cust No	Order	Starting time	Serving time	Preparation of order ensuring minimum time				Idle time	
				Moloy	Time ended	Niloy	Time ended	Moloy	Niloy
1	a) 1 Tortilla, b) 2 F Toast, c) 3 EB+FF at 6.00 pm	6.00 pm	6.15 pm	a) 1 Tortilla	6.15 pm	a) 2 F Toast b) 3 EB+FF	6.06 pm	0 mins	4 mins
2	a) 1 F Toast, b) 2 EB+FF at 6.10 pm	6.10 pm	6.15 pm			a) 1 F Toast b) 2 EB+FF	6.15 pm	0 mins	0 mins
3	a) 1 Tortilla, b) 1 EB+FF at 6.13 pm	6.15 pm	6.30 pm	a) 1 Tortilla b) 1 EB+FF	6.30 pm			0 mins	9 mins
4	a) 2 F Toast at 6.24 pm	6.24 pm	6.30 pm			a) 2 F Toast	6.30 pm	0 mins	0 mins

(C) A customer's order can be attended to only when the previous order closed (Niloy absent)							
Cust No	Order	Starting time	Serving time	Preparation of order ensuring minimum time			
				Moloy	Time ended	Niloy	Time ended
1	a) 1 Tortilla, b) 2 F Toast, c) 3 EB+FF at 6.00 pm	6.00 pm	6.21 pm	a) 1 Tortilla b) 2 F Toast c) 3 EB+FF	6.21 pm	Absent	
2	a) 1 F Toast, b) 2 EB+FF at 6.10 pm	6.21 pm	6.26 pm	a) 1 F Toast b) 2 EB+FF	6.26 pm	Absent	

3	a) 1 Tortilla, b) 1 EB+FF at 6.13 pm	6.26 pm	6.41 pm	a) 1 Tortilla b) 1 EB+FF	6.41 pm	Absent	
4	a) 2 F Toast at 6.24 pm	6.41 pm	6.47 pm	a) 2 F Toast	6.47 pm	Absent	

Hence, assuming that the next customer's order could only be attended to when the previous customer's order was closed, from the chart (A), the third customer's order would be considered closed at 6.35 pm

31. C

We already know that :

(A) A customer's order can be attended to only when the previous order closed							
Cust No	Order	Starting time	Serving time	Preparation of order ensuring minimum time			
				Moloy	Time ended	Niloy	Time ended
1	a) 1 Tortilla, b) 2 F Toast, c) 3 EB+FF at 6.00 pm	6.00 pm	6.15 pm	a) 1 Tortilla	6.15 pm	a) 2 F Toast b) 3 EB+FF	6.06 pm
2	a) 1 F Toast, b) 2 EB+FF at 6.10 pm	6.15 pm	6.20 pm			a) 1 F Toast b) 2 EB+FF	6.20 pm
3	a) 1 Tortilla, b) 1 EB+FF at 6.13 pm	6.20 pm	6.35 pm	a) 1 Tortilla b) 1 EB+FF	6.35 pm		

(B) Multiple orders can be processed at the same time with priority to first comers									
Cust No	Order	Starting time	Serving time	Preparation of order ensuring minimum time				Idle time	
				Moloy	Time ended	Niloy	Time ended	Moloy	Niloy
1	a) 1 Tortilla, b) 2 F Toast, c) 3 EB+FF at 6.00 pm	6.00 pm	6.15 pm	a) 1 Tortilla	6.15 pm	a) 2 F Toast b) 3 EB+FF	6.06 pm	0 mins	4 mins
2	a) 1 F Toast, b) 2 EB+FF at 6.10 pm	6.10 pm	6.15 pm			a) 1 F Toast b) 2 EB+FF	6.15 pm	0 mins	0 mins
3	a) 1 Tortilla, b) 1 EB+FF at 6.13 pm	6.15 pm	6.30 pm	a) 1 Tortilla b) 1 EB+FF	6.30 pm			0 mins	9 mins
4		6.24 pm	6.30 pm				6.30 pm	0 mins	0 mins

	a) 2 F Toast at 6.24 pm					a) 2 F Toast			

(C) A customer's order can be attended to only when the previous order closed (Niloy absent)							
Cust No	Order	Starting time	Serving time	Preparation of order ensuring minimum time			
				Moloy	Time ended	Niloy	Time ended
1	a) 1 Tortilla, b) 2 F Toast, c) 3 EB+FF at 6.00 pm	6.00 pm	6.21 pm	a) 1 Tortilla b) 2 F Toast c) 3 EB+FF	6.21 pm	Absent	
2	a) 1 F Toast, b) 2 EB+FF at 6.10 pm	6.21 pm	6.26 pm	a) 1 F Toast b) 2 EB+FF	6.26 pm	Absent	
3	a) 1 Tortilla, b) 1 EB+FF at 6.13 pm	6.26 pm	6.41 pm	a) 1 Tortilla b) 1 EB+FF	6.41 pm	Absent	
4	a) 2 F Toast at 6.24 pm	6.41 pm	6.47 pm	a) 2 F Toast	6.47 pm	Absent	

Hence, if Moloy and Niloy had decided to process multiple orders at the same time, however strictly prioritising a first come first serve basis, from the chart (B), the second customer's order be considered closed at 6.15 pm

32. D

(A) A customer's order can be attended to only when the previous order closed							
Cust No	Order	Starting time	Serving time	Preparation of order ensuring minimum time			
				Moloy	Time ended	Niloy	Time ended
1	a) 1 Tortilla, b) 2 F Toast, c) 3 EB+FF at 6.00 pm	6.00 pm	6.15 pm	a) 1 Tortilla	6.15 pm	a) 2 F Toast b) 3 EB+FF	6.06 pm
2	a) 1 F Toast, b) 2 EB+FF at 6.10 pm	6.15 pm	6.20 pm			a) 1 F Toast b) 2 EB+FF	6.20 pm
3	a) 1 Tortilla, b) 1 EB+FF at 6.13 pm	6.20 pm	6.35 pm	a) 1 Tortilla b) 1 EB+FF	6.35 pm		

(B) Multiple orders can be processed at the same time with priority to first comers									
Cust No	Order	Starting time	Serving time	Preparation of order ensuring minimum time				Idle time	
				Moloy	Time ended	Niloy	Time ended	Moloy	Niloy
1	a) 1 Tortilla, b) 2 F Toast, c) 3 EB+FF at 6.00 pm	6.00 pm	6.15 pm	a) 1 Tortilla	6.15 pm	a) 2 F Toast b) 3 EB+FF	6.06 pm	0 mins	4 mins
2	a) 1 F Toast, b) 2 EB+FF at 6.10 pm	6.10 pm	6.15 pm			a) 1 F Toast b) 2 EB+FF	6.15 pm	0 mins	0 mins
3	a) 1 Tortilla, b) 1 EB+FF at 6.13 pm	6.15 pm	6.30 pm	a) 1 Tortilla b) 1 EB+FF	6.30 pm			0 mins	9 mins
4	a) 2 F Toast at 6.24 pm	6.24 pm	6.30 pm			a) 2 F Toast	6.30 pm	0 mins	0 mins

(C) A customer's order can be attended to only when the previous order closed (Niloy absent)							
Cust No	Order	Starting time	Serving time	Preparation of order ensuring minimum time			
				Moloy	Time ended	Niloy	Time ended
1	a) 1 Tortilla, b) 2 F Toast, c) 3 EB+FF at 6.00 pm	6.00 pm	6.21 pm	a) 1 Tortilla b) 2 F Toast c) 3 EB+FF	6.21 pm	Absent	
2	a) 1 F Toast, b) 2 EB+FF at 6.10 pm	6.21 pm	6.26 pm	a) 1 F Toast b) 2 EB+FF	6.26 pm	Absent	
3	a) 1 Tortilla, b) 1 EB+FF at 6.13 pm	6.26 pm	6.41 pm	a) 1 Tortilla b) 1 EB+FF	6.41 pm	Absent	
4	a) 2 F Toast at 6.24 pm	6.41 pm	6.47 pm	a) 2 F Toast	6.47 pm	Absent	

Hence, if Moloy and Niloy had decided to process multiple orders at the same time, however strictly prioritising a first come first serve basis, from the chart (B), the third customer's order be considered closed at 6.30 pm

33. B

We already know that :

(A) A customer's order can be attended to only when the previous order closed							
Cust No	Order	Starting time	Serving time	Preparation of order ensuring minimum time			
				Moloy	Time ended	Niloy	Time ended
1	a) 1 Tortilla, b) 2 F Toast, c) 3 EB+FF at 6.00 pm	6.00 pm	6.15 pm	a) 1 Tortilla	6.15 pm	a) 2 F Toast b) 3 EB+FF	6.06 pm
2	a) 1 F Toast, b) 2 EB+FF at 6.10 pm	6.15 pm	6.20 pm			a) 1 F Toast b) 2 EB+FF	6.20 pm
3	a) 1 Tortilla, b) 1 EB+FF at 6.13 pm	6.20 pm	6.35 pm	a) 1 Tortilla b) 1 EB+FF	6.35 pm		

(B) Multiple orders can be processed at the same time with priority to first comers									
Cust No	Order	Starting time	Serving time	Preparation of order ensuring minimum time				Idle time	
				Moloy	Time ended	Niloy	Time ended	Moloy	Niloy
1	a) 1 Tortilla, b) 2 F Toast, c) 3 EB+FF at 6.00 pm	6.00 pm	6.15 pm	a) 1 Tortilla	6.15 pm	a) 2 F Toast b) 3 EB+FF	6.06 pm	0 mins	4 mins
2	a) 1 F Toast, b) 2 EB+FF at 6.10 pm	6.10 pm	6.15 pm			a) 1 F Toast b) 2 EB+FF	6.15 pm	0 mins	0 mins
3	a) 1 Tortilla, b) 1 EB+FF at 6.13 pm	6.15 pm	6.30 pm	a) 1 Tortilla b) 1 EB+FF	6.30 pm			0 mins	9 mins
4	a) 2 F Toast at 6.24 pm	6.24 pm	6.30 pm			a) 2 F Toast	6.30 pm	0 mins	0 mins

(C) A customer's order can be attended to only when the previous order closed (Niloy absent)							
Cust No	Order	Starting time	Serving time	Preparation of order ensuring minimum time			
				Moloy	Time ended	Niloy	Time ended
1	a) 1 Tortilla, b) 2 F Toast, c) 3 EB+FF at 6.00 pm	6.00 pm	6.21 pm	a) 1 Tortilla b) 2 F Toast c) 3 EB+FF	6.21 pm	Absent	
2	a) 1 F Toast, b) 2 EB+FF at 6.10 pm	6.21 pm	6.26 pm	a) 1 F Toast b) 2 EB+FF	6.26 pm	Absent	
3		6.26 pm	6.41 pm	a) 1 Tortilla b) 1 EB+FF	6.41 pm	Absent	

	a) 1 Tortilla, b) 1 EB+FF at 6.13 pm						
4	a) 2 F Toast at 6.24 pm	6.41 pm	6.47 pm	a) 2 F Toast	6.47 pm	Absent	

Hence, if Moloy and Niloy had decided to process multiple orders at the same time, however strictly prioritising a first come first serve basis, from the chart (B), we can observe that while Moloy had never been idle for a moment, Niloy had been idle for $4+9 = 13$ mins

34.C

We already know that :

(A) A customer's order can be attended to only when the previous order closed							
Cust No	Order	Starting time	Serving time	Preparation of order ensuring minimum time			
				Moloy	Time ended	Niloy	Time ended
1	a) 1 Tortilla, b) 2 F Toast, c) 3 EB+FF at 6.00 pm	6.00 pm	6.15 pm	a) 1 Tortilla	6.15 pm	a) 2 F Toast b) 3 EB+FF	6.06 pm
2	a) 1 F Toast, b) 2 EB+FF at 6.10 pm	6.15 pm	6.20 pm			a) 1 F Toast b) 2 EB+FF	6.20 pm
3	a) 1 Tortilla, b) 1 EB+FF at 6.13 pm	6.20 pm	6.35 pm	a) 1 Tortilla b) 1 EB+FF	6.35 pm		

(B) Multiple orders can be processed at the same time with priority to first comers									
Cust No	Order	Starting time	Serving time	Preparation of order ensuring minimum time				Idle time	
				Moloy	Time ended	Niloy	Time ended	Moloy	Niloy
1	a) 1 Tortilla, b) 2 F Toast, c) 3 EB+FF at 6.00 pm	6.00 pm	6.15 pm	a) 1 Tortilla	6.15 pm	a) 2 F Toast b) 3 EB+FF	6.06 pm	0 mins	4 mins
2	a) 1 F Toast, b) 2 EB+FF at 6.10 pm	6.10 pm	6.15 pm			a) 1 F Toast b) 2 EB+FF	6.15 pm	0 mins	0 mins
3	a) 1 Tortilla, b) 1 EB+FF at 6.13 pm	6.15 pm	6.30 pm	a) 1 Tortilla b) 1 EB+FF	6.30 pm			0 mins	9 mins
4	a) 2 F Toast at 6.24 pm	6.24 pm	6.30 pm			a) 2 F Toast	6.30 pm	0 mins	0 mins

(C) A customer's order can be attended to only when the previous order closed (Niloy absent)							
Cust No	Order	Starting time	Serving time	Preparation of order ensuring minimum time			
				Moloy	Time ended	Niloy	Time ended
1	a) 1 Tortilla, b) 2 F Toast, c) 3 EB+FF at 6.00 pm	6.00 pm	6.21 pm	a) 1 Tortilla b) 2 F Toast c) 3 EB+FF	6.21 pm	Absent	
2	a) 1 F Toast, b) 2 EB+FF at 6.10 pm	6.21 pm	6.26 pm	a) 1 F Toast b) 2 EB+FF	6.26 pm	Absent	
3	a) 1 Tortilla, b) 1 EB+FF at 6.13 pm	6.26 pm	6.41 pm	a) 1 Tortilla b) 1 EB+FF	6.41 pm	Absent	
4	a) 2 F Toast at 6.24 pm	6.41 pm	6.47 pm	a) 2 F Toast	6.47 pm	Absent	

Hence, had Niloy been absent on that day, and assuming that the next customer's order could only be attended to when the previous customer's order was closed, from the chart (C), the fourth customer's order would be considered closed at 6.47 pm

35. 100

Foreign exchange reserve in 2020 = 5040 million Rs

Foreign exchange reserve in 2016 = 2520 million Rs

Increase = 5040 – 2520 = 2520 million Rs

Percentage Increase = $(2520/2520) \times 100 = 100\%$

36. 1.5

Required Ratio = 5040 : 3360 = 1.5 : 1

Hence, the foreign exchange reserves in 2020 was 1.5 times that in 2017

37. 2015

The years of 2015, 2017, 2019 and 2020 only had an increase over the previous year.

So calculating the percentage increase of these years compared to previous years :

For year 2015 = $\{(3720-2640)/2640\} \times 100 = 40.91\%$

For year 2017 = $\{(3360-2520)/2520\} \times 100 = 33.33\%$

For year 2019 = $\{(4320-3120)/3120\} \times 100 = 38.46\%$

For year 2020 = $\{(5040-4320)/4320\} \times 100 = 16.67\%$

Hence, in 2015 the percentage increase of foreign exchange reserves over the previous year was the highest

38.38.1

Foreign exchange reserve in 2020 = 5040 million Rs

Foreign exchange reserve in 2021 = 3120 million Rs

Decrease = 5040 – 3120 = 1920 million Rs

Percentage Increase = $(1920/5040) \times 100 = 38.1\%$

39. 124

The average foreign exchange reserves of these 8 years = $(2640+3720+2520+3360+3120+4320+5040+3120) / 8 = 3480$ million Rs

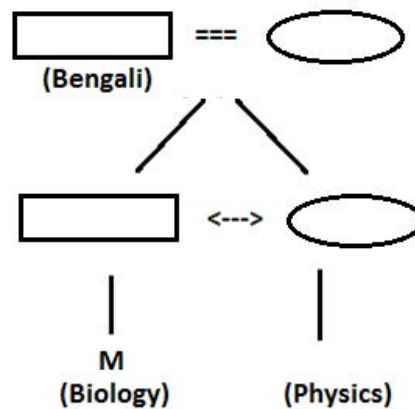
Foreign exchange reserves in 2019 = 4320 million Rs

Required Percentage = $(4320/3480) \times 100\% = 124\%$

40.D

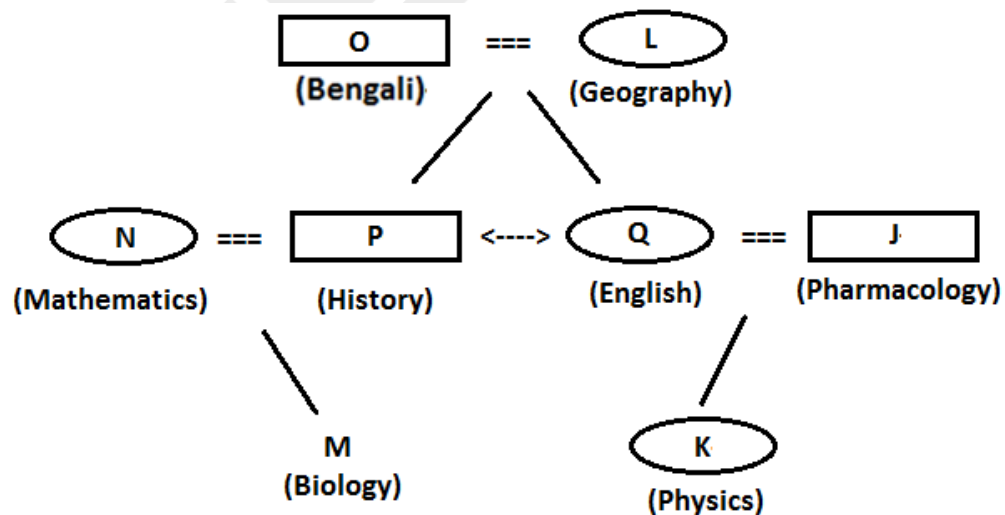
The member who is a graduate in Bengali is the maternal grand-parent of the member who is a graduate in Physics, and the paternal grandfather of M, who is a graduate in Biology

Hence,



The three generations are thus understood

Further expanding with the other information given, it also becomes clear who the three couples can be :



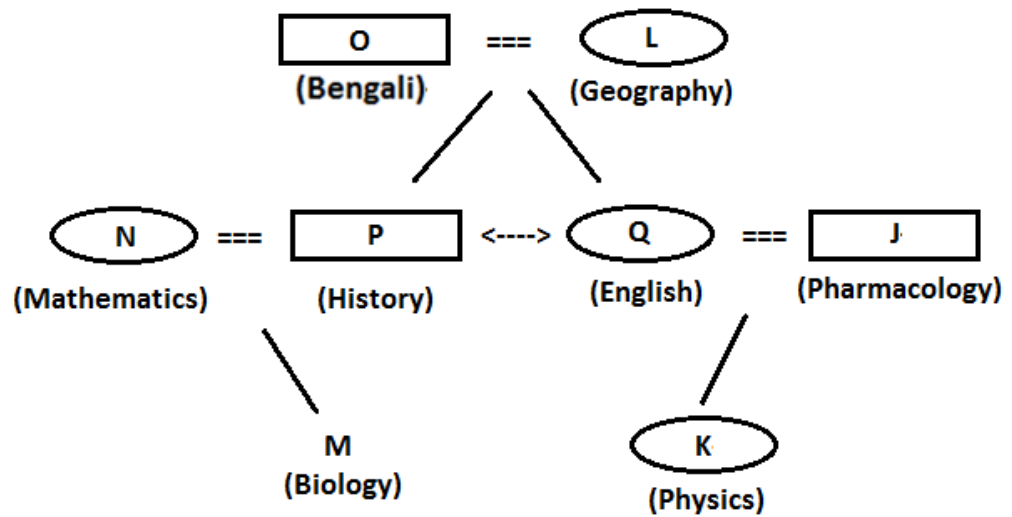
The above shows the final schematic diagram of the relationships with the subjects they are graduates in as per the data given

The gender of M remains unknown

Hence, the member who is a graduate in Mathematics is the daughter-in-law of the member who is a graduate in Geography

41. C

We already know that :

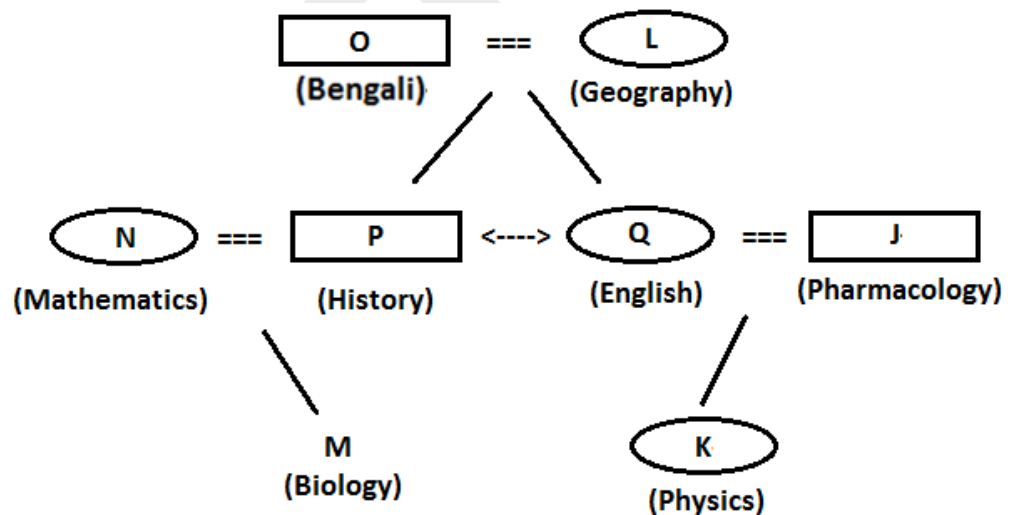


The gender of M remains unknown

Hence, Q is a graduate in English

42. B

We already know that :

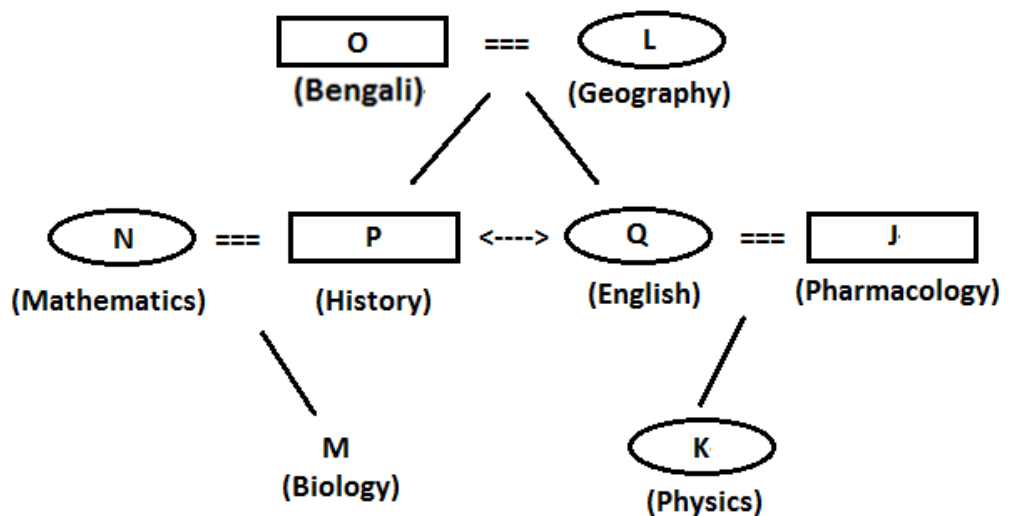


The gender of M remains unknown

Hence, K is the daughter of Q

43.A

We already know that :

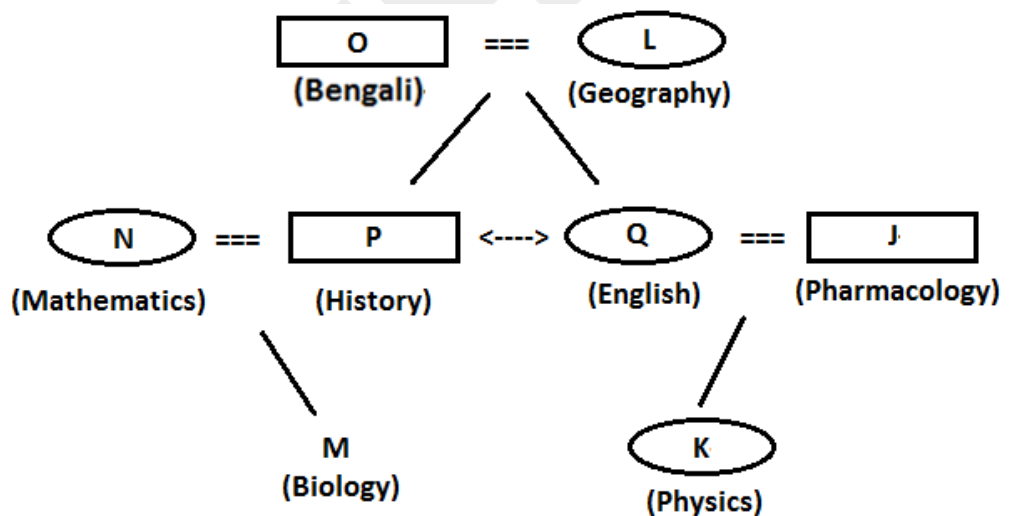


The gender of M remains unknown

Hence, L is the graduate in Geography

44. D

We already know that :



The gender of M remains unknown

The graduate in Biology is M. But the gender of M remains unknown

Hence, the relationship of the member who is a graduate in Biology to the graduate in Pharmacology cannot be determined

Section - Quantitative Aptitude

45. 42460

The total value (in Rs) of Mr Krishnan Iyer's investment after 6 years since the first investment of Rs 5000 in the hawala racket of gangster Mr Vijay Deenanath Chavan

$$\begin{aligned}
 &= 5000 \cdot (1+10/100)^6 + 5000 \cdot (1+10/100)^5 + 5000 \cdot (1+10/100)^4 + \dots + 5000 \cdot (1+10/100)^1 \\
 &= 5000 \cdot \{(1+10/100)^6 + (1+10/100)^5 + (1+10/100)^4 + \dots + (1+10/100)^1\} \\
 &= 5000 \cdot \{(1.1)^6 + (1.1)^5 + (1.1)^4 + \dots + (1.1)\}
 \end{aligned}$$

In the above, the powers of 1.1 are in a Geometric Progression of 5 terms with first term 1.1 and common ratio also 1.1

So, the above result

$$\begin{aligned}
 &= 5000 \cdot 1.1 \cdot \{(1.1)^6 - 1\} / (1.1 - 1) \\
 &= (5000 \cdot 1.1 \cdot 0.772) / 0.1 \\
 &= 42460
 \end{aligned}$$

Hence option A is correct

46. 3

Total quantity of toxic chemical liquid = $3+4+5+6+7 = 25$ units

Hence total capacity of the five cylinders = $25 \cdot (5/3) = 125/3 = 41.67$ units

So capacity of each cylinder = $41.67/5 = 8.33$ units

If each were half full, capacity = $8.33/2 = 4.165$ units

Hence only the three cylinders having quantity 5, 6 and 7 units were at least half full.

47. C

Let MRP of the larger package of peas of weight x gm (say) be 300 units.

Hence MRP of smaller package of peas = 100 units.

Let weight of smaller package of peas be y gm

MRP per gm of peas in larger package = $300/x$ units.

MRP per gm of peas in smaller package = $100/y$ units.

$$\text{So } 300/x = 95/100 \cdot 100/y$$

$$\text{or, } y/x = 95/300.$$

Hence the smaller package of peas is $95 \cdot 100/300 \% = 31.67\%$ of the larger package of peas

48.D

So for total $(18\% + 24\%) = 42\%$ of race in hot and humid condition, water consumption = $12 \cdot (42/18) = 28\%$

Race left in pleasant condition = $100\% - 42\% = 58\%$.

Water left = $100\% - 28\% = 72\%$.

Rate of water consumption in hot and humid conditions = $18/12 = 3/2$.

Rate of water consumption in pleasant conditions = $58/72 = 29/36$.

Hence percentage decrease in water consumption = $\{(3/2 - 29/36) \cdot 100 / (3/2)\} \% = 1250/27 \% = 46.30 \%$

49.2303

The total number of ways he can do his selections from 8 identical tea-cups = 9 ways
(no selection – 1 way, 1 selection – 1 way, 2 selections – 1 way, ..., 8 selections – 1 way)

Similarly, the total number of ways he can do his selections from 7 identical coffee-mugs = 8 ways
(no selection – 1 way, 1 selection – 1 way, 2 selections – 1 way, ... 7 selections – 1 way)

Also the number of ways he can do his selection from 5 distinct wine-glasses = 2^5 ways.

So from the table the number of ways he could make his selection = $9 \times 8 \times 2^5$ ways = 2304 ways.

But not selecting any item is not permitted.

Hence, the number of ways he could make his selection of at least 1 item from the table = $2304 - 1 \times 1 \times {}^5C_0$
= $2304 - 1 = 2303$ ways

50. 1708

Let us treat each positive point as 1 unit.

All the units are identical.

We can distribute a total of 48 points among all the 8 dice in only 1 way, as 6 is the maximum points that a die can carry

But then we will exceed our total target of 42 points by 6 points

To counter this, let us distribute 6 identical negative valued points among the 8 dice

The negative value will compensate for the extra positive points already distributed

We can do this distribution of 6 identical negative valued points among the 8 dice in ${}^{6+(8-1)}C_{(8-1)}$ ways = ${}^{13}C_7$
ways = 1716 ways

But there is a problem in this distribution. If all the negative points go to one particular die, then the share of points of that die will be 0, which is not possible, as the minimum points of a die is 1

So the sharing of 0, 6, 6, 6, 6, 6, 6, 6 is to be neglected as a possible way

This scenario can occur in $8! / 7! = 8$ ways

Hence, the final answer to the number of ways the total of all the 8 dice shows 42 = $1716 - 8 = 1708$ ways.

51. B

Let the selling price of the Mercedes be 100 units.

Then, the selling price of the Rolls Royce = 150 units

Also the cost price of the Rolls Royce = 145 units.

Also the cost price of the Mercedes = $150 \times 100 / 125 = 120$ units

Thus, the total cost price = $(120 + 145) = 265$ units

Also the total selling price = $(100 + 150) = 250$ units

So profit = -15 units.

Hence the profit percentage of Mr Bokadia on making the sales = $(-15/265) \times 100 = -5.67\%$

52. 3500

The initial exit and the subsequent entry of the ladies with a total cash of Rs 21,000 can be ignored as the beginning of the scenario and the end of the scenario both had the ladies incorporated.

The only difference at the end compared to the beginning was caused by the 7 ladies with Rs 4,000 average cash with them.

Let the average of the initial 28 ladies be Rs x

Thus,

$$28x + 7 \times 4000 = (28+7) \times 3600$$

$$\text{or, } 28x + 28000 = 35 \times 3600$$

$$\text{or, } 28x = 98000$$

$$\text{or, } x = 3500$$

Hence, the average amount of cash money with the initial 28 ladies who had assembled at the house of Mrs Mangeshkar = Rs 3,500

53. 38

Let us solve this complex looking problem in the shortest possible way :

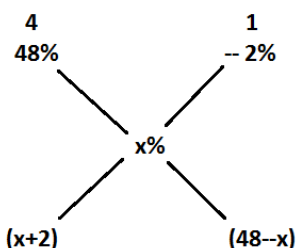
64 Moustache Jeans earned a 48% profit

16 Moustache Jeans earned a 2% loss, that is a -2% profit

The ratio of 64 and 16 = 4 : 1

Let the overall profit % be x

Thus, by the rule of alligation,



$$\text{Thus, } (x+2)/(48-x) = 4/1$$

$$\text{or, } x = 38\%.$$

Hence, M/S Beard Brothers' profit as a percent of the retailer's initial cost for the eighty units of Moustache jeans = 38%

54. B

It can be said that $59^{73 \times 5!} = 59^{73 \times 120} = 59^{(72+1) \times 120}$

Now $(72+1)^{120}$ when expanded binomially can be said to be $= {}^{120}C_0 \cdot 72^{120} \cdot 1 + {}^{120}C_1 \cdot 72^{119} \cdot 1 + {}^{120}C_2 \cdot 72^{118} \cdot 1 + \dots + {}^{120}C_{120} \cdot 72^0 \cdot 1$

But excepting the last term of the expansion which is equal to 1, all other terms are a multiple of 72

So $(72+1)^{120}$ can be considered to be of the form of $72k + 1$, where k is a constant.

$$\text{So } 59^{(72+1)^{120}} = 59^{72k+1} = 59.59^{72k} = 59.59^{(36)2k} = 59.59^{(37-1)2k}$$

$$\text{Now, } 59^{73^{51}}/37 = 59.59^{(37-1)2k}/37$$

So, the remainder of $59^{73^{51}}/37$

= the remainder of $59.59^{(37-1)2k}/37$

= the remainder of $59/37$ * the remainder of $59^{(37-1)2k}/37$

= the remainder of $59/37$ * the remainder of $\{59^{(37-1)}/37\}^{2k}$

= $22 * 1^{2k}$ (applying Euler's Little Theorem, which says that if p is prime and a and p are co-prime, $a^{(p-1)} - 1$ is perfectly divisible by p ,

or that $a^{(p-1)}$ divided by p gives the remainder of 1)

$$\text{Hence, the remainder of } 59^{73^{51}}/37 = 22 * 1^{2k} = 22$$

55. C

If $(x - y)^2 + x^2 = 25$, then $(x - y)^2 = 25 - x^2$

or, $(x - y)^2 = (5 - x)(5 + x)$

or, $(x - y) = \sqrt{(5 - x)(5 + x)}$ (1)

Thus, for x and y to be integral, the right hand side of (1) has to be a perfect square,

If $x = 0$, then $y = 5$,

If $x = 1$, then $y = 1 + \sqrt{24}$,

If $x = 2$, then $y = 2 + \sqrt{21}$,

If $x = 3$, then $y = 7$,

If $x = 4$, then $y = 10$, and

If $x = 5$, then $y = 5$.

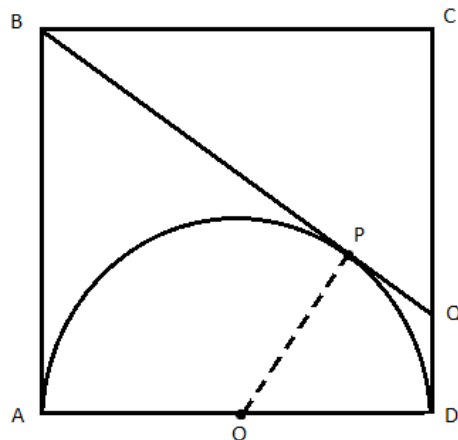
The value of x cannot be more than 5, as for any value of x above 5, the right hand side of (1), and hence y , will be imaginary. But x and y are integers, hence real.

Also $x \geq 0$, and so the first solution will not hold

The second and third solutions will also not hold, as y is a surd, not an integer

Hence, the number of possible solutions is 3

56. A



Let us join OP

Now, the above diagram can be interpreted as two tangents from the point B touching the semicircle at the points A and P.

Thus, $BA = BP$ [because the tangents from the same point on the same circle are equal]

or, $BP = 20$ m

Similarly, the above diagram can also be interpreted as two tangents from the point Q touching the semicircle at the points P and D.

Thus, $QP = QD$ [because the tangents from the same point on the same circle are equal]

Let $QP = QD = x$

Now, in $\triangle BCQ$,

$\angle BCQ = 90^\circ$, $BC = 20$ m, $CQ = CD - QD = (20 - y)$ m and $BQ = BP + BQ = (20 + y)$ m

Thus, as per Pythagoras theorem,

$$BC^2 + CQ^2 = BQ^2$$

$$\text{or, } 20^2 + (20 - y)^2 = (20 + y)^2$$

$$\text{or, } 400 + 400 - 40y + y^2 = 400 + 40y + y^2$$

$$\text{or, } 80y = 400$$

$$\text{or, } y = 5$$

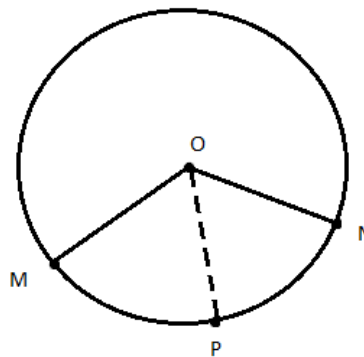
Thus, $BQ = 20 + 5 = 25$ m

Now, since $\triangle BCQ$ is right angled at C, the circum-centre of the triangle will be at the mid-point of the hypotenuse BQ

Thus the radius of the circum-circle of $\triangle BCQ = 25/2 = 12.5$ m

Hence, the area of the circum-circle of $\triangle BCQ = \pi * (12.5)^2 = 156.25\pi$ sq m

57. B



Let us join OP

Let the radius of the circle be r

Thus the circumference of the circle $= 2\pi r$

The circumference subtends an angle of 360° at the centre of the circle

Thus the length of the minor arc MN subtending 120° angle at the centre $= (2\pi r * 120^\circ) / 360^\circ = (2/3)\pi r$

Since arc MP : arc NP $= 8 : 7$,

So, arc NP $= (7/15) * (2/3)\pi r = (14/45)\pi r$

Also the length of the major arc NMP $= 2\pi r - (14/45)\pi r = 2\pi r * (38/45)$

The shortest route that can be taken by the ant = O to N via the radius ON and then N to P along the minor arc NP

$$\text{Thus shortest distance} = ON + \text{arc NP} = r + (14/45)\pi r$$

The longest route that can be taken by the ant = O to N via the radius ON and then N to P along the major arc NMP

$$\text{Thus longest distance} = ON + \text{major arc NMP} = r + 2\pi r*(38/45)$$

$$\text{Summation of the length of the longest and shortest route} = r + 2\pi r*(38/45) + r + (14/45)\pi r = 2r + (90/45)\pi r = 2r + 2\pi r = 2r(1 + \pi)$$

$$\text{Difference of the length of the longest and shortest route} = r + 2\pi r*(38/45) - r - (14/45)\pi r = (62/45)\pi r$$

Hence the ratio of the summation and difference of the length of the longest and shortest route the ant can take to reach P from O

$$= 2r(1 + \pi) : (62/45)\pi r$$

$$= (1 + \pi) : (31/45)\pi$$

$$= (1 + 3.14) : (31*3.14)/45$$

$$= 4.14*45 : 31*3.14$$

$$= 186.30 : 97.34$$

$$= 186 : 97$$

58. C

The surface area of the equilateral face of side 12 cm of the prism = $(\sqrt{3}/4) * 12^2 = 36\sqrt{3} = 62.352$ sq cm

The surface area of the rectangular face of the prism of length 20 cm and breadth 12 cm = $20*12 = 240$ sq cm

The area of each non-opaque circle = $\pi*(7/2)^2 = (22/7)*(7/2)^2 = 77/2 = 38.5$ sq cm

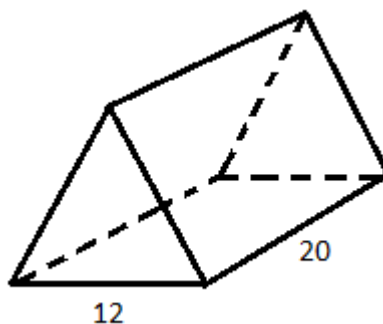
Hence, the area of the prism that the teacher wanted the student to paint

$$= 2*(62.352) + 3*(240) - 2*(38.5)$$

$$= 124.704 + 720 - 77$$

$$= 767.704 \text{ sq cm}$$

The value, accurate to the nearest integer, would be 768 sq cm



59. D

Had the pyramid of Giza been a solid cuboidal structure of dimensions 80 m by 60 m by 43 m, then the volume of the cuboid

$$= (80 \times 60 \times 43) \text{ sq m}$$

Hence the volume of a solid pyramid of a rectangular base of 80 m by 60 m and a height of 43 m

$$= (1/3) \times (80 \times 60 \times 43) = 68800 \text{ cubic m}$$

Volume of the cuboidal passage of dimensions 30 m by 1 m by 1 m = $30 \times 1 \times 1 = 30$ cubic m

Volume of the cuboidal tomb of the Pharaoh of dimensions 5 m by 3 m by 2 m = $5 \times 3 \times 2 = 30$ cubic m

Volume of both the cylindrical tombs of the queens of the Pharaoh of radius 2 m and height 3.5 m

$$= 2 \times \pi \times 2^2 \times 3.5 = 2 \times (22/7) \times 2^2 \times 3.5 = 44 \text{ cubic m}$$

Thus the volume of stones used in the pyramid at Giza = $\{68800 - (30 + 30 + 44)\} = 68696$ cubic m

The weight of 8 cubic m = 1 tonne

Hence, the number of tonnes of stone that were transported along the Nile to construct the pyramid of Giza = $68696/8$

$$= 8587 \text{ tonnes}$$

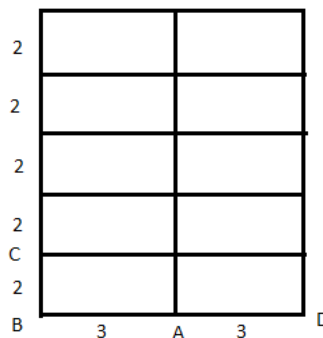
60. 136

Three identical small cuboids are placed exactly one on top of the other on the small cuboid numbered 4

Two identical small cuboids are placed exactly on top of one another on cuboid numbered 3

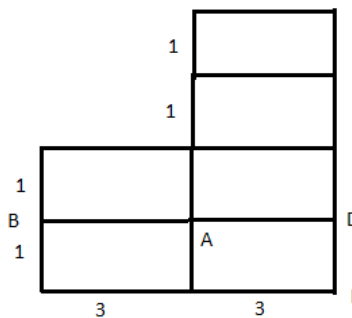
One identical cuboid is placed exactly on cuboid numbered 9

Now, looking from the top, we would only notice a surface of length $2 \times 5 = 10$ m and breadth $3 + 3 = 6$ m as shown below :



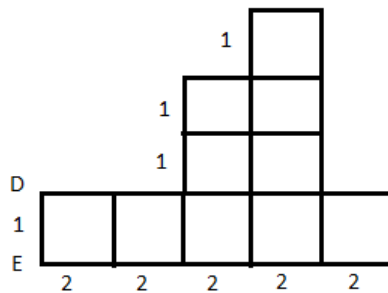
Thus surface area from the top = $10 \times 6 = 60$ sq m

Looking from the left, we would only notice a surface looking like :



Thus surface area from the left = surface area from the right = $6 \times 3 \times 1 = 18$ sq m

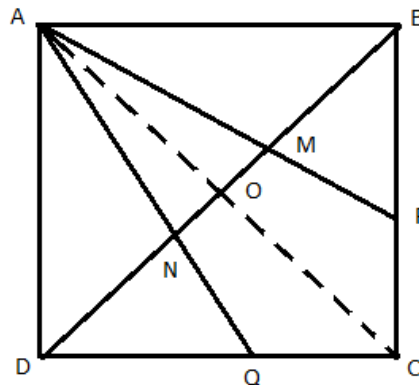
Looking from the front, we would only notice a surface looking like :



Thus surface area from the front = surface area from the back = $10 \times 2 \times 1 = 20$ sq m

Hence, the total surface area of the whole structure, assuming that the whole arrangement is placed on a flat surface and hence cannot be seen = $60 + 2 \times (18 + 20) = 60 + 76 = 136$ sq m

61.A



Let us construct the diagonal AC, intersecting the other diagonal at O.

$$AD = AB = 2\sqrt{3} \text{ m}$$

P and Q are points on the sides DC and BC such that $DQ = BP = 2$ m. Also $\angle ADQ = \angle ABP = 90^\circ$

$$\text{Thus area of } \triangle ADQ = \triangle ABP = \left(\frac{1}{2}\right) \times 2\sqrt{3} \times 2 = 2\sqrt{3} \text{ sq m}$$

$$\text{So area of quadrilateral AQCP} = \text{Area of square} - 2 \times (\text{area of } \triangle ADQ) = 2\sqrt{3} \times 2\sqrt{3} - 2 \times 2\sqrt{3} = (12 - 4\sqrt{3}) \text{ sq m}$$

Now, $\triangle AQC \cong \triangle APC$, as $QC = PC = (2\sqrt{3} - 2)$, AC is common, and $\angle ACQ = \angle ACP = 45^\circ$ (because the diagonal of a square bisects the 90° angle)

$$\text{Hence } \angle QAC = \angle PAC$$

In $\triangle ADC$, which is a right angled triangle with AC as the hypotenuse and the other two sides $2\sqrt{3}$ m, $AC = 2\sqrt{6}$ m

Thus $AO = 2\sqrt{6}/2 = \sqrt{6}$ m, which is also equal to DO.

In $\triangle ADQ$, $\angle ADQ = 90^\circ$, $AD = 2\sqrt{3}$ m and $DQ = 2$ m.

Let $\angle DAQ$ be θ

$$\text{Thus } \tan \theta = DQ/AD = 2/2\sqrt{3} = 1/\sqrt{3} \text{ or, } \theta = 30^\circ \text{ or, } \angle DAQ = 30^\circ$$

Since AC is the diagonal of the square ABCD, so $\angle DAC = 45^\circ$

$$\text{Thus } \angle QAC = \angle DAC - \angle DAQ = 45^\circ - 30^\circ = 15^\circ$$

Similarly $\angle PAC = 15^\circ$

Now, in $\triangle NAM$, AO is $\perp$ to NM , and $\angle NAO = \angle MAO = 15^\circ$, which means AO is the angular bisector of the vertex and is perpendicular to the base NM of $\triangle NAM$

Hence, $\triangle NAM$ is an isosceles triangle, and AO bisects the base NM , resulting in $NO = MO$.

Thus, $\triangle NAO = \triangle MAO = (1/2) \triangle NAM$ in area

In $\triangle NAO$, $\angle NOA = 90^\circ$, $\angle NAO = 15^\circ$ and $AO = \sqrt{6}$ m

Thus $\tan \angle NAO = NO/AO$

or, $\tan 15^\circ = NO/\sqrt{6}$

or, $(\sqrt{3} - 1)/(\sqrt{3} + 1) = NO/\sqrt{6}$

or, $(\sqrt{3} - 1)^2/2 = NO/\sqrt{6}$

or, $NO = \sqrt{6}(3 - 2\sqrt{3} + 1)/2$

or, $NO = \sqrt{6}(2 - \sqrt{3})$

Thus area of $\triangle NAM = 2 * \text{area of } \triangle NAO = 2 * (1/2) * NO * AO = NO * AO = \sqrt{6}(2 - \sqrt{3}) * \sqrt{6} = 6(2 - \sqrt{3}) \text{ sq m}$

Hence area of pentagon $CPMNQ$ = Area of quadrilateral $AQCP$ – Area of $\triangle NAM$

or, Area of pentagon $CPMNQ = (12 - 4\sqrt{3}) - 6(2 - \sqrt{3})$

or, Area of pentagon $CPMNQ = 12 - 4\sqrt{3} - 12 + 6\sqrt{3}$

or, Area of pentagon $CPMNQ = 2\sqrt{3} \text{ sq m}$

62. B

As $AB \parallel CD$, $\angle HGD = \text{corresponding } \angle HFB = 5x$

Also as $EH \parallel IL$, $\angle HFB = \text{alternate } \angle MJI = 5x$

As $EH \parallel IL$, $\angle PND = \text{corresponding } \angle PMB = 2y$

Thus supplementary $\angle IMJ = 180^\circ - 2y$

Thus $\angle JIM = 180^\circ - (\angle MJI + \angle IMJ) = (180^\circ - \{5x + (180^\circ - 2y)\}) = 2y - 5x$

Now, $y \geq 60^\circ$ and is also integral. Also $2y$ (that is $\angle PND$) $\leq 180^\circ$

Hence the possible values of $2y$ are $120^\circ, 122^\circ, 124^\circ, \dots, 178^\circ, 180^\circ$

Also, $x \geq 20^\circ$ and is also integral. And $5x$ (that is $\angle HGD$) $\leq 180^\circ$

Hence the possible values of $5x$ are $100^\circ, 105^\circ, 110^\circ, \dots, 175^\circ, 180^\circ$

Hence the minimum non-zero value of $\angle JIM = 2y - 5x$ takes place when $2y = 178^\circ$ and $5x = 175^\circ$, and the minimum value $= 178^\circ - 175^\circ = 3^\circ$

Hence, the minimum possible value of $\angle LIP = 3^\circ$

63. C

$AB \parallel CD$ and $EH \parallel IM$

Thus,

$\angle HGD = 4x$ or, corresponding $\angle HFB = 4x$ or, vertically opposite $\angle EFA = 4x$ or, corresponding $\angle JKN = 4x$

Also,

$\angle COP = 2y$ or, vertically opposite $\angle EOD = 2y$ or, corresponding $\angle JNK = 2y$

Also

$\angle EJM = 8z$

Since $\angle JKN + \angle JNK = \angle EJK$

So $4x + 2y = 8z$

or, $2x + y = 4z \dots\dots\dots (1)$

Now, x , y and z are integral, $y > x > z > 0$, y is a multiple of 13 and z is $\leq 16^\circ$ and a multiple of 8

Let $z = 16^\circ$

So $2x + y = 4 \times 16^\circ$ or, $2x + y = 64^\circ$

The only possibilities are that

- a) $y = 13^\circ$, $x = 25.5^\circ$. But $y > x$. So this is not valid
- b) $y = 26^\circ$, $x = 19^\circ$
- c) $y = 39^\circ$, $x = 12.5^\circ$. But x is integral. So this is not valid
- d) $y = 52^\circ$, $x = 6^\circ$

Thus for b) $z = 16^\circ$, $y = 26^\circ$ and $x = 19^\circ$, average of x , y and $z = (19^\circ + 26^\circ + 16^\circ)/3 = 20.33^\circ$

Also for d) $z = 16^\circ$, $y = 52^\circ$ and $x = 6^\circ$, average of x , y and $z = (6^\circ + 52^\circ + 16^\circ)/3 = 24.67^\circ$

Let $z = 8^\circ$

So $2x + y = 4 \times 8^\circ$ or, $2x + y = 32^\circ$

The only possibilities are that

- a) $y = 13^\circ$, $x = 9.5^\circ$. But x is integral. So this is not valid
- b) $y = 26^\circ$, $x = 3^\circ$

Thus for b) $z = 8^\circ$, $y = 26^\circ$ and $x = 3^\circ$, average of x , y and $z = (3^\circ + 26^\circ + 8^\circ)/3 = 12.33^\circ$

Hence, among the options, only 20.33° can be the average value of x , y and z

64. 51

You have two 5's, three 6's and four 7's.

You have to form four digit numbers > 6000 . So the thousand's digit can only be 7 or 6

You will have to systematically check the distributions and the resultant number of four digit numbers possible :

- 1) 7777 :- 1 number
- 2) 6666 :- Can't happen, as only three 6s present
- 3) 777 _ (unit's digit vacancy choice 5 & 6) :- 2 numbers
- 4) 666 _ (unit's digit vacancy choice 5 & 7) :- 2 numbers
- 5) 77 _ _ (unit's digit vacancy choice 5 & 6, ten's digit vacancy choice 5, 6 & 7) :- $2 \times 3 = 6$ numbers
- 6) 66 _ _ (unit's digit vacancy choice 5 & 7, ten's digit vacancy choice 5, 6 & 7) :- $2 \times 3 = 6$ numbers
- 7) 75 _ _ (unit's digit vacancy choice 5, 6 & 7, ten's digit vacancy choice 5, 6 & 7) [Special case $\Rightarrow$ 7555 can't happen, as only two 5's present] :- $(3 \times 3) - 1 = 8$ numbers
- 8) 76 _ _ (unit's digit vacancy choice 5, 6 & 7, ten's digit vacancy choice 5, 6 & 7) :- $3 \times 3 = 9$ numbers
- 9) 65 _ _ (unit's digit vacancy choice 5, 6 & 7, ten's digit vacancy choice 5, 6 & 7) [Special case $\Rightarrow$ 6555 can't happen, as only two 5's present] :- $(3 \times 3) - 1 = 8$ numbers
- 10) 67 _ _ (unit's digit vacancy choice 5, 6 & 7, ten's digit vacancy choice 5, 6 & 7) :- $3 \times 3 = 9$ numbers

Hence total possible numbers greater than 6000 = $1+0+2+2+6+6+8+9+8+9 = 51$

65. A

Since instead of a 7 digit number, a 5 digit number has appeared on the screen, Nadar-bhai must have used the faulty keys twice.

Now the three faulty keys must be any three except 0, 1, 2 and 6, which one can clearly understand are not faulty.

Since total number keys in a keyboard = 10, so the faulty keys could be selected in ${}^6C_3$ ways.

Now he could have used the faulty keys twice in two different ways :-

- 1) Used 2 different faulty keys once each, or
- 2) Used 1 faulty key twice.

Again there could be two positions of the faulty key usage :-

- a) Consecutive usage, or
- b) Non consecutive usage.

No of ways as per

1 & a) = ${}^3C_2 * {}^6C_1 = 3 * 6 = 18$ [${}^3C_2$ since two faulty keys out of three are used, and ${}^6C_1$ since the consecutive usage can be done in any 1 of the 6 gaps created to the left, right and in between the digits of 20016, which themselves will always follow the same order]

No of ways as per

1 & b) = ${}^3C_2 * {}^6C_2 = 3 * 15 = 45$ [${}^3C_2$ since two faulty keys out of three are used, and ${}^6C_2$ since the non consecutive usage can be done in any 2 of the 6 gaps created to the left, right and in between the digits of 20016, which themselves will always follow the same order]

No of ways as per

2 & a) = ${}^3C_1 * {}^6C_1 = 3 * 6 = 18$ [${}^3C_1$ since one faulty key out of three are used, and ${}^6C_1$ since the consecutive usage can be done in any 1 of the 6 gaps created to the left, right and in between the digits of 20016]

No of ways as per

2 & b) = ${}^3C_1 * {}^6C_2 = 3 * 15 = 45$ [${}^3C_1$ since one faulty key out of three are used, and ${}^6C_2$ since the non consecutive usage can be done in any 2 of the 6 gaps created to the left, right and in between the digits of 20016]

So the total number of ways Nadar-bhai could have typed the seven digit number on the HCL desktop
 = ${}^6C_3 * (18+45+18+45)$
 = $20 * 126$
 = 2520 ways.

66. B

The prime factors of 360 are $2^3 * 3^2 * 5^1$

The numbers that will be left on the board out of 1 to 360 after the student rubbed off all the multiples of 2, 3 and 5 will be the numbers that are less than 360, but co-prime to it

So what the Professor had essentially asked the class was the result of the summation of the numbers constituting the Euler's number of 360.

Since $360 = 2^3 * 3^2 * 5^1$, the Euler's number of 360
 = $360 * (1 - 1/2) * (1 - 1/3) * (1 - 1/5)$
 = $360 * 1/2 * 2/3 * 4/5$
 = $360 * 4/15$
 = 96

Now, the summation of the numbers constituting the Euler's number of 360
= $360/2 * 96$
= $180 * 96$
= 17280

Hence the answer promptly given by the bright student was 17280

CAREERS360

MOCK TEST - 3

Section - 1 - Verbal Ability & Reading Comprehension

Directions for questions 1 to 4: The passage given below is followed by a set of questions. Choose the most appropriate answer to each question.

Passage-1

Since its Platonic beginnings, philosophical aesthetics has been impelled by an alternative that is as enlightening as it is misleading. Aesthetic perception has been attributed the capacity either to gain a genuine access to being or to disclose a genuine sphere of illusion [Schein]. In the first figure of thought, aesthetic perception is seen as an encounter with how things truly are, as a penetration of illusionary conditions of everyday life. In the second figure of thought, however, aesthetic perception appears inversely as a turning away from the stability of the reliable world and thus as a penetration of the power of the real.

To my mind, this is one of the incorrect contrasts from which aesthetics ought to escape. The way of doing so becomes evident once it is clear that the alternative paths are just variations of a third path that is already well trodden, where intuition and reflection are on a pilgrimage to being or appearance.

The classical aesthetics of being understands the aesthetic process as the revelation of an otherwise concealed higher sense or being. In current discussions, though, a non-classical variation, one frequently formulated in media theory, plays a big part; in the objects of art, this variation sees at work a discovery of the constructiveness of all relations of the real. Both variations of an aesthetics of being do, however, assume that general structures of reality can be recognized in or by means of aesthetic perception; the basic constitution of reality becomes visible in the constitution of aesthetic perception.

An aesthetics of illusion [aesthetik des Scheins], by contrast, rejects this close liaison between reality and aesthetic reality, and, correspondingly, between the aesthetic, epistemological and ethical theory of the one reality. For the aesthetics of illusion the field - or, more radically, the time span - of the aesthetic is a separate zone from which nothing can be inferred about the constitution of reality. It describes the process of aesthetic experience as entering the sphere of illusion, an illusion that is otherwise ignored, one that is located outside the continuity of being.

Each of these positions has been defended in very different variations and with enormously varying willingness to form alliances. One need only recall Hegel's hugely influential discussion of the absolute's sensuous illusion [sinnlicher Schein], Nietzsche's ideas about artistically exposing the illusionary character [Scheincharakter] of the cultural world, or Bloch's aesthetics of anticipating [Vorschein] a better society in the future. Nonetheless, the preoccupation with being or appearance, which goes back to Plato, presents an especially unfortunate alternative. According to this fixation, aesthetic consciousness paves the way either to a higher reality or out of the lower reaches of reality (or it goes both ways simultaneously). Either way, aesthetic perception is conceived of as flight from the phenomenal presence of human life. In effect, aesthetic consciousness is understood in both perspectives as an inattentiveness to the concrete here and now of its acts of perception.

Q. 1. Which one of the following is a suitable summary for the passage?

- A. The domination of one aesthetic perception over the other.
- B. The incoherent and incomplete variations in aesthetic perceptions.
- C. The way aesthetic perceptions change the way humans live life.
- D. Exploring aesthetic perceptions, its forms, and their implications.

Q. 2. All of the following can be inferred from the passage except:

- A. An alternate path, away from classical aesthetics of being and aesthetics of illusions, needs to be developed anew and explored.
- B. Ever since its beginnings, philosophical aesthetics has been propelled in different directions.
- C. Classical aesthetics of being is related to reality rather than illusion.
- D. The sphere of illusion does not reside in the continuity of being.

Q. 3. Match the term in column P with its apt meaning from column Q

COLUMN P		COLUMN Q	
I	Illusion	A	Scheincharakter
II	Sensuous illusion	B	aesthetik des Scheins
III	Illusionary character	C	sinnlicher Schein
IV	Vorschein	D	anticipating
V	Aesthetics of illusion	E	Schein

- A. I-D, II-C, III-A, IV-E, V-B
- B. I-C, II-E, III-D, IV-B, V-A
- C. I-E, II-C, III-A, IV-D, V-B
- D. I-E, II-C, III-A, IV-B, V-D

Q. 4. All of the following can be derived from the passage except:

- A. aesthetics of being and aesthetics of illusions are antithetical to each other in the way they approach aesthetic experience.
- B. various thinkers have adopted either of the positions related to aesthetics, that is the aesthetics of being or that of illusion.
- C. aesthetic of illusions sees only limited value the field of aesthetics can infer about the constitution of reality
- D. the non-classical aesthetics of being places value on all relations of the real.

Directions for questions 5 to 8: The passage given below is followed by a set of questions. Choose the most appropriate answer to each question.

Passage-2

Why can we count to 152? OK, most of us don't need to stop there, but that's my point. Counting to 152, and far beyond, comes to us so naturally that it's hard not to regard our ability to navigate indefinitely up the number line as something innate, hard-wired into us.

Scientists have long claimed that our ability with numbers is indeed biologically evolved – that we can count because counting was a useful thing for our brains to be able to do. The hunter-gatherer who could tell which herd or flock of prey was the biggest, or which tree held the most fruit, had a survival advantage over the one who couldn't. What's more, other animals show a rudimentary capacity to distinguish differing small quantities of things: two bananas from three, say. Surely it stands to reason, then, that numeracy is adaptive.

But is it really? Being able to tell two things from three is useful, but being able to distinguish 152 from 153 must have been rather less urgent for our ancestors. More than about 100 sheep was too many for one shepherd to manage anyway in the ancient world, never mind millions or billions.

The cognitive scientist Rafael Núñez of the University of California at San Diego doesn't buy the conventional wisdom that 'number' is a deep, evolved capacity. He thinks that it is a product of culture, like writing and architecture. 'Some, perhaps most, scholars endorse a nativist view that numbers are biologically endowed,' he said. 'But I'd argue that, while there's a biological grounding, language and cultural traits are necessary for the establishment of number itself.'

'The idea of an inherited number sense as the unique building block of complex mathematical skill has had an unusual attraction,' said the neuroscientist Wim Fias of the University of Gent in Belgium. 'It fits the general enthusiasm and hope to expect solutions from biological explanations,' in particular, by coupling 'the mystery of human mind and behaviour with the promises offered by genetic research.' But Fias agrees with Núñez that the available evidence – neuroscientific, cognitive, anthropological – just doesn't support the idea.

If Núñez and Fias are right, though, where does our sense of number come from? If we aren't born equipped with the neural capacity for counting, how do we learn to do it? Why do we have the concept of 152?

Q5. From the given context, it can be inferred that 'nativism' refers to:

- A. the theory that concepts, mental capacities, and mental structures are not genetically endowed and are acquired by learning.
- B. the theory that concepts, mental capacities, and mental structures are partially innate and partially acquired by learning.
- C. the theory that concepts, mental capacities, and mental structures are acquired by learning rather than being innate.
- D. the theory that concepts, mental capacities, and mental structures are innate rather than acquired by learning.

Q. 6. All of the following are relevant questions related to the context of the passage EXCEPT:

- A. How do we learn to deal with numbers?
- B. Where does our number sense come from?
- C. Is science limited in its understanding of mathematics?
- D. Is our number sense a neural capacity we are born with — or is it a product of our culture?

Q.7. It can be inferred from the passage that:

- A. In all probability, Núñez and Fias are not in agreement with just a few scholars with respect to their views on the number sense of humans.

- B. In all probability, Núñez and Fias are not in agreement with most scholars with respect to their views on the number sense of humans.
- C. In all probability, Núñez and Fias are in agreement with most scholars with respect to their views on the number sense of humans.
- D. In all probability, Núñez and Fias are not in agreement with some scholars with respect to their views on the number sense of humans.

Q. 8. According to the views of Núñez and Fias:

- A. Culture plays an important role in developing the ability of people to learn
- B. There is not enough evidence that genetics endowments lead to an inherited number sense.
- C. Both A and B
- D. Neither A nor B

Directions for questions 9 to 13: The passage given below is followed by a set of questions. Choose the most appropriate answer to each question.

Passage-3

In the 1970s and 1980s employment in quintessentially middle-skilled, middle-income occupations—salespeople, bank clerks, secretaries, machine operators and factory supervisors—grew faster than that in lower-skilled jobs. But around the early 1990s, something changed. Labour markets across the rich countries shifted from a world where people’s job and wage prospects were directly related to their skill levels. Instead, with only a few exceptions, employment in middle-class jobs began to decline as a share of the total while the share of both low- and high-skilled jobs rose. The pattern was similar in countries with very different levels of unionisation, prevalence of collective bargaining and welfare systems. This “polarisation” of employment almost certainly had a common cause.

The development of information technology (IT) is the leading candidate. Computers do not directly compete with the abstract, analytical tasks that many high-skilled workers do, but aid their productivity by speeding up the more routine bits of their jobs. But they do directly affect the need for people like assembly-line workers or those doing certain clerical tasks, whose jobs can be reduced to a set of instructions which a machine can easily follow (and which can consequently be mechanised). At the other end of the employment spectrum, as the example of the towel-folding robot neatly demonstrates, low-skilled jobs may not require much education but they are very hard to mechanise.

Clear evidence in favour of this hypothesis comes from a study by David Autor of the Massachusetts Institute of Technology and David Dorn of the Centre for Monetary and Financial Studies in Madrid, who used data from America’s Department of Labour on the tasks involved in different occupations. By classifying these tasks as routine or non-routine, the authors were able to grade occupations as more or less vulnerable to automation. This method identified the jobs of secretaries, bank tellers and payroll clerks as among those most dominated by routine tasks. (Bus drivers and firefighters are among those at the opposite end of the spectrum.) The economists found that employment polarisation in America between 1980 and 2005 was indeed most marked where jobs vulnerable to automation initially predominated.

Although similar patterns of job polarisation have also been documented for Britain and other European countries, there was until recently no clear cross-country evidence about the importance of IT in explaining them. Filling this gap is a new study by Guy Michaels, Ashwini Natraj and John Van Reenen of the London School of Economics (LSE), which uses industry-level data from 11 countries—nine European ones, plus Japan and America—for the years between 1980 and 2004. Across the board, the economists

find that industries that adopted IT at faster rates (as measured by their IT spending, as well as their spending on research and development) also saw the fastest growth in demand for the most educated workers, and the sharpest declines in demand for people with intermediate levels of education.

The authors also find that once the role of technology is accounted for, openness to trade has no effect on the extent of polarisation. However, the adoption of IT might itself be a function of globalisation. In a paper written with Nicholas Bloom of Stanford University and Mirko Draca of the LSE, Mr Van Reenen looks at rates of IT adoption within Europe. They conclude that industries that faced more direct competition from Chinese imports after China entered the World Trade Organisation responded by innovating more in order to move up the value chain. Between 2000 and 2007, 15% of technology upgrading in Europe can be explained as a response to Chinese competition.

Q. 9. According to the information given in the passage, all of the following impact job polarisation or are related to it except:

- I. Skill level of workers
- II. Openness to trade
- III. Prevalence of collective bargaining and welfare systems
- IV. Levels of information technology (IT) penetration

- A. I & II
- B. II & III
- C. I & III
- D. I & IV

Q. 10. When the author says that 'the adoption of IT might itself be a function of globalisation', he is highlighting that IT and globalisation, with respect to job polarisation, are:

- A. two interdependent phenomena
- B. two independent causes of action
- C. two inter-related causes of action
- D. two un-related phenomena

Q. 11. According to the information given in the passage, which out of the following is most likely to lose his job due to job polarisation?

- A. manual helper in an organisation
- B. a desk employee performing an administrative role at a bank
- C. engineer managing IT operations at an energy plant
- D. investment banker dealing with venture capital funding

Q. 12. Which of the following can be inferred from the passage?

- A. The jobs of secretaries, bank tellers and payroll clerks are impacted the most by automation.
- B. IT does not lead to a loss of jobs for high skilled workers, though it has an impact on their work output.
- C. Level of unionisation does not have an impact on job polarisation.
- D. All of the above

Q. 13. The impact of IT on job polarisation is best highlighted by:

- A. IT leads to a reduction in abstract and analytical tasks.
- B. IT impacts low-skilled jobs by converting them into automated tasks.
- C. IT enables mechanisation of middle-class jobs, in turn leading to declining share of jobs in this segment.
- D. IT enables speeding up of routine jobs, thereby, leading to employee redundancies in the system.

Directions for Questions 14 to 16: Read the passage given below and answer the questions that follow.

Passage-4

“A boy is not happy owing to his age; boys who are called happy are being congratulated by reason of the hopes we have for them. For there is required not only complete virtue, but also a complete life, since many changes occur in life, and all manners of chances, and the most prosperous may fall into great misfortunes in old age.”

In other words, what Aristotle is saying is that what is required for happiness is “a complete life” which obviously no young person has while he is still young. He makes the same point in another way. He refers to the story of Croesus and Solon, as told by the ancient Greek historian, Herodotus. Croesus was King of Lydia, and one of the richest and most powerful rulers of his day. Solon was one of the wisest men of Greece. Here is the story of their conversation.

“Solon set out upon his travels, in the course of which he came on a visit to Croesus at Sardis. Croesus received him as his guest, and lodged him in the royal palace, and had his servants conduct him over his treasures, and show him all their greatness and magnificence. And when Solon had seen them all. Croesus said, ‘Stranger of Athens, I have heard much of your wisdom and of your travels through many lands. I am curious therefore to ask you, whom of all the men that you have seen, you consider the most happy?’ This he asked because he thought himself the happiest of mortals: but Solon answered him without flattery: ‘Tellus of Athens, sire.’ Astonished at what he heard, Croesus demanded sharply, ‘And why do you consider Tellus the happiest of men?’ To which the other replied, ‘First because his country was flourishing in his days, and he himself had sons both beautiful and good, and he lived to see children born to each of them, and these children all grew up; and further because, after a life spent in what our people look upon as comfort his end was glorious. In a battle between the Athenians and their neighbors near Eleusis, he died gallantly upon the field. And the Athenians gave him a public funeral and paid him the highest honors.’”

Thus, Solon admonished Croesus by the example of Tellus. When he had ended, Croesus asked angrily, ‘Is my happiness, then, so little to you that you do not even put me on a level with private men?’

Q. 14. It can be inferred from the passage that:

- A. Aristotle believed that it was desirable that young people be happy, but it was not possible.
- B. Aristotle believed that for young people to be happy, complete virtue was the path to adopt.
- C. Aristotle believed that out of all the factors that could make a young person happy, virtue was one that did not matter as much as the others.
- D. Aristotle believed that it was not possible for young people to be happy.

Q. 15. The logical relationships that can be derived from Aristotle's argument are:

- I. If you have a complete life, you are not young.
- II. If you are a young person, you cannot be happy.
- III. If you are old and not young, you are happy.
- IV. You can be happy only if you have a complete life.

- A. I, II, and III
- B. II, III, and IV
- C. I, II, and IV
- D. All the above

Q. 16. Which of the following is most likely to continue the passage?

- A. Solon answers to Croesus, 'I see that You are wonderfully rich and are the lord of many nations, and as for your question, I would like to hear of the wisdom that you have accumulated'.
- B. Solon answers to Croesus, 'I see that You are wonderfully rich and are the lord of many nations, but as for your question, I have no answer to give until I hear that you have led a life of virtue and met an end that is honored'.
- C. Solon answers to Croesus, 'I see that You are wonderfully rich and are the lord of many nations, but as for your question, I have no answer to give until I hear that you have not fallen misfortune in your old age'.
- D. Solon answers to Croesus, 'I see that You are wonderfully rich and are the lord of many nations, but as for your question, I have no answer to give until I hear that you have closed your life happily'.

Directions for the Question: Identify the apt summary for the given paragraph. Enter the option number you deem as the correct answer.

Q. 17. A number of people I know go on fasts, every now and then. Some of them do it for religious reasons, during the Navratras, or Muharram, or Easter. Moreover, such fasting can also have psychological benefits in that the mind, freed from the daily routine of eating more out of habit than hunger, can focus on itself with greater clarity, without distraction. Which makes me wonder if what we need even more than going without food or speech for a while is going without using any of the various gadgets, like cellphones and computers, that have become an indispensable part of our daily lives. We need to go on an electronic vipassana. Switch off our TV sets and our cellphones. Don't check our email, or Facebook, or Twitter.

- A. The author is pushing people to keep a fast for religious reasons and from gadgets.
- B. The author favours various fasts that people keep for religious or any other reasons.
- C. The author basically espouses fasts from various gadgets and apps that have become a part of our daily lives.
- D. The author is exploring the idea of people ditching their gadgets to live a peaceful life and achieving this through the route of digital fasts.

Directions for the Question: Identify the apt summary for the given paragraph. Enter the option number you deem as the correct answer.

Q. 18. There is still a huge gap between the earnings of men and women for the same jobs. Work distribution between casual and highly skilled jobs is still gender-skewed. Inheritance of property or ownership of agricultural land are still dark areas for women. The glass ceiling is still a long way from

shattering. Women still need to struggle far more at work than they should need to; they still bear the onus of proving their worth time and again. And then there are still many women who, to keep the peace at home, hand over their salaries to husbands and are subjected to rationed spends despite earning in their own right.

- A. The status of women in society is enviable.
- B. The status of women in society is not equal to that of men.
- C. The status of women in society is that of helpless victims and slaves.
- D. The status of women in society is one that does not show enough veneration towards them.

Q. 19. Identify the apt summary for the given paragraph. Enter the option number you deem as the correct answer.

When we say, "A encrypts the document", what A actually does is run this document through a hash function software. The hash function software produces a fixed length of alphabets, numbers, and symbols for any document. This is known as the hash result. The hash result is never the same for two different documents. Any small alteration in the document will generate an entirely different hash result. The hash function software will always produce the same hash result for a particular message. Thus, if there is any doubt about the message being intercepted, all one must do is to compare the hash functions at both ends.

- A. The process of encrypting a document entails generating a standard and unchanging hash result for the content.
- B. The process of encrypting a document entails generating a one-of-a-kind and variable hash result for the content.
- C. The process of encrypting a document requires the production of a one-of-a-kind and fixed hash result.
- D. The process of encrypting a document entails generating a hash result that is both universal and unique to that document.

Directions for the Question: The question below has a paragraph given with one sentence missing at the end. From among the answer choices given, select the sentence that can fill the blank to form a coherent paragraph.

Q. 20.

Experts fear that a grim byproduct of the crisis is rising gender-based violence – which made a sudden and shocking foray into the election campaign last week when Ilias Kasidiaris of the far-right Golden Dawn party struck a female politician on live television. The act, at once deeply shocking and barely surprising from a neo-Nazi with a lengthy charge sheet, was harshly condemned by Maria Stratigaki, Greece's secretary general for gender equality. She uses the term "gender-based violence" to include domestic abuse, rape, sexual harassment and human trafficking.

-
- A. Quantifying the phenomenon is difficult, she admits, as there are no official statistics to back up anecdotal evidence.
 - B. Human trafficking is inherently inhuman, unjust and makes the world a worse place to live in.
 - C. Sexual harassment and rape have been problems that have affected man for long and the answers have eluded them so far.
 - D. Gender based violence is one feature of society that we could do without.

Directions for the Question: The question below has a paragraph given with one sentence missing in at the end. From among the answer choices given, select the sentence that can fill the blank to form a coherent paragraph.

Q. 21. Hosni Mubarak, who now may be dying—Tuesday, he was briefly reported clinically dead—was an excellent military officer, and a capable bureaucrat, but he had no independent vision and no idea how to escape the impediments to progress that the original coup in Egypt had imposed. Immediately after Sadat's assassination, in 1981, Mubarak imposed emergency rule, which essentially authorized unbridled dictatorial power masked by a façade of democratic elections. Under his rule, freedom of speech and assembly were tightly constrained. These restrictions on liberty crushed other forms of political expression, so that the Islamists—the Muslim Brotherhood and more radical forms of political Islam—became the only real way to voice opposition to Mubarak's reign.

_____.

- A. Military dictatorship and Islamism became the axis upon which Egyptian politics revolved.
- B. Hosni Mubarak became the anti-thesis of what he set out to be.
- C. This Mubarak was very different from the Mubarak Egyptians saw in their everyday life.
- D. The Islamists had to do this as this was the only way they could gain a foothold in an increasingly fractured and sectarian society.

Directions for questions 22 to 24: In the following questions, rearrange the five sentences in order to form a meaningful paragraph.

TITA

Q. 22.

1. The US navy rescued the women on Wednesday after a Taiwanese fishing vessel spotted them about 900 miles south-east of Japan, well off their planned course, and alerted the US coast guard.
2. Two women and their dogs have been rescued after being lost at sea for five months while trying to sail from Hawaii to Tahiti.
3. The USS Ashland arrived early the next day, the navy said in a statement released on Thursday.
4. The women, identified by the navy as Jennifer Appel and Tasha Fuiaba, both of Honolulu, lost their engine in bad weather in late May but believed they could still reach Tahiti using their sails.

TITA

Q. 23.

1. There is no provision for breaking away in this constitution.
2. There is a Spanish constitution which clearly lays down the sovereignty and integrity of the Spanish state.
3. Catalonia, despite its distinctive past, has long acquiesced in this Spanish constitution and has no legal right to become independent and therefore, its demand for breaking away is not justified.
4. Catalonia is wrong. Madrid is right.

TITA

Q. 24.

1. In this 37-year period they had been able to reach per capita GDP values in the range of \$10,000-18,000.
2. If the population growth rate turns lower and the average annual growth rate of GDP does not falter too much, as it has not till now, India's per capita GDP too may prosper significantly in the next decade or two.

3. The average annual growth rates of per capita GDP for the far eastern miracle economies (Hong Kong, Singapore, Taiwan and South Korea) hovered around 5-6 per cent during 1960 through 1997.
4. India's annual growth rate of per capita GDP has well exceeded the miracle figures in the last five years.

Section - 2 - Data Interpretation and Logical Reasoning

Directions for questions 25 to 29 :

The Jadavpur University's Prince Anwar Shah Road hostel consists of two large separate buildings, one for the ladies and the other for the gents, while having a common kitchen and dining hall. It is the hostel of the CS and the EEC department of engineering students of the university.

In recognition of the growing dissatisfaction and hence complaints among the inmates of the hostel regarding the menu served for dinner, the Dean of the engineering department, Dr Aparesh Sanyal, personally decided to investigate the matter. He set about collecting information about the preference of dinner among the inmates, separately from the gents and the ladies wing of the hostel.

Dr Sanyal was able to gather the following partial information :

Hostel inmates	Menu preference for dinner			Total
	Egg Meal	Fish Meal	Chicken Meal	
Gents			20	
Ladies				64
Total		60		

The Warden of the hostel was consulted, who after investigation declared that the following facts were clear :

1. Forty percent of the hostel inmates were ladies
2. One-third of the gentlemen inmates preferred an egg meal for dinner
3. Half the hostel inmates preferred either fish meal or chicken meal

Q 25

What proportion of the lady hostel inmates preferred a fish meal for dinner ?

- A) 0.25
- B) 0.50
- C) 0.75
- D) 1.00

Q 26 Among the hostel inmates who preferred an egg meal for dinner, what was the ratio of gents to ladies ?

- A) 3 : 1
- B) 2 : 3
- C) 1 : 1
- D) 4 : 3

Q 27 How many gentlemen inmates of the hostel preferred a fish meal for dinner ?

- A) 20
- B) 32
- C) 44
- D) 96

Q 28 How many of the hostel inmates were ladies who preferred a chicken meal for dinner?

- A) 16
- B) 32
- C) 64
- D) None of the above

Q 29 (TITA)

What percentage of the total hostel inmates were ladies who preferred an egg meal for dinner ?

Directions for questions 30 to 34 :

At the OSL Prestige Motorrad – the BMW car and bike showroom at Eastern Metropolitan Bypass, Kolkata – A, B, C, D and E were the five BMW car models present while P, Q and R were the three BMW motorbike models present.

Model A had the highest top speed among the cars while model R had the lowest top speed among the motorbikes. Model C was costlier than model D and model Q, but less costly than model B. Among the cars, model A was not the costliest. Model D was less costly than model E and there was no car model whose cost lay in between the cost of those two. Model E had a top speed higher than three of the car models and all of the motorbike models. Model Q was costlier than model R but less costly than model P, which had a top speed higher than that of model Q. None of the different car models had the same cost.

Q 30 Which of the following models of BMW cars would not occupy exactly the middle position if all the BMW car models present at the OSL Prestige Motorrad were arranged as per their cost ?

- A) D
- B) E
- C) A
- D) B

Q 31 If motorbike model P was less costly than car model A, which in turn was not costlier than car model E, which one of the options below was the least costly of all the car and motorbike models present at the OSL Prestige Motorrad according to the information provided ?

- A) E
- B) R
- C) D
- D) Q

Q 32 If car models B and C had higher top speeds than car model D, which of the options indicate the car model present at the OSL Prestige Motorrad with the lowest top speed ?

- A) A
- B) B
- C) D
- D) E

Q 33 Which of the following statements would be true about the BMW motorbike models present at the OSL Prestige Motorrad ?

- A) Model P was the costliest as well as the model with the highest top speed
- B) The model with the highest top speed was not the costliest motorbike model
- C) The model with the lowest top speed was the least costly motorbike model
- D) Both options A and C

Q. 34 If motorbike model P was more costly than car model E, how many BMW cars present at the OSL Prestige Motorrad were less costly than motorbike model P ?

- A) 1
- B) 2
- C) 3
- D) Cannot be determined

Directions for questions 35 to 39:

Table A shows the number of Grand Slams won in the Mixed-Doubles category by the men's five top-seeded tennis players from 1991 to 1995. Table B shows their Mixed-Doubles partner in each of these wins. The data of their partners within the women's top four seeds are given separately, while the rest are clubbed together.

<i>Table A</i>	Number of Mixed-Doubles Grand Slam wins				
Male Players	1991	1992	1993	1994	1995
Connors	2	0	4	2	2

Borg	2	4	0	0	2
McEnroe	0	0	2	2	0
Edberg	0	2	2	0	2
Agassi	2	0	2	0	2

<i>Table B</i>	Number of Mixed-Doubles Grand Slam wins				
Female Players	1991	1992	1993	1994	1995
Graf	4	0	2	0	2
Navratilova	2	2	0	2	0
Sabatini	0	2	2	2	0
Chris Evert	0	2	0	0	2
Others	0	0	6	0	4

It was also known that :

- a) Agassi and Graf never played together due to their reasons.
- b) Sabatini did not have the opportunity to play with Borg in those five years.
- c) McEnroe being a left-hander, only teamed up with the left-handed Navratilova among the top four women seeded players.
- d) Connors had paired up with only two women players in all the five years.
- e) Borg teamed up with women players only within the top four seed.

Q 35 In 1993, the four Mixed-doubles Grand-Slam wins of Connors were with

- A) Graf and Sabatini
- B) Graf and Others
- C) Sabatini and Others
- D) Navratilova only

Q 36 Chris Evert's four wins in the five years had been with ?

- A) Borg and Agassi
- B) Borg only
- C) Borg and Connors
- D) Borg and Edberg

Q 37 Edberg's wins had been with ?

- A) Graf and Navratilova
- B) Navratilova and Sabatini

- C) Sabatini and Others
- D) Graf & Chris Evert

Q 38 Both the wins of McEnroe in 1993 had been with ?

- A) Graf and Sabatini
- B) Sabatini and Others
- C) Graf and Others
- D) Others only

Q 39 Which pair had won the maximum Mixed-Doubles Grand Slams in the five years (1991 to 1995) taken together ?

- A) Borg and Chris Evert
- B) Connors and Sabatini
- C) Agassi and Others
- D) Connors and Graf

Directions for questions 40 to 44 :

At the 44th Chess Olympiad, 2022, being held at Mamallapuram, the number of participants who preferred an early morning jog to keep fit was twice the number of participants who preferred only to go to the gym to do so. 344 participants preferred both. The participants who preferred neither were half the number of participants who preferred only an early morning jog. 1720 chess players participated in the Olympiad.

Q 40 (TITA)

How many participants at the 44th Chess Olympiad held in Mamallapuram preferred neither an early morning jog nor the gym to keep fit ?

Q. 41 (TITA)

How many of the participants at the 44th Chess Olympiad preferred only to jog to keep fit ?

Q.42 (TITA)

How many of the participants at the 44th Chess Olympiad preferred the gym to keep fit ?

Q. 43 (TITA)

How many participants at the 44th Chess Olympiad preferred at least one among an early morning jog or the gym to keep fit ?

Q. 44 (TITA)

How many participants at the 44th Chess Olympiad preferred at most one among an early morning jog or the gym to keep fit ?

Section - 3 - Quantitative Aptitude

Q45. If a^2 , b^2 , and c^2 are in GP, then $\log a$, $\log b$, $\log c$ are in

- (a) AP (b) GP (c) HP (d) None of these

Q46. (TITA)

5 men complete a work in 16 days. With the help of 10 boys, they finish the same work in 10 days. 2 days after they had started working, 2 more men joined them. Again after 2 days, 2 more men joined them. In how many days the work be completed. (Nearest to integer in days)

Q47. Find the ratio of the areas of two circles if chords of equal lengths making angle of 60° and 120° at the centre of circles respectively.

- (a) 1: 2 (b) 2: 1 (c) 1: 3 (d) 3: 1

Q48. (TITA)

A shopkeeper fixed his selling price of goods same as cost price. He sells one third of the stock at this price, one-third of his stock at a price 70% more than the cost price and rest at the were not sold due to bad quality of goods. Find the gain or loss percent altogether.

Q49. If α and β are zeroes of $x^2 - \sqrt{5}x - 5 = 0$. Find value of $\log_{9/5}^{(\alpha^2 + \beta^2)} - \log_{9/5}^{(\alpha^2 - \beta^2)}$

- (a) 1 (b) -1 (c) $1/2$ (d) $-1/2$

Q50. State of California has a sales tax of 5 percent on the portion of a purchase price that is greater than \$100 and a sales tax of N% percent on the portion of a purchase

price that is greater than \$200. A customer paid a sales tax of \$20 on a purchase value lies between \$320 and \$350. Then,

- (a) $10 \leq N \leq 13$ (b) $9 \leq N$ (c) $10 \leq N < 13$ (d) $N \leq 15$

Q51. A certain company that deals with only I-pads and I-phones reported that revenues from I-phone sales in 2017 were down 9 percent from 2016 and revenues from I-pad sales in 2017 were up 6 percent from 2016. If total revenue of the company were up by 2 percent in the same period, what is the ratio of revenue of the company from the sales of I-pad in 2016 to revenue from sales of I-phones in 2017?

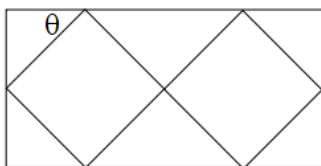
- (a) less than 3 (b) greater than 4 (c) 4: 3 (d) lies between 3 and 4

Q52. A superfast train travelled at an average speed of 80 kilometres per hour, stopping for 4 minutes after every 60 kilometres. A local train travelled at an average speed of 40 Kilometres per hour, stopping for 1 minute after 20 kilometres, stopping for 2 minutes after another 20 kilometres, stopping for 3 minutes after another 20 kms and so on. If at 7 AM. Find the ratio of distances travelled by local train and superfast till 10 AM on the same day?

- (a) 55: 112 (b) 112:55 (c) 2:1 (d) 1: 2

Q53. In how many ways can one choose 6 face cards from a deck of 52 cards such that exactly two kings of same colour are there? (TITA)

Q54



In the figure above, two identical squares are inscribed in the rectangle. If the perimeter of the rectangle is $64\sqrt{3}$, then what is the value of $\sin \theta$?

- (a) $1/2$ (b) $3/2$ (c) $1/\sqrt{2}$ (d) $1/\sqrt{3}$

Q55. If the average of eleven consecutive even natural numbers, the least of which is y , is x , find the average of 31 consecutive natural numbers, the greatest of which is x ?

- (a) $x - 6$ (b) $x - 10$ (c) $y - 6$ (d) $y + 1$

Q56. (TITA)

A man invested two equal sums of money in two different schemes at simple interest, one offering annual rate of interest of 10% and the other, at a rate of 15%. If the difference between the interests earned after two years is between \$100 and \$125, exclusive, which of the following could be the difference between the amounts

earned for the same amounts of money, invested at the same rates of interest as above, but at compound interest? [nearest to integer]

Q57. (TITA)

If the number $7m34n$, where m and n represent the thousands' and unit digits, is divisible by 18, what is the maximum value of $(m-n)^2$?

Q58. In a certain city, 40 percent of the registered voters are Communists and the rest are Leftists. In a mayoral race, if 45 percent of the registered voters who are Communists and 30 percent of the registered voters who are Leftists are expected to vote for Candidate A.

Candidate A get $N\%$ of the votes get by candidate B. Then N is

- (a) $N > 60\%$ (b) $40\% < N < 50\%$ (c) $N < 30\%$ (d) $50\% < N < 60\%$

Q59. If $f(x) = 3/x$ and $g(x) = x^2/(x+2)$, for all $x: x \neq 0$, what is the minimum value of $f(g(x))$

- a) $-3/8$ b) $-5/4$ c) 2 d) $3/8$

Q60. Anirudh was asked to pick up 4 marbles from a box containing 10 blue and 15 red marbles. What is the probability of the Anirudh picking, at random, 4 marbles out of which at least 2 are of red colours?

- (a) 0.84 (b) 0.78 (c) 0.92 (d) 0.69

Q61. In what proportion must water be mixed with milk to gain 37.5% by selling the mixture at a price 5% more than the actual price? (Assume that water is freely available)

- (a) 1: 9 (b) 1: 8 (c) 13: 42 (d) 13: 55

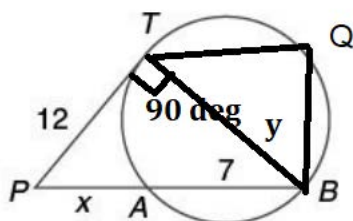
Q62. If $f(x) = x/(x+1)$, then the ratio of x to $f(y)$ where $y = 2/f(x)$ is

- (a) $x: y$ (b) $x^2: y^2$ (c) 1: 1 (d) $x(3x+1): (2x+2)$

Q63. (TITA)

If n is an integer, minimum integral value of $(7n^4+6n^3+6n+7)/n$?

Q64. In the given figure, find $\tan \angle TPB$



- (a) $1/6$ (b) $2/\sqrt{7}$ (c) $\sqrt{7}/3$ (d) $4\sqrt{7}/3$

Q65. (TITA)

River Ganga which is 3 Km wide and 220m depth is flowing at the speed of 10 Kmph and falls from a cliff in to a bay of conical shape of height 14 Kms for 40 hrs. Find the volume of a sphere of the radius equal to the radius of bay. Write answer nearest to a perfect square in KM^3 .

Q66. Find the perpendicular distance of point $(-6, -2)$ from the line joining the two points $(-4, -6)$ and $(-2, 5)$.

- A. $6/5\sqrt{5}$
- B. $6\sqrt{5}$
- C. $6/\sqrt{5}$
- D. $5/\sqrt{5}$

Answer Key - Mock Test 3

Section - Verbal Ability & Reading Comprehension

1 - D, 2-A, 3-C, 4-C, 5-D, 6-C, 7-B, 8-C, 9-B, 10-C, 11-B, 12-D, 13-C, 14-D, 15-C, 16-D, 17-C, 18-B, 19-C, 20-A, 21-A, 22-2, 23-4213, 24- 3142

Section - Data Interpretation & Logical Reasoning

25 -A, 26-B, 27-C, 28-D, 29-30, 30-D, 31-B, 32-C, 33-D, 34-D, 35-A, 36-B, 37-C, 38-D, 39-D, 40-301, 41-602, 42-817, 43-1419, 44-1376

Section - Quantitative Aptitude

45 - A, 46- 8, 47-D, 48-10, 49-C, 50-C , 51-D, 52-A, 53- 364, 54-C, 55- C, 56- 243, 57-25, 58-D, 59-A, 60-A, 61-C, 62-D, 63-2702, 64-C, 65-900, 66-C

Solutions - Mock Test 3

Section - Verbal Ability & Reading Comprehension

1. D

In the given case, option D is the best answer.

The passage primarily highlights two forms of aesthetic perceptions: classical aesthetics of being and aesthetics of illusions.

The author highlights the two forms, their shortcomings and how we need to find a middle path for the two. Option D fits here as it aligns with the general content of the passage.

Option A is incorrect as there is no indication of domination of one form over the other.

Option B is incorrect as there is no mention of the fact whether these two perceptions are incoherent/incomplete.

Option C is extreme in its nature and the passage does not imply that these perceptions change the way humans live.

2. A

Option A is incorrect. Refer to the lines: The way of doing so becomes evident once it is clear that the alternative paths are just variations of a third path that is already well trodden, where intuition and reflection are on a pilgrimage to being or appearance.

The alternate path exists already and is well trodden; this option talks about it being developed anew.

Option B can be derived from the lines: Since its Platonic beginnings, philosophical aesthetics has been impelled by an alternative that is as enlightening as it is misleading. Aesthetic perception has been attributed the capacity either to gain a genuine access to being or to disclose a genuine sphere of illusion [Schein]. In the first figure of thought, aesthetic perception is seen as an encounter with how things truly are, as a penetration of illusionary conditions of everyday life.

Option C can be derived from the lines: The classical aesthetics of being understands the aesthetic process as the revelation of an otherwise concealed higher sense or being. In current discussions, though, a non-classical variation, one frequently formulated in media theory, plays a big part; in the objects of art, this variation sees at work a discovery of the constructiveness of all relations of the real. Both variations of an aesthetics of being do, however, assume that general structures of reality can be recognized in or by means of aesthetic perception;....

As we can see from the above, the classical aesthetics of being is connected with reality.

Option D can be derived from the lines: It describes the process of aesthetic experience as entering the sphere of illusion, an illusion that is otherwise ignored, one that is located outside the continuity of being.

3. C

This is a simple fact based question.

You just need to match the appropriate terms on the left with those on the right.

Here are the references for you in the passage:

1. Aesthetic perception has been attributed the capacity either to gain a genuine access to being or to disclose a genuine sphere of illusion [Schein].
2. Hegel's hugely influential discussion of the absolute's sensuous illusion [sinnlicher Schein]
3. Nietzsche's ideas about artistically exposing the illusionary character [Scheincharakter]
4. Bloch's aesthetics of anticipating [Vorschein]
5. An aesthetics of illusion [aesthetik des Scheins],

4. C

Option C is incorrect here. Refer to the line: For the aesthetics of illusion the field - or, more radically, the time span - of the aesthetic is a separate zone from which nothing can be inferred about the constitution of reality.

Aesthetic of illusions sees no value (rather than limited value) the field of aesthetics can infer about the constitution of reality

Option A can be derived from the lines: The classical aesthetics of being understands the aesthetic process as the revelation of an otherwise concealed higher sense or being. Both variations of an aesthetics of being do, however, assume that general structures of reality can be recognized in or by means of aesthetic perception; the basic constitution of reality becomes visible in the constitution of aesthetic perception...

...For the aesthetics of illusion the field - or, more radically, the time span - of the aesthetic is a separate zone from which nothing can be inferred about the constitution of reality.

Option B can be derived from the lines: Each of these positions has been defended in very different variations and with enormously varying willingness to form alliances.

Option D can be derived from the lines: In current discussions, though, a non-classical variation, one frequently formulated in media theory, plays a big part; in the objects of art, this variation sees at work a discovery of the constructiveness of all relations of the real.

5. D

Refer to the context: 'Some, perhaps most, scholars endorse a nativist view that numbers are biologically endowed,' he said. 'But I'd argue that, while there's a biological grounding, language and cultural traits are necessary for the establishment of number itself.'

It is clear from the context the nativists hold an opinion opposite to Rafael Núñez. In the above lines, the author is limiting the role of biological grounding. We need to find an option that states the opposite of this. This sentiment is best reflected by option D in the given case.

Nativism refers to the theory that concepts, mental capacities, and mental structures are innate rather than acquired by learning.

6. C

The problem with option C is that it changes the scope of the given passage and becomes too broad based on the given context. The given passage is dealing with numbers and our sense of numbers. Option C changes the scope to the full subjects of mathematics and science. This makes it an incorrect answer choice in the given context.

7. B

Refer to the lines: 'Some, perhaps most, scholars endorse a nativist view that numbers are biologically endowed,' he said. 'But I'd argue that, while there's a biological grounding, language and cultural traits are necessary for the establishment of number itself.'

We can see that option B is the best answer in the given case.

8. C

Option A can be derived from the lines: 'Some, perhaps most, scholars endorse a nativist view that numbers are biologically endowed,' he said. 'But I'd argue that, while there's a biological grounding, language and cultural traits are necessary for the establishment of number itself.'

Option B can be derived from the lines:

'The idea of an inherited number sense as the unique building block of complex mathematical skill has had an unusual attraction,' said the neuroscientist Wim Fias of the University of Gent in Belgium. 'It fits the general enthusiasm and hope to expect solutions from biological explanations,' in particular, by coupling 'the mystery of human mind and behaviour with the promises offered by genetic research.' But Fias agrees with Núñez that the available evidence – neuroscientific, cognitive, anthropological – just doesn't support the idea.

9. B

I is related to job polarisation: Instead, with only a few exceptions, employment in middle-class jobs began to decline as a share of the total while the share of both low- and high-skilled jobs rose.

II does not impact job polarisation: The authors also find that once the role of technology is accounted for, openness to trade has no effect on the extent of polarisation.

III does not impact job polarisation: The pattern was similar in countries with very different levels of unionisation, prevalence of collective bargaining and welfare systems. This “polarisation” of employment almost certainly had a common cause.

IV impacts job polarisation: The development of information technology (IT) is the leading candidate.

10. C

Refer to the lines: The authors also find that once the role of technology is accounted for, openness to trade has no effect on the extent of polarisation. However, the adoption of IT might itself be a function of globalisation.... They conclude that industries that faced more direct competition from Chinese imports after China entered the World Trade Organisation responded by innovating more in order to move up the value chain.

In the above example, we can see that these two factors are connected to one another and are inter-related causes of action. These are two things, related to one another, leading to job polarisation. Hence, option C is the correct answer here.

11. B

In this case, you need to find a middle-class job that does not require special skills. We find this in option B.

Option A highlights a low-level job that cannot be mechanised.

Options C and D highlight high skill jobs that require specialised knowledge; hence, cannot be automated.

12. D

Option A can be derived from the lines: By classifying these tasks as routine or non-routine, the authors were able to grade occupations as more or less vulnerable to automation. This method identified the jobs of secretaries, bank tellers and payroll clerks as among those most dominated by routine tasks. (Bus drivers and firefighters are among those at the opposite end of the spectrum.)

Option B can be derived from the lines: Computers do not directly compete with the abstract, analytical tasks that many high-skilled workers do, but aid their productivity by speeding up the more routine bits of their jobs.

Option C can be derived from the lines: Instead, with only a few exceptions, employment in middle-class jobs began to decline as a share of the total while the share of both low- and high-skilled jobs rose. The pattern was similar in countries with very different levels of unionisation, prevalence of collective bargaining and welfare systems.”

13. C

Refer to the lines: Instead, with only a few exceptions, employment in middle-class jobs began to decline as a share of the total while the share of both low- and high-skilled jobs rose. ...The development of information technology (IT) is the leading candidate. Computers do not directly compete with the abstract, analytical tasks that many high-skilled workers do...But they do directly affect the need for people like assembly-line workers or those doing certain clerical tasks..At the other end of the employment spectrum, as the example of the towel-folding robot neatly demonstrates, low-skilled jobs may not require much education but they are very hard to mechanise.

The above extract actually neatly outlines to you the specific type of jobs under threat because of IT: middle class jobs (assembly-line workers or those doing certain clerical tasks). This aspect is highlighted by option C.

Options A, B, and D actually run counter to what is stated above.

14. D

Option D can be derived from the lines: In other words, what Aristotle is saying is that what is required for happiness is “a complete life” which obviously no young person has while he is still young. Generally definitive answers (involving a definite yes or no) are avoided in RCs but here we make an exception. The passage clearly implies option D: you can be happy only if you have a complete life. Option A is ruled out as at no point does Aristotle link happiness of young people with its desirability. Option B is ruled out as complete virtue is one of the factors and not the specific path to adopt. Option C is ruled out as there is no comparison of virtue with other qualities (in terms of what matters).

15. C

This is a logical argument question where you must establish if/only-if relationships.

Let us look at the context provided: In other words, what Aristotle is saying is that what is required for happiness is “a complete life” which obviously no young person has while he is still young.

Let us derive logical relationships from the above.

What is needed for happiness? A complete life.

This means if one is happy (effect), then the cause (complete life), must exist.

Hence, statement IV is correct: You can be happy only if you have a complete life (limitation on effect that the cause must take place).

Next relationship given: no young person has a complete life.

If a young person does not have a complete life, can he be happy?

No, you cannot. Hence, statement II is correct.

Also, by extension of the above, if one has a complete life, one cannot be young. Hence, statement I is also correct.

Statement III is the incorrect one here. There is no definite relationship in being old (not young) and being happy. Aristotle does not imply old age automatically implies happiness.

Hence, the correct answer is option C.

16. D

This is effectively a main idea question. Why so? Because if you understand the main idea of the passage, you understand that this question is essentially asking you to co-relate the key argument of the passage with the answer options.

Which is this key argument? The key argument here is that for Salon to judge the life of Croesus, he needs to know how happy he has been in life and that is something that he explains in the previous paragraph when he talks about Tellus. The key here is being happy and this factor is only present in option D. None of the other options place happiness as a priority in the given case.

17. C

The author here is supporting the fast from gadgets and apps and that can be clearly seen in option C. Option A is too strong in its wording.

Option B is incomplete in its sentiment as it misses out the main point of reducing/avoiding the use of digital devices.

Option D is incorrect as the author does not say “ditch gadgets”.

18. B

The paragraph highlights how women are not equal to men. The author is essentially highlighting the injustices faced by women and this sentiment is best expressed by option B.

Option A mentions positive words and that is why it is incorrect.

Option C is too extreme given this paragraph which focuses on equality in work and ownership of property.

Option D changes the sentiment of the passage and converts it from injustices women face to the fact that they do not receive enough veneration (respect).

19. C

Explanation

The passage talks about encryption and generation of a hash function. It mentions that a hash is never the same for two documents and is therefore unique. Further, it mentions that each message will always have the same hash result and is therefore fixed. The correct option is option C.

20. A

Only two options come close to being the answers: option A and option D. The other two options do not fit in the given context. Option 4 is rejected as it affects the unnecessary change of taking the problem of gender based violence to the world level and converting it into a generic problem, whereas we are only talking of specific examples here. Option A is correct as it takes forward the context provided by Maria Stratigaki.

21. A

This is a really interesting question, as a couple of options seem probable answers for the same. The first option is chosen ultimately as it succinctly completes the whole paragraph and provides a suitable ending for it. It makes a defining point about the Mubarak regime, the primary subject of our argument. The other options place the emphasis on something else, taking the argument in another direction and hence are rejected.

22. 2

This is an easy question. Statements 2-1-3-4 form a set of connected statements describing the given event (remember, the order is not important here; you just need to identify that these statements are simply providing a description for the given event).

23. 4213

This is a tricky question where you have to be careful with the statements.

Statement 2 introduces the Spanish Constitution and statement 1 discusses its provisions. Then, statement 3 relates Catalonia to this constitution.

Now the whole problem is with the placement of statement 4. In this case, statement 4 comes right at the end. The clue is 'therefore' in statement 3. This makes it an apt conclusion and statement 4 becomes the indirect opening sentence for the paragraph.

24. 3142

Statement 3 sets up the context by talking about miracle economies.

Statement 1 then provides us further information about them.

Statement 4 then compares the growth rate in India with the miracle economies and statement 2 then extends the same topic.

Section - Data Interpretation & Logical Reasoning

25. A

From the table having the partial information, it was seen that :

1) The number of ladies were 32, which was 40% of the total inmates

Thus the total number of hostel inmates were $(32/40) \times 100 = 80$

2) Thus the number of gentlemen inmates were $= (80 - 32) = 48$

3) It was found out by the Warden that one-third of the gentlemen inmates preferred an egg meal for dinner

So the number of gentlemen inmates preferring an egg meal for dinner $= 48/3 = 16$

4) It was also found out by the Warden that half the hostel inmates preferred either fish meal or chicken meal

So number of hostel inmates who preferred an egg meal for dinner $= (\text{Number of hostel inmates who preferred a fish meal for dinner} + \text{Number of hostel inmates who preferred a chicken meal for dinner}) = 80/2 = 40$

5) Total number of hostel inmates who preferred a fish meal for dinner $= 60$ (given)

6) Therefore, the number of hostel inmates who preferred a chicken meal for dinner $= (80 - 60) = 20$

7) Hence number of lady inmates who preferred a chicken meal for dinner $= 20 - 20 = 0$

8) The total number of gentlemen inmates preferring a fish meal for dinner $= (96 - 32 - 20) = 44$

9) The number of lady inmates who preferred an egg meal for dinner $= (\text{Total hostel inmates who preferred an egg meal for dinner} - \text{Total gentlemen inmates preferring an egg meal for dinner}) = (40 - 16) = 24$

10) The number of lady inmates who preferred a fish meal for dinner $= (\text{Total hostel inmates who preferred a fish meal for dinner} - \text{Total gentlemen inmates preferring a fish meal for dinner}) = (60 - 44) = 16$

Now, from the above information, the given chart would change to the following :

Hostel inmates	Menu preference for dinner			Total
	Egg Meal	Fish Meal	Chicken Meal	
Gents	32	44	20	96
Ladies	48	16	0	64
Total	80	60	20	160

Thus the proportion of lady hostel inmates who preferred a fish meal for dinner $= 16/64 = 1/4 = 0.25$

26.B

We now know that :

Hostel inmates	Menu preference for dinner			Total
	Egg Meal	Fish Meal	Chicken Meal	
Gents	32	44	20	96
Ladies	48	16	0	64
Total	80	60	20	160

Hence, among the hostel inmates who preferred an egg meal for dinner, the ratio of gents to ladies = 32 : 48 = 2 : 3

27.C

We now know that :

Hostel inmates	Menu preference for dinner			Total
	Egg Meal	Fish Meal	Chicken Meal	
Gents	32	44	20	96
Ladies	48	16	0	64
Total	80	60	20	160

Hence, the number of gentlemen inmates of the hostel who preferred a fish meal for dinner = 44

28.D

We now know that :

Hostel inmates	Menu preference for dinner			Total
	Egg Meal	Fish Meal	Chicken Meal	
Gents	32	44	20	96
Ladies	48	16	0	64
Total	80	60	20	160

The number of lady hostel inmates who preferred a chicken meal for dinner = 0

Hence 'None of the above' is the correct option

29. 30

We now know that :

Hostel inmates	Menu preference for dinner			Total
	Egg Meal	Fish Meal	Chicken Meal	
Gents	32	44	20	96
Ladies	48	16	0	64
Total	80	60	20	160

The total hostel inmates = 160

The lady hostel inmates who preferred an egg meal for dinner = 48

Hence, the percentage of the total hostel inmates who were ladies preferring an egg meal for dinner = $(48 \times 100) / 160 = 30\%$

30. A

As per the information provided, we can conclude the following :

I) Top speed :

- Model A had the highest top speed among cars
- Model E had a top speed higher than three of the car models, so Model E had the second highest top speed among cars
- Model E had a top speed higher than all three of the motorbike models
- Model R had the lowest top speed among the motorbikes
- Model P had a top speed higher than that of model Q

II) Cost :

- Model B was costlier than model C, and model C was costlier than model D among cars
- Model C was costlier than motorbike model Q
- Model A was not the costliest among cars
- Model E was costlier than model D and there was no car model whose cost lay in between them
- Model P was costlier than model Q which was costlier than model R

Thus, arranging the models in the descending order from left to right, under the following groups, we get :

- Cars (Top speed) : A, E, __, __, __ (B, C and E will occupy the last three spaces in any order)
- Motorbikes (Top speed) : P, Q, R
- Cars (Cost) : B, C, E, D (Since none of the different car models had the same cost, A could lie anywhere between B and C or C and E, or after D)
- Motorbikes (Cost) : P, Q, R
- Also regarding cost, model C > model Q (point II b). Hence, we can also conclude that regarding cost, B > Q, B > R and C > R

We can see from point (3) that arranging the models in the descending order from left to right, under Cars (Cost) : B, C, E, D (A could lie anywhere between B and C or C and E, or after D)

Hence, irrespective of the position where A lies, model D of BMW cars would not occupy exactly the middle position if all the BMW car models present at the OSL Prestige Motorrad were arranged as per their cost

31. B

We know that :

Arranging the models in the descending order from left to right, under the following groups, we get :

- 1) Cars (Top speed) : A, E, __, __, __ (B, C and E will occupy the last three spaces in any order)
- 2) Motorbikes (Top speed) : P, Q, R
- 3) Cars (Cost) : B, C, E, D (Since none of the different car models had the same cost, A could lie anywhere between B and C or C and E, or after D)
- 4) Motorbikes (Cost) : P, Q, R
- 5) Also regarding cost, model C > model Q (point II b). Hence, we can also conclude that regarding cost, B > Q, B > R and C > R

If car model A was not costlier than car model E, then the arrangement in the descending order from left to right, under the head of Cars (Cost) would be : B, C, E, D, A

Also motorbike model P was less costly than car model A

Thus, the arrangement of the car and motorbike models in the descending order from left to right, under the head of Cost would be : B, C, E, D, A, P, Q, R

Hence, the least costly of all the car and motorbike models present at the OSL Prestige Motorrad as per the given information was R

32. C

We know that :

Arranging the models in the descending order from left to right, under the following groups, we get :

- 1) Cars (Top speed) : A, E, __, __, __ (B, C and E will occupy the last three spaces in any order)
- 2) Motorbikes (Top speed) : P, Q, R
- 3) Cars (Cost) : B, C, E, D (Since none of the different car models had the same cost, A could lie anywhere between B and C or C and E, or after D)
- 4) Motorbikes (Cost) : P, Q, R
- 5) Also regarding cost, model C > model Q (point II b). Hence, we can also conclude that regarding cost, B > Q, B > R and C > R

If car models B and C had higher top speeds than car model D, then the arrangement of the car models in the descending order from left to right, under the group of Cars (Top speed) would be : A, E, B/C, C/B, D

Hence, the car model present at the OSL Prestige Motorrad with the lowest top speed would be model D

33. D

We know that :

Arranging the models in the descending order from left to right, under the following groups, we get :

- 1) Cars (Top speed) : A, E, __, __, __ (B, C and E will occupy the last three spaces in any order)
- 2) Motorbikes (Top speed) : P, Q, R
- 3) Cars (Cost) : B, C, E, D (Since none of the different car models had the same cost, A could lie anywhere between B and C or C and E, or after D)
- 4) Motorbikes (Cost) : P, Q, R

5) Also regarding cost, model C > model Q (point II b). Hence, we can also conclude that regarding cost, B > Q, B > R and C > R

From the above we can conclude that of all the BMW motorbike models present at the OSL Prestige Motorrad, model P was the costliest as well as the model with the highest top speed, and model R with the lowest top speed was the least costly motorbike model

Hence, both options A and C are true.

34. D

We know that :

Arranging the models in the descending order from left to right, under the following groups, we get :

- 1) Cars (Top speed) : A, E, __, __, __ (B, C and E will occupy the last three spaces in any order)
- 2) Motorbikes (Top speed) : P, Q, R
- 3) Cars (Cost) : B, C, E, D (Since none of the different car models had the same cost, A could lie anywhere between B and C or C and E, or after D)
- 4) Motorbikes (Cost) : P, Q, R
- 5) Also regarding cost, model C > model Q (point II b). Hence, we can also conclude that regarding cost, B > Q, B > R and C > R

If motorbike model P was more costly than car model E, apart from concluding that model P was also costlier than car model D, we cannot comment anything about the order of the other models, and hence the relationship in the order of model P with that of the other models.

Hence cannot be determined

35. A

From the two tables, the following could be concluded :

In 1991:

- a) Since Agassi never played with Graf, Agassi's partner in both the wins was Navratilova
- b) Hence Connors and Borg both had Graf as their partner in their 2 wins each

In 1992 :

- a) Since Sabatini did not have the opportunity to play with Borg, Sabatini's partner in both her wins was Edberg
- b) Hence in his four Mixed-Doubles wins Borg had Navratilova and Chris Evert as his partner in two wins each

In 1994 :

- a) Since McEnroe did not team up with anybody else but Navratilova among the top four women seeds, both his wins could only be with Navratilova as his partner.
- b) Hence Connors paired up with Sabatini in both his wins.

In 1993 :

- a) Connors had paired up with only two women players in all five years, one of them being Graf in 1991 and the other Sabatini in 1994. Hence two of his four wins had to be with Graf, and the other two with Sabatini
- b) Hence McEnroe, Edberg, and Agassi all won their two Grand Slams each with the Others

In 1995 :

- a) Connors could only play with Graf for his two wins
- b) Borg did not team up with women players below the top four seed. Hence his two wins had to come from pairing up with Chris Evert .
- c) Hence Edberg and Agassi had teamed up with the Others for their two wins each.

Hence, in 1993, the four Mixed-doubles Grand-Slam wins of Connors were with Graf and Sabatini

36. B

From the conclusions that could be drawn from the two tables, we can say that Chris Evert's four wins in the five years had been with Borg only

37.C

From the conclusions that could be drawn from the two tables, we can say that Edberg's wins had been with Sabatini and Others

38. D

From the conclusions that could be drawn from the two tables, we can say that both the wins of McEnroe in 1993 had been with Others only

39. D

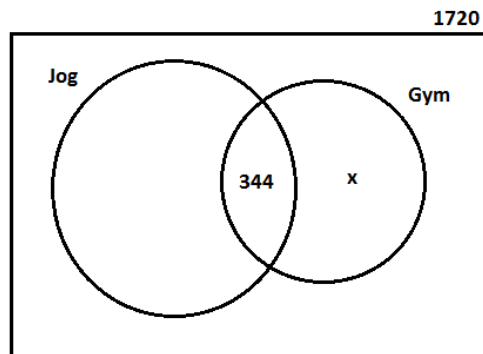
Below are the total number of wins by all pairs formed from 1991 to 1995 :

- a) Agassi and Navratilova – 2 wins
- b) Agassi and Others – 4 wins
- c) Borg and Graf – 2 wins
- d) Borg and Chris Evert – 4 wins
- e) Borg and Navratilova – 2 wins
- f) Edberg and Sabatini – 2 wins
- g) Edberg and Others – 4 wins
- h) McEnroe and Navratilova – 2 wins
- i) McEnroe and Others – 2 wins
- j) Connors and Sabatini – 4 wins
- k) Connors and Graf – 6 wins

Hence, the Connors and Graf pair had won the maximum Mixed-Doubles Grand Slams in the five years (1991 to 1995) taken together

40. 301

Out of the 1720 participants, those who prefer to Jog and those who prefer the Gym to keep fit can be expressed as the Venn Diagram below :

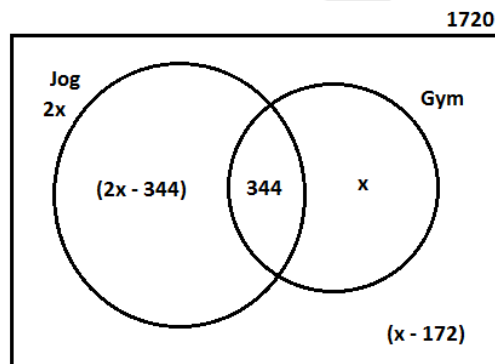


Let the number of participants who prefer only the Gym to keep fit be x .

Hence, the number of participants who prefer to Jog to keep fit will be $2x$

Hence the number of participants who prefer only to Jog to keep fit will be $(2x - 344)$

Hence, the number of participants who preferred neither to Jog nor the Gym to keep fit = $(2x - 344)/2 = (x - 172)$



Hence,

$$2x + x + (x - 172) = 1720$$

$$\text{or, } 4x = 1720 + 172$$

$$\text{or, } 4x = 1892$$

$$\text{or, } x = 473$$

Thus,

The number of participants who prefer only the Gym to keep fit = 473

The number of participants who prefer to Jog to keep fit = 946

The number of participants who prefer only to Jog to keep fit = $(946 - 344) = 602$

The number of participants who preferred neither to Jog nor the Gym to keep fit = $(473 - 172) = 301$

The number of participants who prefer the Gym to keep fit = $(473 + 344) = 817$

Hence the final Venn Diagram is :



From the Venn Diagram, it can be seen that the number of participants at the 44th Chess Olympiad held in Mamallapuram who preferred neither an early morning jog nor the gym to keep fit = 301

41. 602

We know that the final Venn Diagram is :



Hence, the number of participants at the 44th Chess Olympiad who preferred only to jog to keep fit = 602

42. 817

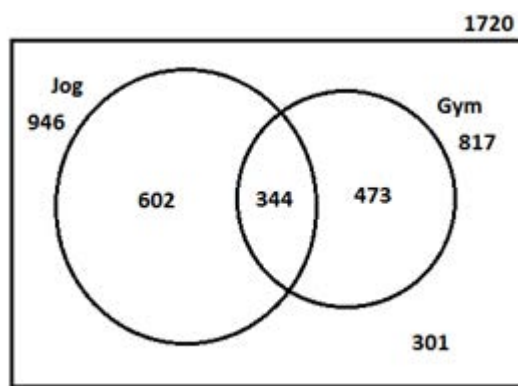
We know that the final Venn Diagram is :



Hence, the number of participants at the 44th Chess Olympiad who preferred the gym to keep fit = 817

43. 1419

We know that the final Venn Diagram is :

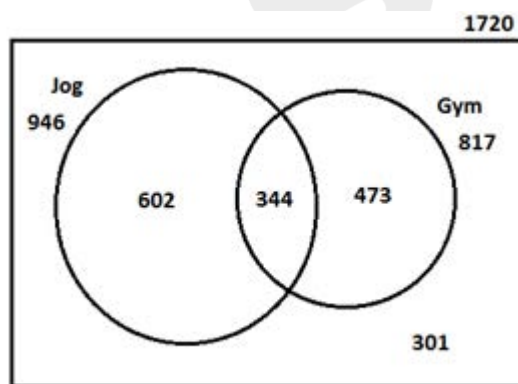


Preferring at least one among an early morning jog or the gym to keep fit implies that excepting the case of preferring none among an early morning jog and the gym, all other cases are included.

Hence number of participants who prefer at least one among an early morning jog or the gym to keep fit
 $= (1720 - 301) = 1419$

44. 1376

We know that the final Venn Diagram is :



Preferring at most one among an early morning jog or the gym to keep fit implies that excepting the case of preferring both an early morning jog and the gym, all other cases are included.

Hence number of participants who prefer at most one among an early morning jog or the gym to keep fit
 $= (1720 - 344) = 1376$

Section - Quantitative Aptitude

45.A

Since a^2 , b^2 , and c^2 are in GP, then

$$b^4 = a^2 c^2$$

$$\log b^4 = \log a^2 c^2$$

$$\Rightarrow 4 \log b = 2 \log c + 2 \log a$$

$$\Rightarrow 2 \log b + 2 \log b = 2 \log c + 2 \log a$$

$$\Rightarrow \log b + \log b = \log c + \log a$$

$$\Rightarrow \log c - \log b = \log b - \log a$$

So, $\log a$, $\log b$, $\log c$ are in AP.

46. 8

Let 1 man did 1 unit work in a day, then total work to be completed = $5 \times 16 = 80$ units.

Also 5 men and 10 boys finish the same work in 10 days. So,

$(5M+10B) \times 10 = 80$, where M and B represents 1 day work of 1 man and 1 boy respectively.

So,

$$(5 \times 1 + 10B) \times 10 = 80,$$

$$\Rightarrow B = 0.3$$

Therefore, $80 = 2x(5M + 10B) + 2x(7M + 10B) + D \times (9M + 10B)$

$$\Rightarrow 80 = 2x(5 + 3) + 2x(7 + 3) + D \times (9 + 3)$$

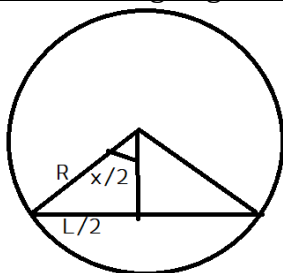
$$\Rightarrow D = 3.66$$

$$\text{Total time} = 2 + 2 + 3.66 = 8 \text{ (Approx)}$$

47. D

Let radius of circle = R and length of chord = L

Chord making angle of x°



$$R = L / 2 \sin (x/2)$$

If L is constant then $R_1 : R_2 = \sin (x_2/2) : \sin (x_1/2)$

For two circles of radius R_1 and R_2 ; Ratio of areas

$$A_1 : A_2 = (R_1/R_2)^2 = (\sin (x_2/2) : \sin (x_1/2))^2 = (\sin 60 : \sin 30)^2 = 3 : 1$$

48. 10

Let total articles be 30 and Cost Price per article be Rs 100.

Total Cost Price = Rs $30 \times 100 = \text{Rs } 3000$

10 articles be sold at the rate of Rs 100

10 articles be sold at the rate of Rs 170 (70% more than the CP)

Total Selling Price = Rs $10 \times 100 + \text{Rs } 10 \times 170 = \text{Rs } 2700$

Total Cost Price = Rs $100 \times 30 = \text{Rs } 3000$

$$\text{Loss \%} = (300/3000) \times 100 = 10\%$$

49. C

Since α and β are zeroes of $x^2 - \sqrt{5}x - 5 = 0$;

$$\alpha + \beta = \sqrt{5}$$

$$\text{and } \alpha\beta = -5$$

Also

$$\alpha^2 + \beta^2 = (\alpha + \beta)^2 - 2\alpha\beta$$

$$\text{So, } \alpha^2 + \beta^2 = (\sqrt{5})^2 - 2x(-5) = 15$$

$$\text{And, } (\alpha - \beta)^2 = \alpha^2 + \beta^2 - 2\alpha\beta = 15 + 10 = 25$$

So, $\alpha - \beta = 5$

Now, $\log_{9/5}^{(\alpha^2+\beta^2)} - \log_{9/5}^{(\alpha^2-\beta^2)} = \log_{9/5}^{(\alpha^2+\beta^2)} - \log_{9/5}^{(\alpha+\beta)(\alpha-\beta)} = \log_{9/5}^{15} - \log_{9/5}^{(\sqrt{5})(5)} = \log_{9/5}^{3/\sqrt{5}} = \frac{1}{2}$.

50. C

Max value of N:

5% of 100 + N% of (320-200) = 20

So, N = 75/6% < 13%

Min value of N:

5% of 100 + N% of (350-200) = 20

So, N = 10%

51. D

Year	I-phone	I-Pad	Total
2016	100x	100y	100x + 100y
2017	91x	106y	91x + 106y

ATQ,

$91x + 106y = 102\% \text{ of } (100x + 100y)$

On solving, x: y = 4: 11

So,

(Revenue of the company from the sales of I-pad in 2016): (Revenue from sales of I-phones in 2017) = 100y: 91x = 275: 91

52. A

Local train took 30 minutes to cover distance of 20 Kms and then stop for 1 minute and again cover 20 kms and stops for 2 minutes and so on.

So, Distance travelled by local train in 3hrs:

Time (min)	30	1	30	2	30	3	30	4	30	5	15
Distance (Kms)	20	0	20	0	20	0	20	0	20	0	10

Total distance covered by local train = 110 KM

Superfast train took 45 minutes to cover distance of 60 Kms and then stop for 4 minute and so on.

So, Distance travelled by superfast train in 3hrs:

Time (min)	45	4	45	4	45	4	33
Distance (Kms)	60	0	60	0	60	0	44

Total distance covered by Superfast train = 224 KM

So, ratio will be 110: 224 i.e. 55: 11

53. 364

There are only 12 face cards.

B_1 and B_2 are two black kings; R_1 and R_2 are two red kings.

Case 1: B_1 and B_2 are selected and also R_1 and R_2 can not be selected together.

If R_1 is selected and R_2 is not selected then remaining 3 cards must be chosen from rest of 8 cards i.e. ${}^8C_3$ ways.

If R_2 is selected and R_1 is not selected then remaining 3 cards must be chosen from rest of 8 cards i.e. ${}^8C_3$ ways.

If R_1 and R_2 both are not selected then remaining 4 cards must be chosen from rest of 8 cards i.e. ${}^8C_4$ ways

$$\text{Total ways} = {}^8C_3 + {}^8C_3 + {}^8C_4 = 56 + 56 + 70 = 182$$

Case 2: R_1 and R_2 are selected and also B_1 and B_2 cannot be selected together.

If B_1 is selected and B_2 is not selected then remaining 3 cards must be chosen from rest of 8 cards i.e. ${}^8C_3$ ways.

If B_2 is selected and B_1 is not selected then remaining 3 cards must be chosen from rest of 8 cards i.e. ${}^8C_3$ ways.

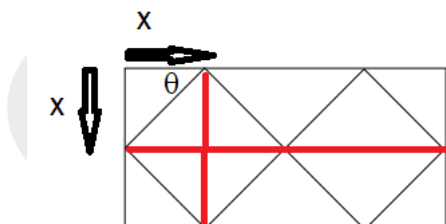
If B_1 and B_2 both are not selected then remaining 4 cards must be chosen from rest of 8 cards i.e. ${}^8C_4$ ways

$$\text{Total ways} = {}^8C_3 + {}^8C_3 + {}^8C_4 = 56 + 56 + 70 = 182$$

Answer is $182 + 182 = 364$ ways

54. C

Dimensions are as below



Let Side of square is y , then $y^2 = x^2 + x^2$

Therefore $y = x\sqrt{2}$

$$\sin \theta = x / x\sqrt{2} = 1/\sqrt{2}$$

55. C

The average of eleven consecutive even numbers will be its 6th term.

So, 6th even number from the starting = $y + 10$

So, $y + 10 = x$

Average of 31 consecutive numbers will be its 16th term.

So, 11th term from last = $x - 16$

Average = $x - 16 = y + 10 - 16 = y - 6$

56. 243

Let Principal amount be Rs P

So, difference between simple interest for two years = $P \times 5 \times 2 / 100 = P/10$

Since difference between interest lies between \$100 and \$125, P lies between \$1000 and \$1250.

Now, calculate difference between amount for these two principles:

If $P = \$1000$; difference = $1000(23/20)^2 - 1000(11/10)^2 = \$112.5$

If $P = \$1250$; difference = $1250(23/20)^2 - 1250(11/10)^2 = \$330.625$

57. 25

Since number is divisible by 18, it should be divisible by both 2 and 9. Therefore, n can take any value of 0, 2, 4, 6, 8.

n	Sum of digits (14+n+m)	M	$(m-n)^2$
0	14+ m	4	16
2	16+ m	2	0
4	18+ m	0/9	16/25
6	20+ m	7	1
8	22+ m	5	9

So, maximum value will be 25.

58. D

Let total voters be 100.

Communists = 40 and Leftists = 60

A get 45% of 40 and 30% of 60 which is equal to 36.

So, B must get 64 votes.

Clearly N lies between 50% and 60%.

59. A

$f(g(x)) = 3(x+2)/x^2$

For minima and maxima differentiate above function and put the result equal to 0 to get the value of x.

We get, $d\{3(x+2)/x^2\}/dx = (3x+6)(-2)/x^3 + 3/x^2 = 0$

So, $x = -4$

And

$f(g(x)) = 3(x+2)/x^2 = 3(-4+2)/16$

60. A

Total outcomes = ${}^{25}C_4 = 12650$

Favourable Outcomes = 2 red and 2 black + 3 red and 1 black + 4 red

$$= {}^{10}C_2 \times {}^{15}C_2 + {}^{15}C_3 \times {}^{10}C_1 + {}^{15}C_4 = 4725 + 4559 + 1365 = 10649$$

$$\text{Probability} = 10649/12650 = 0.84$$

61. C

He gain 37.5% means he gain 3 on 8.

$$\frac{\text{Final SP}}{\text{Initial CP}} = \frac{\text{SP}}{\text{CP}} \times \frac{\text{Selling Quantity}}{\text{Purchased Quantity}}$$

$$\text{SP: CP} = 21: 20$$

$$\text{Final SP: Initial CP} = 11: 8$$

$$\text{So, } \frac{11}{8} = \frac{21}{20} \times \frac{\text{Selling Quantity}}{\text{Purchased Quantity}}$$

$$\frac{55}{42} = \frac{\text{Selling Quantity}}{\text{Purchased Quantity}}$$

He mixes 13 litre in 42 litres of pure milk.

62. D

$$y = 2/f(x)$$

$$f(y) = y/(y+1)$$

$$\text{Calculate } y = 2/f(x) = 2(x+1)/x$$

$$\text{Similarly, } y+1 = 2(x+1)/x + 1 = (3x+2)/x$$

$$\text{So, } f(y) = (2x+2)/(3x+2)$$

$$x : f(y) = x(3x+1) : (2x+2)$$

63. 2702

$$(7n^4 + 6n^3 + 6n + 7)/n = 7n^3 + 6n^2 + 6 + 7/n$$

We need to check $7/n$ only as the other terms are integers

n should be equal to 7 to get the minimum integral value.

$$\text{So, Min}((7n^4 + 6n^3 + 6n + 7)/n) = 7 \times 7^3 + 6 \times 7^2 + 6 + 1 = 2702.$$

64. C

$$PA \times PB = PT^2$$

$$x(7+x) = 12^2$$

$$\Rightarrow 7x + x^2 = 144$$

On solving, $x = 9$

$$PT = 12$$

$$PB = 16$$

Using Pythagoras theorem

$$TB^2 = PB^2 - PT^2$$

$$TB^2 = 16^2 - 12^2 = 256 - 144 = 112$$

$$TB = 4\sqrt{7}$$

$$\tan \angle TPB = TB/TP = 4\sqrt{7}/12 = \sqrt{7}/3$$

65. 900

Volume of conical bay = $(1/3) \times \pi r^2 h$ = width of the river x depth of the river x speed of the river x time

$$\Rightarrow (1/3) \times (22/7) r^2 7 = 3 \times 220/1000 \times 10 \times 40$$

$$\Rightarrow r = 6 \text{ Km}$$

$$\text{Volume of sphere} = 4/3 \times (22/7) \times 6^3 = 905.14 \text{ KM}^3$$

66. C

Area of triangle with the three points = $1/2 |y_1(x_2 - x_3) + y_2(x_3 - x_1) + y_3(x_1 - x_2)| \text{sq. unit}$

$$= 1/2 |(-2)(-4+2) - 6(-2+6) + 5(-6+4)|$$

$$= 1/2 |4 - 24 - 10| = 15 \text{ sq unit}$$

$$\text{Base of triangle} = \sqrt{[(-2+4)^2 + (5+6)^2]} = 5\sqrt{5}$$

$$\text{Area} = 1/2 \text{ base} \times \text{height}$$

$$15 = 1/2 \times 5\sqrt{5} \times \text{height}$$

$$\text{So, height} = 6/\sqrt{5}$$

CAREERS360

MOCK TEST – 4

Section - 1 - Verbal Ability & Reading Comprehension

Questions 1 to 4: Read the passage given below and answer the questions that follow.

Passage-1

Look around you. On the train platform, at the bus stop, in the carpool lane: these days someone there is probably faking it, maintaining a job routine without having a job to go to. The Wall Street type in suspenders, with his bulging briefcase; the woman in pearls, thumbing her BlackBerry; the builder in his work boots and tool belt - they could all be headed for the same coffee shop, or bar, for the day. "I have a new client, a laid-off lawyer, who's commuting in every day - to his Starbucks," said Robert C. Chope, a professor of counseling at San Francisco State University and president of the employment division of the American Counseling Association. "He gets dressed up, meets with colleagues, networks; he calls it his Western White House. I have encouraged him to keep his routine."

The fine art of keeping up appearances may seem shallow and deceitful, the very embodiment of denial. But many psychologists beg to differ. To the extent that it sustains good habits and reflects personal pride, they say, this kind of play-acting can be an extremely effective social strategy, especially in uncertain times.

"If showing pride in these kinds of situations was always maladaptive, then why would people do it so often?" said David DeSteno, a psychologist at Northeastern University in Boston. "But people do, of course, and we are finding that pride is centrally important not just for surviving physical danger but for thriving in difficult social circumstances, in ways that are not at all obvious."

For most of its existence, the field of psychology ignored pride as a fundamental social emotion. It was thought to be too marginal, too individually variable, compared with basic visceral expressions of fear, disgust, sadness or joy. Moreover, it can mean different things in different cultures. But recent research by Jessica L. Tracy of the University of British Columbia and Richard W. Robins of the University of California, Davis, has shown that the expressions associated with pride in Western society - most commonly a slight smile and head tilt, with hands on the hips or raised high - are nearly identical across cultures. Children first experience pride about age 2 ½, studies suggest, and recognize it by age 4.

It's not a simple matter of imitation, either. In a 2008 study, Dr. Tracy and David Matsumoto, a psychologist at San Francisco State, analyzed spontaneous responses to winning or losing a judo match during the 2004 Olympic and Paralympic games. They found that expressions of pride after a victory were similar for athletes from 37 nations, including for 53 blind competitors, many of them blind from birth. "It's a self-conscious emotion, reflecting how you feel about yourself, and it has this important social component," Dr. Tracy said. "It's the strongest status signal we know of among the emotions; stronger than a happy expression, contentment, anything."

Q.1. The author of the passage is trying to:

- A. defend the essential need of pride in majority social settings

- B. highlight and add to the myths about pride
- C. change the existing portrayal of pride
- D. showcase the need for pride in winning

Q. 2. It can be inferred from the passage that:

- A. pride is what helps one get through tough times.
- B. pride has an innate and natural component to it.
- C. pride cannot be derived from imitation.
- D. pride is something that is limited to adults.

Q. 3. Pride has been ignored as a social emotion by psychology because:

- A. it does not quite seem to carry the social weight as some of the other emotions do.
- B. it was not seen as something important for surviving physical danger and was not as important as our basic human instincts of fear, disgust, sadness or joy.
- C. it was not seen as something which was basic enough to be analyzed in detail.
- D. it was thought to be trivial in comparison to other inherent human instincts and was seen as something limited to individuals.

Q.4. The example of the lawyer in the first paragraph is provided to highlight which of the following?

- A. the need for social recognition by one's peers
- B. the need to hide something bad by pretending that nothing is wrong
- C. the need to maintain a feeling of self-respect and personal worth.
- D. the need to show that one can be successful even in adverse situations

Directions for Questions 5 to 8: Read the passage given below and answer the questions that follow.

Passage-2

Have you heard? Someday we will live in a perfect society ruled by an omnipotent artificial intelligence, provably and utterly beneficial to mankind. That is, if we don't all die once the machines gain consciousness, take over, and kill us. Wait, actually, they are going to take some of us with them, and we will transcend to another plane of existence. Or at least clones of us will. Or at least clones of us that are not being perpetually tortured for our current sins.

These are all outcomes that futurists of various stripes currently believe. A futurist is a person who spends a serious amount of time—either paid or unpaid—forming theories about society's future. And although it can be fun to mock them for their silly sounding and overtly religious predictions, we should take futurists seriously. Because at the heart of the futurism movement lies money, influence, political power, and access to the algorithms that increasingly rule our private, political, and professional lives.

Google, IBM, Ford, and the Department of Defense all employ futurists. And I am myself a futurist. But I have noticed deep divisions and disagreements within the field, which has led me, below, to chart the four basic "types" of futurists. My hope is that by better understanding the motivations and backgrounds of the people involved—**however** unscientifically—we can better prepare ourselves for the upcoming political struggle over whose narrative of the future we should fight for: tech oligarchs that want to own flying cars and live forever, or gig economy workers that want to someday have affordable health care.

With that in mind, let me introduce two dimensions of futurism, represented by axes. That is to say, two ways to measure and plot futurists on a graph, which we can then examine more closely.

The first measurement of a futurist is the extent to which he or she believes in a singularity. Broadly speaking a singularity is a moment where technology gets so much better, at such an exponentially increasing rate, that it achieves a fundamental and meaningful technological shift of existence, transcending its original purpose and even nature. In many singularity myths the computer either becomes self-aware and intelligent, possibly in a good way but sometimes in a destructive or even vindictive way. In others humans are connected to machines and together become something new. The larger point is that some futurists believe fervently in a singularity, while others do not.

On our second axis, let's measure the extent to which a given futurist is worried when they theorize about the future. Are they excited or scared? Cautious or jubilant? The choices futurists make are often driven by their emotions. Utopianists generally focus on all the good that technology can do; they find hope in cool gadgets and the newest AI helpers. Dystopianists are by definition focused on the harm; they consequently think about different aspects of technology altogether. The kinds of technologies these two groups consider are nearly disjoint, and even where they do intersect, the futurists' takes are diametrically opposed.

So, now that we have our two axes, we can build quadrants and consider the group of futurists in each one. Their differences shed light on what their values are, who their audiences are, and what product they are peddling.

Q.5. The purpose of the first paragraph of the passage is:

- A. to outline a hypothesis for a given future event
- B. to enumerate possible consequences, though by a group of people, for the future
- C. to showcase the need for urgent action to avoid possible outcomes in the future
- D. to enhance our understanding of the future by outlining possible events

Q.6. In the following paragraphs of the passage, the author, in all probability, will:

- A. chart the two remaining "types" of futurists
- B. chart the four basic "types" of futurists
- C. outline her definition of futurism
- D. all of the above

Q.7. A suitable title for the passage is:

- A. Know My Futurist
- B. Know Thy Futurist
- C. Know Thy Future
- D. Know My Future

Q.8. It can be discerned from the passage that:

- A. There is wide scale consonance within futurists.
- B. There is a major lack of application for the ideas represented by futurists.
- C. There is wide scale dissonance within futurists.
- D. All of the above

Directions for Questions 9 to 13: Read the passage given below and answer the questions that follow.

Passage-3

Take a guess: What is the single most important year of an individual's academic career? The answer isn't junior year of high school, or senior year of college. It's third grade. What makes success in third grade so significant? It's the year that students move from learning to read — decoding words using their knowledge of the alphabet — to reading to learn. The books children are expected to master are no longer simple primers but fact-filled texts on the solar system, Native Americans, the Civil War. Children who haven't made the leap to fast, fluent reading begin at this moment to fall behind, and for most of them the gap will continue to grow. So third grade constitutes a critical transition — a “pivot point,” in the words of Donald J. Hernandez, a professor of sociology at CUNY–Hunter College. A study Hernandez conducted found that third-graders who lack proficiency in reading are four times more likely to become high school dropouts.

Too often the story unfolds this way: struggles in third grade lead to the “fourth-grade slump,” as the reading-to-learn model comes to dominate instruction. While their more skilled classmates are amassing knowledge and learning new words from context, poor readers may begin to avoid reading out of frustration. A vicious cycle sets in: school assignments increasingly require background knowledge and familiarity with “book words” (literary, abstract and technical terms)— competencies that are themselves acquired through reading. Meanwhile, classes in science, social studies, history and even math come to rely more and more on textual analysis, so that struggling readers begin to fall behind in these subjects as well.

In operation here is what researchers call the “Matthew effect,” after the Bible verse found in the Gospel of Matthew: “For whosoever hath, to him shall be given, and he shall have more abundance: but whosoever hath not, from him shall be taken away even that he hath.” In other words, the academically rich get richer and the poor get poorer, as small differences in learning ability grow into large ones. But the Matthew effect has an important upside: well-timed interventions can reverse its direction, turning a vicious cycle into a virtuous one.

Recognizing the importance of this juncture, some states have been taking a hard line: third-graders who aren't reading at grade level don't get promoted to fourth grade. “Mandatory retention” bills have already passed in Arizona, Florida, Indiana and Oklahoma, and are being considered in Colorado, Iowa, New Mexico and Tennessee. But many education researchers say holding kids back isn't the answer. The ideal alternative: teachers and parents would collaborate on the creation of an individualized learning plan for each third-grader who needs help with reading — a plan that might involve specialized instruction, tutoring or summer school. Most important is taking action, researchers say, and not assuming that reading problems will work themselves out. It might seem scary that a single school year can foretell so much of a student's future. But maybe we should feel grateful instead — that research has given us a golden opportunity to both build on what has already been accomplished and turn kids' academic lives around.

Q.9. All of the following are suitable titles for the passage except:

- A. Why Third Grade Is So Important
- B. The 'Matthew Effect' of learning
- C. How can learning be saved?
- D. The 'domino effect' of learning

Q.10. According to the information given in the passage:

- I. Even mathematics requires students to have the ability to have a certain proficiency in reading in order to comprehend specific terms.
- II. As a child progresses upwards in the grade-structure, he is required to be familiar with words and terms.
- III. It is impossible to reverse the outcomes in case the child stumbles in one of the early grades.

- A. I & II
- B. I & III
- C. II & III
- D. All of the above

Q11. The conclusion drawn by Hernandez with regards to high school dropouts (in the first paragraph of the passage) parallels which out of the following reasoning structures?

- A. There is no C that causes A and B to happen together at the same time.
- B. A and B happen parallel to C, therefore C causes A and B.
- C. A happens parallel to B, therefore A caused B.
- D. A happens because of B and B happens because of A.

Q12. The author of the passage will agree with the statement:

- A. Children who have made the leap to fluent reading will slump, while those who haven't will learn exponentially.
- B. Children who have made the leap to fluent learning will read exponentially, while those who haven't will slump
- C. Children who have made the leap to fluent reading will learn exponentially, while those who haven't will slump
- D. Children who have made the leap to fluent learning will slump, while those who haven't will read exponentially

Q.13. The author of the passage ends the passage on a note of:

- A. abject fear
- B. reserved optimism
- C. moderate apprehension
- D. considerable hope

Directions for Questions 14 to 16: Read the passage given below and answer the questions that follow.

Passage-4

Moral philosophers often prefer to conceive thought experiments, dilemmas and problem cases of single individuals who make one-shot decisions with well-defined short-term consequences. Morality is complex enough that such simplifications seem justifiable or even necessary for philosophical reflection.

If we are still far from consensus on which is the best moral theory or what makes actions right or wrong – or even if such aspects should be the central problem of moral philosophy – by considering simplified toy scenarios, then introducing group or long-term effects would make matters significantly worse. However, when it comes to actually changing human moral dispositions with the use of technology (i.e., moral enhancement), ignoring the essential fact that morality deals with group behaviour with long-ranging consequences can be extremely risky. Despite those risks, attempting to provide a full account of morality in order to conduct moral enhancement would be both simply impractical as well as arguably risky. We seem to be far away from such an account, yet there are pressing current moral failings, such as the inability for proper large-scale cooperation, which makes the solution to present global catastrophic risks, such as global warming or nuclear war, next to impossible. Sitting back and waiting for a complete theory of morality might be riskier than attempting to fix our moral failing using incomplete theories. We must, nevertheless, proceed with caution and an awareness of such incompleteness. Here I will present several severe risks from moral enhancement that arise from focusing on improving individual dispositions while ignoring emergent societal effects and point to tentative solutions to those risks. I deem those emergent risks fundamental problems both because they lie at the foundation of the theoretical framework guiding moral enhancement – moral philosophy – and because they seem, at the time, inescapable; my proposed solution will aim at increasing awareness of such problems instead of directly solving them.

Q.14. In the given context, the word 'dispositions' means:

- A. understanding
- B. proclivities
- C. rationality
- D. eccentricities

Q15. According to the author of the passage:

- A. Morality demands that we adopt a utilitarian point of view and ensure that we undertake such experiments that are run parallel to experiments carried out under the aegis of moral enhancement.
- B. Certain pressing issues make it imperative that we act on our current incomplete understanding of morality since the lack of action will cause greater damage.
- C. Moral enhancement is something that is barely understood and we would be fools if we stop our actions simply to further our understanding of such a nascent topic.
- D. Even though there are some matters which can be solved by moral enhancement, we need to be careful with respect to our approach and move forward when we have arrived at a certain minimum consensus on how to deal with certain moral issues.

Q.16. According to the information given in the passage, 'moral enhancement' refers to:

- A. Change in technology brought about the changing paradigms in human morality.
- B. Change in human moral choices brought about by the use of technology.
- C. Both A and B
- D. Neither A nor B

Directions for the Question: Identify the apt summary for the given paragraph. Enter the option number you deem as the correct answer.

17. Job offers for fresh management graduates in India are at a five-year low, official data show, a trend experts blame on a sluggish economy as well as a mismatch between the years-old curriculum and industry expectations. In 2016-17, just 47% of Master of Business Administration (MBA) graduates got placed on the campus, a dip of 4% over the previous year, marking a five-year low. At 12%, the drop was far sharper for postgraduate diploma holders.

- A. There are emerging tendencies in new job paths, and management is becoming less rewarding.
- B. A slow-growing economy is the primary cause of the poor placement rates, which also affects the number of job openings for recent management graduates.
- C. Graduates in the management field place less frequently than those in the engineering and medical fields.
- D. Due to two factors, there is a declining trend in the placements of management graduates.

Directions for the Question: Identify the apt summary for the given paragraph. Enter the option number you deem as the correct answer.

Q.18. An apparently devoted son, taking good care of his old, affluent parents may be motivated more by greed than true love. A government official holding a lucrative post may be practising honesty for two reasons. He may be a self-inspired, inherently principled individual who is honest simply because he ought to be. Or, he may be honest for fear of being caught and penalised. While the former act can be termed 'right', the latter, though right outwardly, cannot be tagged 'right'. It is only when an action comes from the heart with no thought of reward, that it can be called pure and selfless.

- A. One must do something right for the right reason and from the heart.
- B. Practising honesty always leads to right decisions.
- C. Instead of greed, love should be the reason for doing things.
- D. Pure and selfless actions lead to salvation.

Directions for the Question: Identify the apt summary for the given paragraph. Enter the option number you deem as the correct answer.

19. Given below is a short paragraph and a set of four options. Read the paragraph and select the best summary for the paragraph.

Squeezed between railway lines on the fringes of central Berlin, the 15-employee company is one of 500,000 German employers that take on young graduates each year for a thorough apprenticeship. These often lead to full-time jobs. This decades-old commitment of bosses and teenagers to the German vocational training system is widely regarded as the secret behind the country's relatively low youth unemployment rate, which was 7.9 per cent in May, two-thirds less than the European Union's average of 22.7 per cent unemployed under-25s, according to Eurostat. This is in part a cyclical phenomenon. Germany has so far powered through the eurozone crisis, with the EU's statistical agency putting its total seasonally adjusted jobless rate at 5.6 per cent. But it is also a structural one. Youth unemployment in Germany has hovered two to three points above total unemployment, while in France or Spain it has regularly run at two or three times the jobless rate.

- A. Germany has been able to weather the Eurozone crisis because of its lower total unemployment rate than the rest of Europe.
- B. The reason Germany has a lower youth unemployment rate than the rest of Europe is due to its robust apprenticeship system..

- C. Due to businesses like the 15-employee company on the outskirts of Central Berlin, Germany has weathered the Eurozone crisis with lower unemployment rates.
- D. In May, Germany's unemployment rate was about 10% lower than that of the rest of Europe, and this is both a cyclical and a structural problem.

Directions for the Question: The question below has a paragraph given with one sentence missing in at the end. From among the answer choices given, select the sentence that can fill the blank to form a coherent paragraph.

Q.20. Fanning herself in the midday heat, Mary Trifonopoulou sits patiently in the jobcentre and waits. It is not her first time here, and it will almost certainly not be her last. A qualified nurse with a big smile and cheerful demeanour, the 30-year-old lost her job in a children's hospital in October and has been looking for work ever since. For nursing jobs? "For anything." Meanwhile, she is living with her mother, surviving on €360 a month in unemployment benefits, and learning English as a last-resort exit strategy. _____.

- A. Life, she says simply, "is very hard".
- B. She says, "I wish I wasn't a nurse."
- C. Life is all about overcoming obstacles, she claims.
- D. This is how Greeks live their lives—by skillfully adjusting to their surroundings.

Chapter: Paracompletion

Directions for the Question: The question below has a paragraph given with one sentence missing in at the end. From among the answer choices given, select the sentence that can fill the blank to form a coherent paragraph.

Q.21. The transformation of energy into heat is among the most ubiquitous processes of physics. As cars drive down roads, trains roar along railways, planes cross the skies and industrial plants turn raw materials into refined products, energy gets turned into heat, which is the scientific word for energy stored in the disorganised motions of molecules at the microscopic level. As a plane flies from Paris to Boston, it burns fuel and thrusts hot gases into the air, generates lots of sound and stirs up contrails. These swirls of air give rise to swirls on smaller scales which in turn make smaller ones until the energy ultimately ends up lost in heat – the air is a little warmer than before, the molecules making it up moving about a little more vigorously. A similar process takes place when energy is used by the tiny electrical currents inside the microchips of computers, silently carrying out computations. Energy used always ends up as heat. (_____)

- A. The first law of thermodynamics simply states that the total quantity of energy never changes but is conserved.
- B. The energy initially stored in an aircraft's fuel, for example, can be changed into the energetic motion of the plane
- C. Decades ago, research by the IBM physicist Rolf Landauer showed that a computation involving even a single computing bit will release a certain minimum amount of heat to the environment.
- D. Turn on an electric heater, and energy initially held in electric currents gets turned into heat, which spreads into the air, walls and fabric of your house. The total energy remains the same, but it markedly changes form.

Directions for questions 22 to 24: In the following questions, rearrange the five sentences in order to form a meaningful paragraph.

TITA

Q.22.

1. The crisis “endangers the physical and mental wellbeing of present and future generations”, warned Kofi Annan, speaking in advance of the global nutrition summit in Milan on Saturday.
2. Donors at the World Bank’s Global Nutrition Summit have pledged an extra 640 million dollars to reduce the serious burden of malnutrition, which affects one in three people in the world.
3. “We need further urgent investments so that people, communities and nations can reach their full potential.”
4. At the summit, the World Bank has further pledged to increase its spending on nutrition to 1.7 billion dollars by 2020.

TITA

Q.23.

1. He has used it publicly about such people as Cher, John McCain, Rosie O’Donnell and Jeb Bush.
2. Right now, though, there is only one big loser in Trumpworld, and that loser is President Trump himself.
3. It is one of Donald Trump’s favourite and most sneering insults.
4. In Trumpworld, all these people have been dismissed in tweets as “losers”.

TITA

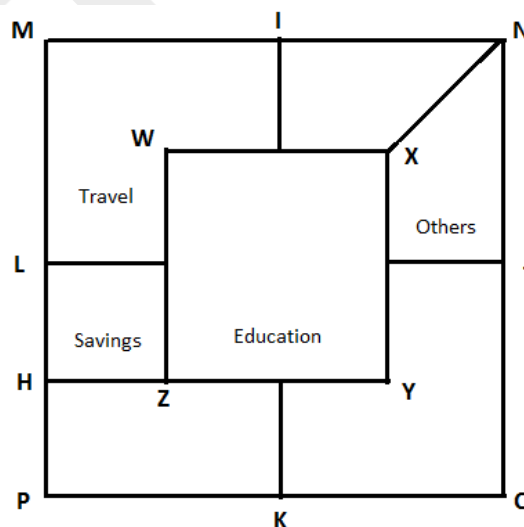
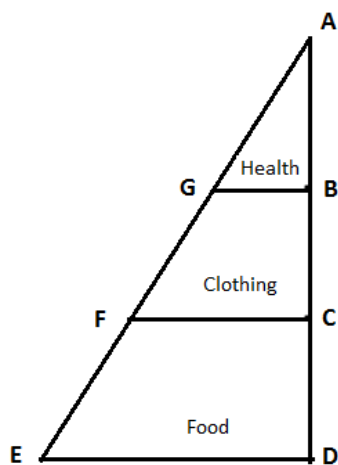
Q.24.

1. Puigdemont flew to Brussels earlier this week with a handful of his deposed ministers after Spanish authorities removed him and his cabinet from office for pushing ahead with the declaration despite repeated warnings that it was illegal.
2. Puigdemont was summoned to appear at Spain’s national court on Thursday to give evidence relating to possible charges of sedition, rebellion and misuse of public funds, but failed to appear.
3. In the latest twist in Spain’s worst political crisis in four decades, a national court judge on Friday issued a European arrest warrant for Carles Puigdemont in response to a request from state prosecutors.
4. Puigdemont’s Belgian lawyer has already said his client will fight extradition without seeking political asylum.

Section - 2 - Data Interpretation and Logical Reasoning

Directions for questions from 25 to 28 :

Refer to the data given below to answer the questions that follow



The above two figures show the savings and expenditure of the family of Banerjee's under various heads which is in the ratio of the area occupied by the heads.

In the left-handed figure, GB, FC and ED is perpendicular to AD. Also, $AB = BC = CD$, and $GB : FC : ED = 1 : 2 : 3$.

In the right handed figure, MNOP and WXYZ are squares (having the same centre) where WX is half of MN. I, J, K, and L are the mid points of MN, NO, OP and PM respectively.

The expenditure on Health is the same as the expenditure on Others.

Q 25 What is the ratio of expenditure on Food to that of Travel in the Banerjee family ?

- A) 5 : 2
- B) 5 : 6
- C) 2 : 3
- D) 9 : 19

Q 26 If the total income of the Banerjee family were divided among the seven different heads as shown in the above two figures, what percentage of the total income (rounded to the nearest integer) was spent on Food and Education ?

- A) 62%
- B) 53%
- C) 42%
- D) 33%

Q 27 (TITA)

If the total income of the Banerjee family was Rs 92,450, and was divided among the seven different heads as shown in the above two figures, what is the difference (in Rs) between the sum of the expenditures on Health and Clothing and the sum of the expenditures on Travel, Savings and Others ?

Q 28 (TITA)

In the right handed figure, the area representing Others was wrongly represented and was corrected to the original area which was three times of the area mistakenly shown. If a pie-chart were to be drawn representing all the seven different heads, what would be the value of the angle (in degrees, rounded to the first decimal place) representing the head of Food ?

Directions for questions from 29 to 34 :

Three schoolchildren, Amal, Bimal and Chintu, went to the 46th Kolkata International Book Fair with their parents on 26th February'23, a Sunday. All three of them bought books of a number from 18 to 24, with none buying the same number of books.

Next day, at school, when their friend Dipak asked them as to how many books they had bought, they replied in the following manner, making three statements each :

Amal : Chintu has bought 2 books less than me
Bimal is lying about the number of books he has bought.
Chintu has bought any number of books from 19 to 23

Bimal : I have bought 19 books
Chintu has bought 21 books
Amal has bought less than 19 books

Chintu : Amal has not bought the highest number of books
I have bought 24 books

Amal's third statement is a lie

It is also known that at any particular point of time, exactly one among Amal, Bimal and Chintu always tells the truth, one always lies and one always alternates between truth and lie, in any order.

From the data given above, answer the following questions :

Q. 29 Which of the following must be true ?

- A) Amal is the truth teller
- B) Bimal is the truth teller
- C) Chintu is the truth Teller
- D) None of the above

Q.30 If Bimal is the alternator, then which of the following are true ?

- A) Chintu has bought 21 books
- B) Chintu has bought 24 books
- C) Exactly one of (A) and (B)
- D) None of (A) and (B)

Q. 31 Chintu will have bought 24 books when

- I. Amal is the liar
- II. Bimal is the alternator
- III. Chintu is the truth teller

- A) Only I
- B) Only I and III
- C) I and either II or III only
- D) Chintu can never buy 24 books

Q.32 Bimal will not have bought 19 books when

- I. Amal is the liar
- II. Bimal is the liar
- III. Chintu is the liar

- A) Only II and III
- B) Only I and III
- C) I and either II or III only
- D) I, II and III

Q. 33 Which of the following statement/(s) are definitely false?

- A) Amal has bought 18 books
- B) Bimal's number of books bought cannot be definitely determined
- C) If Chintu buys 24 books, Amal too buys 24 books
- D) All the above statements are definitely false

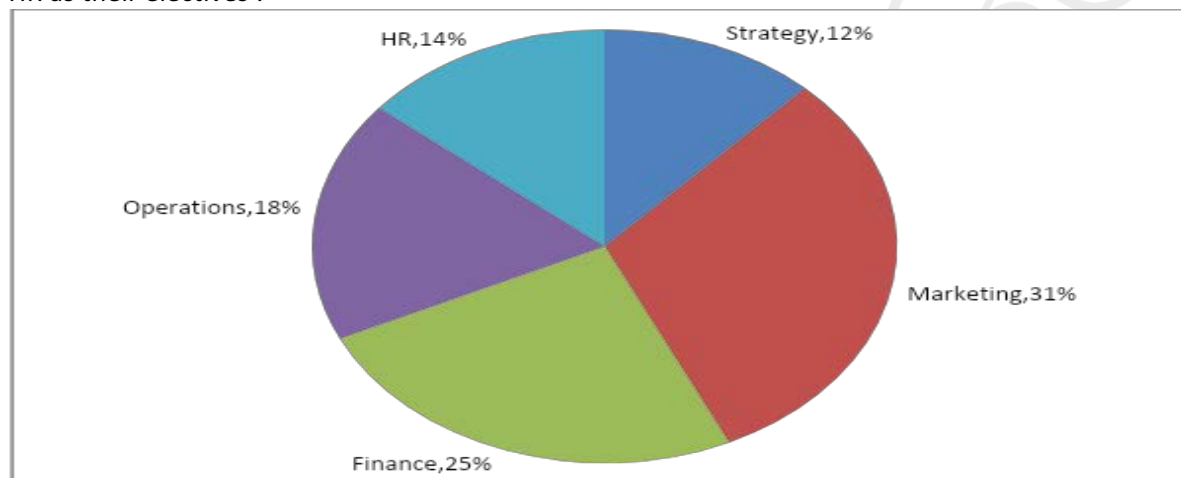
Q 34 If Amal is the truth teller, then which of the following is/are true ?

- I. Amal's has bought 23 books
- II. Bimal's second statement is true
- III. Chintu's third statement is false

- A) I, II and III
- B) Only I and III
- C) Only II and III
- D) Only I

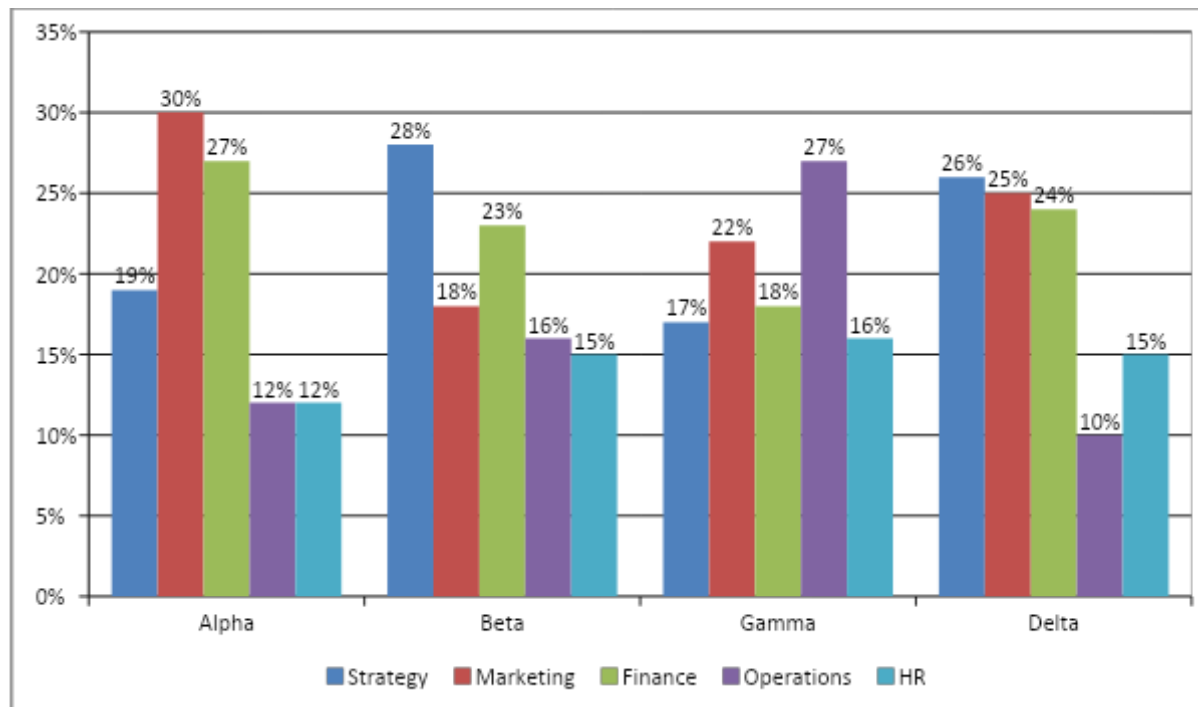
Directions for questions from 35 to 39 :

The time had arrived for the four sections (Alpha, Beta, Gamma and Delta) of the first year PGDBM students of IIM Calcutta in January 2023 to choose their elective subject. The following pie-chart shows the percentage of the first year PGDBM students who chose Strategy, Marketing, Finance, Operations and HR as their electives :



The following bar-chart shows the percentage of the first year PGDBM students of individual sections of Alpha, Beta, Gamma and Delta who chose Strategy, Marketing, Finance, Operations and HR as their electives :

CAREERS360



It was assumed that all the first year students chose an elective and it was only one out of the above five subjects.

Q 35 (TITA)

If 15.5% of the first year students of IIM Calcutta in January 2023 were from section Beta, what percent of students who chose Marketing as their elective subject were in section Beta of the first year?

Q 36 If 20% of the first year students of IIM Calcutta in January 2023 were from section Alpha and 30% from section Gamma, then the number of first year students who chose Finance as their elective subject from Alpha is _____ % of the number of first year students who chose Strategy as their elective subject from section Gamma. Fill in the blank.

- A) 123%
- B) 106%
- C) 76%
- D) 42%

Q 37 If 20% and 34.5% of the first year students of IIM Calcutta in January 2023 were from sections Alpha and Delta respectively, then find out the ratio of the percentage of students who chose HR as their elective subject from section Delta to the percentage of students who chose Operations as their elective subject from section Alpha ?

- A) 13 : 7
- B) 12 : 5
- C) 11 : 4
- D) 10 : 3

Q. 38 (TITA)

The number of first year PGDBM students in IIM Calcutta in January 2023 was 4000. Hence the number of first year students who chose Marketing as their elective subject from section Delta was more than the number who chose HR from section Alpha was ? (Data from the previous questions can be used if required)

Q.39 (TITA)

If 15%, 20%, 25% and 40% of the first year students of IIM Calcutta in January 2023 were from sections Alpha, Beta, Gamma and Delta respectively, and the number of students who chose Strategy as their elective subject from section Beta was 252, what was the total number of first year PGDBM students in IIM Calcutta in January 2023 ?

Directions for questions from 40 to 44 :

A word and number arrangement machine when given an input line of words and numbers rearranges them following a particular rule in each step. The following is an illustration of an input and its rearrangement :

Input : world 65 32 95 bottle forth 46 hollow 28 15 give comment
 Step I : 95 65 32 bottle forth 46 hollow 28 15 give comment world
 Step II : 15 95 65 32 bottle forth 46 28 give comment world hollow
 Step III : 65 15 95 32 bottle forth 46 28 comment world hollow give
 Step IV : 28 65 15 95 32 bottle 46 comment world hollow give forth
 Step V : 46 28 65 15 95 32 bottle world hollow give forth comment
 Step VI : 32 46 28 65 15 95 world hollow give forth comment bottle (final output)

Answer the following questions based on the following input in the above word and number arrangement machine :

‘fire 89 amend the 28 16 bullet crowd 35 53 here 68’

Q 40 Which of the following would be Step II ?

- A) 89 fire amend 28 16 bullet crowd 35 53 here 68 the
- B) 35 53 28 68 16 89 the here fire crowd bullet amend
- C) 16 89 amend fire 28 crowd bullet 35 53 68 the here
- D) None of these

Q 41 Which word/number would be at the seventh position from the left end in Step IV?

- A) bullet
- B) amend
- C) 53
- D) 35

Q 42 Which step number would be the following output :

‘53 28 68 16 89 amend 35 the here fire crowd bullet’ ?

- A) There will be no such step
- B) Step VI
- C) Step V
- D) Step IV

Q 43 Which is the step in which the elements '35 the here' are found in the same order ?

- A) Step VI
- B) Step V
- C) Step IV
- D) Step III

Q 44 Which element is exactly between '89' and 'bullet' in Step IV ?

- A) amend
- B) 28
- C) here
- D) fire

Section - 3 - Quantitative Aptitude

Q45. For two integers a and b ($a > b$), their geometric mean is 80% of their arithmetic mean. Which of the following cannot be sum of a and b?

- (a) 12 (b) 15 (c) 5 (d) 65

Q46. The average marks in non-academic subjects of a student are 32. The average marks in academic subjects of a student are 68. If the marks in non-academic subjects is increased by 10% and that of academic subjects is increased by 15%. If the ratio of academics and non-academics subjects is 1:4. Find the average percentage change in all subjects.

- (a) 12.5% (b) 10% (c) 11.7% (d) 10.5%

Q47. Data of a coaching institute is released, 38% students failed in SNAP and 52% students failed in CAT, 20% students failed in both the exams. If the number of students who cleared both exams is 60 more than the number of students who failed in both exams. The number of students in the coaching institute. (TITA)

Q48. A's income is more than that of B in the range of 20% to 30% and B's income is 25% less than that of C. If C's income is Rs 3000 more than that of A. Average incomes of the three can be

- (a) 160000 (b) 200000 (c) 205000 (d) 90000

Q49. A shopkeeper allows a discount of 10% on marked price but mistakenly he gave discount on the discounted price and sold the article for Rs 1980. Find the amount of loss he incurred in his expected income.

- (a) Rs 320 (b) Rs 20 (c) Rs 220 (d) Rs 244.44

Q50. Three amounts x, y and z ($z = 2x$) are such that y is the difference between CI and SI for two years on x and z respectively at 10% per annum. Then y is

- (a) 22% of z (b) 22% of x (c) 22% of x (d) 20% of x

Q51. A bucket of capacity 200 litres has completely filled by an inlet pipe with a hole at its bottom and took 25 minutes. But if the hole gets bigger and outlet flow rate is doubled then inlet pipe is not able to fill the bucket. Which of the following can be outlet flow rate in liters/min?

- (a) 6 (b) 8 (c) 12 (d) 5

Q52. The time taken by two motorists to meet travelling in opposite directions which are initially at a distance of 273 km is 2 hours 20 minutes. If the difference between their speeds is a prime value lies between 35 and 65. Which of the following cannot be the speed of slower motorist?

- (a) 32 kmph (b) 48 kmph (c) 38 kmph (d) 28 kmph

Q53. If three horses are tied at the three alternate corners of a regular pentagon of side 12m with the rope of 4m. Find the radius of a circle whose area is equal to the total grazed area by the three horses.

- (a) 3m (b) 5m (c) $\sqrt{15}$ m (d) $\sqrt{5}$ m.

Q54. Three metal cubes with edges 6 cm, 8 cm and 10 cm respectively are melted together and formed a solid frustum of a cone of height 2 cm. If the radius of top of frustum is 25 cm. This frustum is now shaped into a cylinder with the radius equal to smaller radius of frustum. Find the amount of metal wasted if 1 cubic cm of metal weighs 5 gms.

- (a) 11 Kg (b) 2.2 Kg (c) 1.35 Kg (d) 2.36 Kg

Q55. The area of square base of a prism is 36 cm^2 and its volume is 252 cm^3 . Find its total surface area.

- (a) 100 cm^2 (b) 180 cm^2 (c) 170 cm^2 (d) 270 cm^2

Q56. The points $(x-6, x+3)$, $(x-5, x+2)$, $(x-4, x+1)$ are collinear for

- (a) $x = 0$ (b) $x = 1$ (c) $x = -1/2$ (d) Any value of x

Q57. Given $f(t) = kt - 1$ and $g(t) = 2t + 3$. If $2(f \circ g) = 3(g \circ f)$, find k .

- (a) -1 (b) $-2/3$ (c) $2/3$ (d) $3/2$

Q58. If a team of six persons is to be selected from 6 men, 7 women and 8 children, then in how many ways can the selections be made to include at least one man, one child and one woman. (TITA)

Q59 The number of factors of the square of a natural number is 105. The number of factors of the cube of the same number is 'X'. Find the maximum possible value of 'X'.

- a) 208 b) 217 c) 157 d) 280

Q60. The co-ordinates of vertices A, B and C of a parallelogram ABCD are (6, 1), (8, 2) and (9, 4) respectively. If E is a point on DC such that $2DE = 3EC$, then what is the area (in sq. units) of triangle ADE?

- a) 1.00 b) 0.90 c) 0.45 d) 0.50

Q61. (TITA)

Aman being an active member enters in to a partnership with Bhawna. For this Aman keeps 24% of the profit or Rs 7500. Apart from this he has his share in the remaining profit. Aman prefers to keep Rs 7500. If Aman prefers to take 24% instead of Rs 7500, he would have got Rs 200 more. Find the total profit.

Q62. (TITA)

In how many ways can 37600 be written as a product of two factors which are relatively prime?

Q63. (TITA)

P and Q are two points in a plane, separated by distance x cm. How many lines in the plane are at a distance of y cm from point P and $(x-y)$ cm from Q?

Q64. (TITA) If each of p_1 , p_2 and $(p_1 - p_2)$ is a prime number less than 50, how many possible values can p_1 assume?

Q65. (TITA)

How many integral values of x satisfy the equation $x = |x - |36 - 3x||$?

Q66. Find the difference of sum of all possible numbers divisible by 7 and sum of all possible numbers divisible by 9 (Both are less than 300).

- (a) 2012 (b) 2624 (c) 769 (d) 1338

Answer Key - Mock Test 4

Section - Verbal Ability & Reading Comprehension

1-C, 2-B, 3-D, 4-C, 5-B, 6-B, 7-B, 8-C, 9-D, 10-A, 11-C, 12-C, 13-B, 14-B, 15-B, 16-B, 17-D, 18-A, 19-B, 20-A, 21-C, 22-2134, 23-3142, 24-3142

Section - Data Interpretation & Logical Reasoning

25 - A, 26-B, 27-2150, 28-110.2, 29-D, 30-C, 31-B, 32-A, 33-C, 34-A, 35-9%, 36-B, 37-C, 38-249, 39-4500, 40-D, 41-D, 42-C, 43-B, 44-A

Section - Quantitative Aptitude

45 - A, 46-C, 47-600, 48-D, 49-C, 50-B, 51-C, 52-B, 53-C, 54-D, 55-C, 56-D, 57-C, 58-274176, 59-D, 60-B, 61-32916, 62-4, 63-3, 64-6, 65-1, 66-D

Solutions - Mock Test 4

Section - Verbal Ability & Reading Comprehension

1. C

The author of the passage is trying to achieve something very simple in the passage: he is trying to change how we view pride as something negative to something which is positive and helps people. This sentiment is best reflected by option C.

Option A is too extreme (essential/majority) in its nature.

Option B is incorrect as no myths are mentioned.

Option D is incorrect as it only talks about the role of pride in winning.

2. B

Option B is correct. It can be derived from the lines: Children first experience pride about age 2 ½, studies suggest, and recognize it by age 4. It's not a simple matter of imitation, either... They found that expressions of pride after a victory were similar for athletes from 37 nations, including for 53 blind competitors, many of them blind from birth. "It's a self-conscious emotion, reflecting how you feel about yourself, and it has this important social component," Dr. Tracy said. "It's the strongest status signal we know of among the emotions; stronger than a happy expression, contentment, anything."

Option A is incorrect as pride is one of the things that help one get through; the passage does not say it is that thing that helps one get through.

Option C is factually incorrect. The first part of the paragraph explains how pride works by imitation.

Option D is again incorrect as the passage clearly mentions children possessing pride as well.

3. D

Option D can be derived from the lines: For most of its existence, the field of psychology ignored pride as a fundamental social emotion. It was thought to be too marginal, too individually variable, compared

with basic visceral expressions of fear, disgust, sadness or joy. Moreover, it can mean different things in different cultures.

Option A is ruled out as there is no mention of social weight.

Option B is ruled out as it merges two different contexts from the passage and changes the sentiment altogether.

Option C is ruled out as it is incomplete in nature. We see that option D actually explains the correct sentiment in a much better way.

4. C

Refer to the complete context: "I have a new client, a laid-off lawyer, who's commuting in every day - to his Starbucks," said Robert C. Chope, a professor of counseling at San Francisco State University and president of the employment division of the American Counseling Association. "He gets dressed up, meets with colleagues, networks; he calls it his Western White House. I have encouraged him to keep his routine." The fine art of keeping up appearances may seem shallow and deceitful, the very embodiment of denial. But many psychologists beg to differ. To the extent that it sustains good habits and reflects personal pride, they say, this kind of play-acting can be an extremely effective social strategy, especially in uncertain times... "If showing pride in these kinds of situations was always maladaptive, then why would people do it so often?" said David DeSteno, a psychologist at Northeastern University in Boston. "But people do, of course, and we are finding that pride is centrally important not just for surviving physical danger but for thriving in difficult social circumstances, in ways that are not at all obvious."

In this case, we can see that the person indulges in this activity to feel a sense of pride and this is what helps him survive. Pride here refers to the feeling of self-respect and personal worth. Hence, the correct answer is option C.

Remember, option B just highlights the fact that one needs to keep up appearances but does not highlight why the author has used this example. Option C is the answer to that question.

Options A and D are irrelevant here.

5. B

The first paragraph very simply lists down the possible outcomes (consequences) that futurists (group of people) think are possible in the future. Considering this, option B is the easy to identify answer option in the given case.

6. B

First, let's identify the purpose of the author of the passage: Google, IBM, Ford, and the Department of Defense all employ futurists. And I am myself a futurist. But I have noticed deep divisions and disagreements within the field, which has led me, below, to chart the four basic "types" of futurists.

Now, let's identify what the author has done in the subsequent paragraphs: With that in mind, let me introduce two dimensions of futurism, represented by axes. That is to say, two ways to measure and plot futurists on a graph, which we can then examine more closely.... So, now that we have our two axes, we can build quadrants and consider the group of futurists in each one. Their differences shed light on what their values are, who their audiences are, and what product they are peddling.

She has defined the axis of the graph. Now that the two axes have been defined, she will fill in the four types of people in the four quadrants. This makes option B the correct answer in the given case

7. B

The passage is about the types of futurists that belong to the world.

'Thy' translates to 'your' and option B becomes: Know your Futurist

The author of the passage is telling us about the futurists of the world and this makes option B the right answer in the given case.

8. C

Option B is incorrect. It states the opposite of what is given in the passage.

Consonance means: Agreement or compatibility between opinions or actions.

Dissonance means: A conflict of people's opinions, actions or characters.

We can see that option C is the clear answer in the given case.

9. D

Options A and B are direct derivations from the passage. Hence, these pose no issue at all.

Option D requires a little bit of consideration. Domino effect means 'The consequence of one event setting off a chain of similar events (like a falling domino causing a whole row of upended dominos to fall)'. This fits in perfectly with the given context where the author explains how learning issues in one class can lead to more learning issues down the line.

Option C, in the given context, is too generic in nature and hence, does not fit in the given context.

10. A

Statement I can be derived from the lines: Meanwhile, classes in science, social studies, history and even math come to rely more and more on textual analysis, so that struggling readers begin to fall behind in these subjects as well.

Statement II can be derived from the lines: A vicious cycle sets in: school assignments increasingly require background knowledge and familiarity with "book words" (literary, abstract and technical terms)—competencies that are themselves acquired through reading.

Statement III is incorrect. Refer to the lines: But the Matthew effect has an important upside: well-timed interventions can reverse its direction, turning a vicious cycle into a virtuous one.

11. C

This is a question based on the concept of co-relation and causation.

Co-relation implies two things happening together, implying some sort of relationship but not necessarily one which implies one is the cause of another.

Causation implies one thing leads to the other.

Often, these two are confused with one another and things happening together are assumed to be either the cause of one another. Something similar is happening here. This is a common reasoning structure you should be aware of.

Let us see what is it that is actually taking place: Lack proficiency in reading are more likely to be high school dropouts.

A: Lack proficiency in reading

B: High school dropouts

The author implies that when A and B are happening together, A is the cause of B (lack to read leads to high school dropouts). This makes option C the correct answer in the given case.

12. C

This is an easy question. Option C represents the main idea of the passage as well. In the given context, the author of the passage relates reading well to learning well. This makes option C the clear answer.

Option A reverses the impact of who will learn and who won't.

Options B and D (illogically) reverse the relationship direction between reading and learning (reading leads to learning and not the other way around).

13. B

Refer to the lines: It might seem scary that a single school year can foretell so much of a student's future. But maybe we should feel grateful instead — that research has given us a golden opportunity to both build on what has already been accomplished and turn kids' academic lives around.

The author of the passage clearly expresses a concern in this case but he is also hopeful and considers the research as a chance to solve a problem. Considering this, option B is the best answer in the given case.

Option A is too negative an answer option.

Option C is again negative in nature and misses out the optimism.

Option D is too positive and misses out on the note of caution implied by the author.

Option B is the balanced answer option in the given case.

14. B

The word 'dispositions' means: an inclination or tendency/a person's inherent qualities of mind and character.

The meanings of the answer options are as follows:

Understanding: the knowledge that somebody has about a particular subject or situation/ an informal agreement/ the ability to understand why people behave in a particular way and the willingness to forgive them for wrong

Proclivities: A natural inclination

Rationality: The state of having good sense and sound judgment

Eccentricities: Strange and unconventional behaviour

We can clearly see that option B is the best answer in the given case.

15. B

Option B is the correct answer here. Refer to the lines: We seem to be far away from such an account, yet there are pressing current moral failings, such as the inability for proper large-scale cooperation, which makes the solution to present global catastrophic risks, such as global warming or nuclear war, next to impossible. Sitting back and waiting for a complete theory of morality might be riskier than attempting to fix our moral failing using incomplete theories. We must, nevertheless, proceed with caution and an awareness of such incompleteness.

Option A finds no mention in the passage. There is no mention of any 'utilitarian point of view'.

Option C is not stated and the author expresses no such view.

Option D states the opposite of what is given in the lines above.

16. B

The answer can be derived from the lines: However, when it comes to actually changing human moral dispositions with the use of technology (i.e., moral enhancement), ignoring the essential fact that morality deals with group behaviour with long-ranging consequences can be extremely risky.

17. D

The paragraph is highlighting the trend of dip in placements due to sluggish economy and industry-academia mismatch. This makes option D the apt choice.

Option B is ruled out as it highlights only one problem.

Options A and C are irrelevant here.

18. A

The examples in the given paragraph point out the motivation and reason for doing things. And what constitutes a right thing based on the reasons. This makes option A the right choice.

19. B

Explanation

The central theme of the passage is low youth unemployment in Germany compared to Europe due to its apprenticeship system. These aspects are reflected in option B.

Option A is incorrect as it talks about unemployment and the passage talks about youth unemployment.

Options C and D are incorrect as they do not mention the apprenticeship system from the passage.

20. A

The key to finding the correct answer for this question is identifying the tone of the author. What is the general approach of the author? Well, he does adopt a negative stance and outlines the problems being faced by the person concerned. What is being referred to in the last part of the question is how hard life is and how tough it is on the person concerned. Options can be rejected on the basis of this: option B changes what is being talked about, option C shows a positive approach (not there in the passage) and option D introduces a new subject. We are left only with one generic statement that fits the bill: option A.

21. C

Option A changes the topic to the first law of thermodynamics.

Option B goes back to the aircraft but we are talking about microchips now. Why reverse the flow of sentiment?

Option D talks about change in form and in a different context.

Option C is the only one that talks about computers.

22. 2134

Statement 2 is the generic opening sentence in this case.

Statement 1 then takes forward the sentiment by providing the statement of Kofi Annan.

Statement 3 then completes this statement.

Statement 4 then concludes the given paragraph.

23. 3142

Statement 3 is the opening sentence that introduces the subject of Trump's favourite insult.

Then statements 1 and 4 form a pair that tell us for whom has Trump used this forward (the 'all these people' in statement 4 helps us identify that this statement follows statement 1).

Statement 2 then wraps up the given context by providing a contradictory viewpoint in the given case.

24. 3142

In this case, statements 3-1-4-2 form the set of connected statements. Statement 3 is the opening sentence that introduces the subject in this case. Statement 1 then mentions what Puigdemont has done and statement 4 links up with it (the common reference to Brussels and Belgium; Brussels is the capital of Belgium). Statement 2 then talks about the same topic.

Section - Data Interpretation & Logical Reasoning

25. A

Let the length of AD be $3x$ units.

Hence length of AB and AC are x and $2x$ units respectively.

Let the length of GB be y units.

Hence length of FC and ED are $2y$ and $3y$ units respectively

Area of triangles AGB, AFC and AED are $(x*y)/2$, $(2x*2y)/2$ and $(3x*3y)/2$ respectively, that is, $xy/2$, $2xy$ and $9xy/2$ respectively

Thus, Area under the head of Health = $xy/2$,

Area under the head of Clothing = $2xy - xy/2 = 3xy/2$

Area under the head of Food = $9xy/2 - 2xy = 5xy/2$

The expenditure on Health is the same as the expenditure on Others

Now, considering the geometrical pattern in the right handed figure,

Area under Others = $(1/2)*\text{Area under Travel}$

Area under Travel = $(3/4)*\text{Area under Education}$

Area under Savings = $(1/4)*\text{Area under Education}$

Thus, Area under the head of Others = $xy/2$

Area under the head of Travel = xy

Area under the head of Education = $4xy/3$

Area under the head of Savings = $xy/3$

Also, the total area representing the seven heads = $(xy/2 + 3xy/2 + 5xy/2 + xy/2 + xy + 4xy/3 + xy/3) = 11xy/2 + 5xy/3 = 43xy/6$

Hence, the ratio of expenditure on Food to that of Travel in the Banerjee family = $5xy/2 : xy = 5 : 2$

26. B

From the previous deductions, we know that in the Banerjee family :

Area under the head of Health = $xy/2$,

Area under the head of Clothing = $3xy/2$

Area under the head of Food = $5xy/2$

Area under the head of Others = $xy/2$

Area under the head of Travel = xy

Area under the head of Education = $4xy/3$

Area under the head of Savings = $xy/3$

Also, the total area representing the seven heads = $43xy/6$

Thus area under Food and Education = $5xy/2 + 4xy/3 = 23xy/6$

Hence, the percentage of the total income that was spent on Food and Education = $(23xy/6)*100 / (43xy/6) = (23*100)/43 = 53\%$

27. 2150

From the previous deductions, we know that in the Banerjee family :

Area under the head of Health = $xy/2$,
 Area under the head of Clothing = $3xy/2$
 Area under the head of Food = $5xy/2$
 Area under the head of Others = $xy/2$
 Area under the head of Travel = xy
 Area under the head of Education = $4xy/3$
 Area under the head of Savings = $xy/3$
 Also, the total area representing the seven heads = $43xy/6$

Sum of the area under Health and Clothing = $xy/2 + 3xy/2 = 2xy$
 Sum of the area under Travel, Savings and Others = $xy + xy/3 + xy/2 = 11xy/6$
 Difference in sum of the areas = $2xy - 11xy/6 = xy/6$

Now, the total income of the Banerjee family was Rs 92,450, and it was divided among the seven different heads as shown above.

So $43xy/6 = 92450$

or, $xy/6 = 92450/43 = 2150$

Hence, the difference between the sum of the expenditures on Health and Clothing and the sum of the expenditures on Travel, Savings and Others in the Banerjee family is Rs 2150

28. 110.2

From the previous deductions, we know that in the Banerjee family :

Area under the head of Health = $xy/2$,
 Area under the head of Clothing = $3xy/2$
 Area under the head of Food = $5xy/2$
 Area under the head of Others = $xy/2$
 Area under the head of Travel = xy
 Area under the head of Education = $4xy/3$
 Area under the head of Savings = $xy/3$
 Also, the total area representing the seven heads = $43xy/6$

But, the actual area under the head of Others = $3 \cdot (xy/2) = 3xy/2$, that is an increase of xy

As a result, , the total area representing the seven heads = $43xy/6 + xy = 49xy/6$

Hence, if a pie-chart were to be drawn representing all the seven different heads, the value of the angle representing the head of Food would be $(5xy/2) \cdot 360 / (49xy/6) = (5 \cdot 6 \cdot 360) / (2 \cdot 49) = 110.2$ degrees

29. D

It is given that at any particular point of time, exactly one among Amal, Bimal and Chintu always tells the truth, one always lies and one always alternates between truth and lie, in any order.

Case 1 : Let us assume that Amal is the truth teller.

Hence all of Amal's statements are true.

Considering his second statement it can be concluded that Bimal's first statement is false.

Also considering his third statement it can be concluded that Chintu's second statement is false.

Also Chintu's third statement is false, as we have considered Amal to be a truth teller

Hence :

	Stat 1	Stat 2	Stat 3
Amal	T	T	T
Bimal	F		
Chintu		F	F

So Bimal has to be the alternator and Chintu the liar.

Hence :

	Stat 1	Stat 2	Stat 3
Amal	T	T	T
Bimal	F	T	F
Chintu	F	F	F

Hence, when Amal is the truth teller,

We can conclude that Chintu has bought 21 books (Bimal Stat 2), or 19/20/22/23 books (Amal Stat 3)

Hence we can conclude that Amal has bought $21+2 = 23$ or, $19+2 = 21$ or, $20+2 = 22$ or, $22+2 = 24$ books (Amal Stat 1). But $23+2 = 25$ books is not possible as it violates the upper criteria of books bought.

Bimal has not bought 19 books (Amal Stat 2). But no other conclusion can be drawn about books bought by Bimal. So Bimal has bought either 18 or, 20 or, 21 or, 22 or, 23 or, 24 books

Case 2 : Let us assume that Bimal is the truth teller.

Hence all of Bimal's statements are true.

Considering his first statement it can be concluded that Amal's second statement is false

Also considering his second statement it can be concluded that Chintu's second statement is false and Amal's third statement is true

Also, considering his second and third statement together, it can be concluded that Amal's first statement is also false.

Hence :

	Stat 1	Stat 2	Stat 3
Amal	F	F	T
Bimal	T	T	T
Chintu		F	

But such a case of FFT (for Amal) is not possible.

So Bimal can never be the truth teller.

Case 3 : Let us assume that Chintu is the truth teller.

Hence all of Chintu's statements are true.

Considering his second statement, we can conclude that Amal's third statement and Bimal's second statement are both false.

Also, considering his second statement, Chintu has the highest possible number of books bought, and hence Amal cannot buy 2 books more than Chintu. Hence Amal's first statement is also false.

Hence :

	Stat 1	Stat 2	Stat 3
Amal	F		F
Bimal		F	
Chintu	T	T	T

Hence, when Chintu is the truth teller, two sub-cases can happen. Either, Amal is the alternator and Bimal the liar, or vice-versa.

Sub-case 3A : Amal is the alternator and Bimal the liar

	Stat 1	Stat 2	Stat 3
Amal	F	T	F
Bimal	F	F	F
Chintu	T	T	T

We can conclude that Chintu has bought 24 books (Chintu Stat 2)

We can conclude that Amal has not bought 18 books (Bimal Stat 3), nor 24 books (Chintu Stat 1). Hence Amal has bought either 19 or, 20 or, 21 or, 22 or, 23 books

Bimal has not bought 19 books (Amal Stat 2). But no other conclusion can be drawn about books bought by Bimal. So Bimal has bought either 18 or, 20 or, 21 or, 22 or, 23 books.

Sub-case 3B : Amal is the liar and Bimal the alternator

	Stat 1	Stat 2	Stat 3
Amal	F	F	F
Bimal	T	F	T
Chintu	T	T	T

We can conclude that Chintu has bought 24 books (Chintu Stat 3)

We can conclude that Bimal has bought 19 books (Bimal Stat 1)

Amal has bought 18 books (Bimal Stat 3)

As we can see from the above, either Amal or Chintu can be the truth teller

Hence, 'None of the above' is the correct option

30. C

As we can see from the explanation given in answer 1, Bimal can be the alternator either in Case 1 or Case 3B.

In Case 1, Chintu can buy 21 books.

In Case 3B, Chintu can buy 24 books.

Hence exactly one of the cases can be true

31. B

As we can see from the explanation given in answer 1,
 Whenever Amal has been the liar, Chintu has bought 24 books (Case 3B)
 Whenever Chintu has been the truth teller, Chintu has bought 24 books (Case 3A and 3B)
 Whenever Bimal has been the alternator, Chintu has bought either 24 books (Case 3B) or 19, 20, 21, 22 or 23 books (Case 1)

Hence, Chintu will have bought 24 books when Amal is the Liar and Chintu is the truth teller

32. A

As we can see from the explanation given in answer 1,
 Whenever Amal has been the liar, Bimal has bought 19 books (Case 3B)
 Whenever Bimal has been the liar, Bimal has not bought 19 books (Case 3A)
 Whenever Chintu is the liar, Bimal has not bought 19 books (Case 1)

Hence, Bimal has not bought 19 books when Bimal is the liar and Chintu is the liar

33. C

As we can see from the explanation given in answer 1,
 If Chintu buys 24 books, Amal can buy 18 books in Case 3B. So it can be true.
 If Chintu buys 24 books, Bimal's number of books bought cannot be definitely determined in Case 1 and Case 3A. So it can be true.
 If Chintu buys 24 books, Amal buys 24 books is definitely false, as no two of them can buy the same number of books

Hence, option C is the correct answer

34. A

As we can see from the explanation given in answer 1,
 In Case 1, where Amal is the truth teller, all the three statements can be true.

Hence option A is the right answer

35. 9%

Let the number of first year PGDBM students of IIM Calcutta in January 2023 be x
 So, the number of first year students in section Beta = (15.5% of x)
 Number of students who chose Marketing as their elective subject in first year = (31% of x)
 The number of students who chose Marketing as their elective subject in first year from section Beta = 18% of (15.5% of x)

Hence, percent of students who chose Marketing as their elective subject who were in section Beta of the first year
 $= \{18\% \text{ of } (15.5\% \text{ of } x)\} * 100 / (31\% \text{ of } x)$
 $= (18 * 15.5) / 31$
 $= 9\%$

36. B

Let the number of first year PGDBM students of IIM Calcutta in January 2023 be x

So, the number of first year students in section Alpha = (20% of x)

The number of first year students in section Gamma = (30% of x)

Thus the number of students who chose Finance as their elective subject in first year from section Alpha = 27% of (20% of x)

The number of students who chose Strategy as their elective subject in first year from section Gamma = 17% of (30% of x)

Hence, compared to the number of first year students who chose Strategy as their elective subject from section Gamma, then the number of first year students who chose Finance as their elective subject from Alpha

$$= \{27\% \text{ of } (20\% \text{ of } x)\} * 100 / \{17\% \text{ of } (30\% \text{ of } x)\}$$

$$= (27*20)*100 / (17*30)$$

$$27/17 = \text{approx } 1.5 \text{ and } 20/30 = 2/3, \text{ and } 1.5*(2/3)*100 = \text{approx } 100$$

Hence result is 106%, as other options are far apart

37. C

Let the number of first year PGDBM students of IIM Calcutta in January 2023 be x

Number of students who chose HR as their elective subject in first year = (14% of x)

Number of students who chose Operations as their elective subject in first year = (18% of x)

The number of students who chose HR as their elective subject in first year from section Delta = 15% of (34.5% of x)

The number of students who chose Operations as their elective subject in first year from section Alpha = 12% of (20% of x)

Percent of students who chose HR as their elective subject in first year from section Delta

$$= \{15\% \text{ of } (34.5\% \text{ of } x)\} * 100 / (14\% \text{ of } x)$$

$$= (15*34.5)/14$$

$$= \text{slightly less than } 37$$

Percent of students who chose Operations as their elective subject in first year from section Alpha

$$= \{12\% \text{ of } (20\% \text{ of } x)\} * 100 / (18\% \text{ of } x)$$

$$= (12*20)/18$$

$$= 40/3$$

Hence, the ratio of the percentages

$$= \text{slightly less than } 37 : 40/3$$

$$= \text{slightly less than } 111 : 40$$

$$= 110 : 40$$

$$= 11 : 4$$

38. 249

From the previous questions we know that :

20%, 15.5%, 30% and 34.5% of the first year students of IIM Calcutta in January 2023 were from sections Alpha, Beta, Gamma and Delta respectively

From the data of this question we know that :

The number of first year PGDBM students in IIM Calcutta in January 2023 = 4000

Thus the number of first year students who chose Marketing as their elective subject from section Delta

$$= 25\% \text{ of } (34.5\% \text{ of } 4000) = 345$$

Also the number of first year students who chose HR as their elective subject from section Alpha

$$= 12\% \text{ of } (20\% \text{ of } 4000) = 96$$

Hence the number of first year students who chose Marketing as their elective subject from section Delta was more than the number who chose HR from section Alpha by $= 345 - 96 = 249$

39. 4500

Thus the number of first year students who chose Strategy as their elective subject from section Beta = 28% of (20% of x)

So,

$$28\% \text{ of } (20\% \text{ of } x) = 252$$

$$\text{or, } x = (252 \times 100 \times 100) / (28 \times 20)$$

$$\text{or, } x = 4500$$

Hence, the total number of first year PGDBM students in IIM Calcutta in January 2023 = 4500 the number of first year PGDBM students of IIM Calcutta in January 2023 be x

40. D

From the illustration, we can see that In step I, the machine shifts the largest number to the leftmost place and the last word coming in English alphabetical series to the rightmost place

In step II, it shifts the smallest number to the leftmost place and the next word (in reverse alphabetical order) to the rightmost

In step III 2nd largest number is shifted to the leftmost place and the next word (in reverse alphabetical order) to the rightmost.

It continues accordingly.

Input :	fire 89 amend the 28 16 bullet crowd 35 53 here 68
Step I :	89 fire amend 28 16 bullet crowd 35 53 here 68 the
Step II :	16 89 fire amend 28 bullet crowd 35 53 68 the here
Step III :	68 16 89 amend 28 bullet crowd 35 53 the here fire
Step IV :	28 68 16 89 amend bullet 35 53 the here fire crowd
Step V :	53 28 68 16 89 amend 35 the here fire crowd bullet
Step VI :	35 53 28 68 16 89 the here fire crowd bullet amend (final output)

Hence, Step II would be : '16 89 fire amend 28 bullet crowd 35 53 68 the here'

41. D

We know that :

Input :	fire 89 amend the 28 16 bullet crowd 35 53 here 68
Step I :	89 fire amend 28 16 bullet crowd 35 53 here 68 the
Step II :	16 89 fire amend 28 bullet crowd 35 53 68 the here
Step III :	68 16 89 amend 28 bullet crowd 35 53 the here fire
Step IV :	28 68 16 89 amend bullet 35 53 the here fire crowd
Step V :	53 28 68 16 89 amend 35 the here fire crowd bullet
Step VI :	35 53 28 68 16 89 the here fire crowd bullet amend (final output)

Step IV : 28 68 16 89 amend bullet 35 53 the here fire crowd
Hence, 35 would be at the seventh position from the left end in Step IV

42. C

We know that :

Input :	fire 89 amend the 28 16 bullet crowd 35 53 here 68	
Step I :	89 fire amend 28 16 bullet crowd 35 53 here 68 the	
Step II :	16 89 fire amend 28 bullet crowd 35 53 68 the here	
Step III :	68 16 89 amend 28 bullet crowd 35 53 the here fire	
Step IV :	28 68 16 89 amend bullet 35 53 the here fire crowd	
Step V :	53 28 68 16 89 amend 35 the here fire crowd bullet	
Step VI :	35 53 28 68 16 89 the here fire crowd bullet amend	(final output)

Hence Step V would give the given input

43.B

We know that :

Input :	fire 89 amend the 28 16 bullet crowd 35 53 here 68	
Step I :	89 fire amend 28 16 bullet crowd 35 53 here 68 the	
Step II :	16 89 fire amend 28 bullet crowd 35 53 68 the here	
Step III :	68 16 89 amend 28 bullet crowd 35 53 the here fire	
Step IV :	28 68 16 89 amend bullet 35 53 the here fire crowd	
Step V :	53 28 68 16 89 amend 35 the here fire crowd bullet	
Step VI :	35 53 28 68 16 89 the here fire crowd bullet amend	(final output)

Thus, it is in Step V in which the elements '35 the here' are found in the same order

44. A

We know that :

Input :	fire 89 amend the 28 16 bullet crowd 35 53 here 68	
Step I :	89 fire amend 28 16 bullet crowd 35 53 here 68 the	
Step II :	16 89 fire amend 28 bullet crowd 35 53 68 the here	
Step III :	68 16 89 amend 28 bullet crowd 35 53 the here fire	
Step IV :	28 68 16 89 amend bullet 35 53 the here fire crowd	
Step V :	53 28 68 16 89 amend 35 the here fire crowd bullet	
Step VI :	35 53 28 68 16 89 the here fire crowd bullet amend	(final output)

So, Step IV : 28 68 16 89 amend bullet 35 53 the here fire crowd
Thus 'amend' is exactly between '89' and 'bullet' in Step IV.

Section - Quantitative Aptitude

45. A

$$80\% \text{ of } (a+b)/2 = (ab)^{1/2};$$

$$2(a+b) = 5(ab)^{1/2}$$

Squaring both sides

$$4(a^2 + b^2 + 2ab) = 25 ab$$

Divide both sides by ab , we get

$$4(a/b + b/a + 2) = 25$$

$$\text{Let } a/b = x$$

$$4(x + 1/x + 2) = 25$$

On solving, we get

$$x = 4 \text{ or } \frac{1}{4}$$

Since $a > b$, ratio cannot be $\frac{1}{4}$

$$\text{So, } a : b = 4$$

So, sum of a and b must be divisible by 5. Therefore option (a) is correct.

46. C

Let academic subject is 1, and non-academic subjects are 4.

$$\text{Average change in marks of academic subjects} = 15\% \text{ of } 68 = 10.20$$

$$\text{Average change in marks of non-academic subjects} = 10\% \text{ of } 32 = 3.2$$

$$\text{Net increase in total marks} = 1 \times 10.2 + 4 \times 3.2 = 23$$

$$\text{Total Previous marks} = 1 \times 68 + 4 \times 32 = 196$$

$$\text{Average of all subjects} = 196/5 = 39.2$$

$$\text{Average change} = 23/5 = 4.6$$

$$\text{Percentage average change} = (4.6/39.2) \times 100 = 11.73\%$$

47. 600

$$\text{Percentage of students who get failed in at-least one exam} = 38 + 52 - 20 = 70\%$$

$$\text{Percentage of students who gets passed in both exams} = 30\%$$

$$\text{Students failed in both the exams} = 20\%$$

$$\text{So, according to question } 30\% - 20\% = 10\% = 60$$

$$\text{Total number of students} = 100\% = 600$$

48. D

If A's income is 20% more than that of B

$$A : B = 5 : 4$$

$$B : C = 3 : 4$$

$$A : B : C = 15 : 12 : 16$$

$$C - A = 1$$

According to question

$$1 = \text{Rs } 3000$$

$$\text{So, } (15 + 12 + 16 = 43) = \text{Rs } 43 \times 3000 = \text{Rs } 129000$$

$$\text{Average} = \text{Rs } 129000/3 = \text{Rs } 43000$$

If A's income is 30% more than that of B

$$A : B = 13 : 10$$

$$B : C = 3 : 4$$

$$A : B : C = 39 : 30 : 40$$

$$C - A = 1$$

According to question

$$1 = \text{Rs } 3000$$

$$\text{So, } (39 + 30 + 40 = 109) = \text{Rs } 109 \times 3000 = \text{Rs } 327000$$

$$\text{Average} = \text{Rs } 327000/3 = \text{Rs } 109000$$

Average income of the three must lie between Rs 43000 and Rs 109000.

49. C

Since shopkeeper allows a discount of 10% on marked price but mistakenly, he gave discount on the discounted price. So,

Selling Price: Expected Selling Price = 9: 10

So, 9 = Rs 1980

Loss incurred in his expected income = 1 = Rs 1980/9 = Rs 220

50. B

$$SI = 2x/10$$

$$CI = z/10 + z/10 + z/10^2 = 21z/100$$

$$\text{Difference} = y = 21z/100 - 2x/10 = (21z - 20x)/100$$

$$\Rightarrow 100y = 42x - 20x = 22x$$

y is 22% of x.

51. C

The net flow rate = 200/25 = 8 litres/minutes.

The required answer will be such that when it is doubled, the increase in emptying rate (in litres/minute) should be more than 8 litres/minute.

52. B

Relative speed of two motorists $(S_1 + S_2) = 273/(7/3) = 117 \text{ Km/hr}$

Prime numbers between 35 and 65 are 37, 41, 43, 47, 53, 59 and 61.

$(S_1 + S_2)$	$(S_1 - S_2)$	S_2 (Slower)
117	37	$(117-37)/2 = 40 \text{ Kmph}$
117	41	$(117-41)/2 = 38 \text{ Kmph}$
117	43	$(117-43)/2 = 37 \text{ Kmph}$
117	47	$(117-47)/2 = 35 \text{ Kmph}$
117	53	$(117-53)/2 = 32 \text{ Kmph}$
117	59	$(117-59)/2 = 29 \text{ Kmph}$
117	61	$(117-61)/2 = 28 \text{ Kmph}$

53. C

Internal angle of regular hexagon is 108°

$$\text{Total grazed area} = 3(108/360) \times \pi \times 4^2$$

$$\text{Area of a circle with radius } R = \pi R^2$$

According to question

$$\pi R^2 = 3(108/360) \times \pi \times 5^2$$

$$R = \sqrt{15} \text{ m.}$$

54. D

Let the radii of frustum are R and r respectively.

Then according to question

$$6^3 + 8^3 + 10^3 = \frac{1}{3} \pi (25^2 - r^2) \times 2$$

$$\Rightarrow r^2 = 200$$

$$\text{So, } r = 14.14 \text{ cm}$$

$$\begin{aligned}\text{Volume of cylinder formed with the radius of } 14.14 \text{ cm} &= \pi r^2 h = 3.14 \times 200 \times 2 \\ &= 1256 \text{ cm}^3\end{aligned}$$

$$\text{Volume of frustum} = 6^3 + 8^3 + 10^3 = 1728 \text{ cm}^3$$

$$\text{Volume of solid wasted} = 1728 - 1256 = 472 \text{ cm}^3$$

$$\text{Amount of solid wasted} = 472 \times 5 = 2360 \text{ gms} = 2.36 \text{ Kg}$$

55. C

Volume of prism = Area of base x height

$$252 = 36 \times h$$

$$h = 7 \text{ cm}$$

$$\text{Total Surface Area} = 4(6 \times 6) + 2 \times 36 = 216 \text{ cm}^2$$

56. D

Three points are collinear if

Slope of first two points = slope of last two points

$$\frac{x+2-x-3}{x-5-x+6} = \frac{x+1-x-2}{x-4-x+5}$$

Which gives $-1 = -1$.

It means x can take any value.

57. C

$$\text{fog} = k(2t+3) - 1 = 2kt + 3k - 1$$

$$\text{gof} = 2(kt - 1) + 3 = 2kt - 2 + 3 = 2kt + 1$$

According to question

$$2kt + 3k - 1 = 2kt + 1$$

$$\Rightarrow 3k = 2$$

$$\text{So, } k = 2/3.$$

58. 274176

$$\text{Combinations} = {}^6C_1 \times {}^7C_1 \times {}^8C_1 \times {}^{18}C_3 = 274176$$

59. D

Let the number be N .

In order to maximize the number of factors of N^3 , N^2 must be expressed as a product of as many prime factors as possible.

$$\text{No. of factors of } N^2 = 105 = 3 \times 5 \times 7$$

$$\therefore N^2 = a^2 b^4 c^6 \text{ where } a, b \text{ and } c \text{ are prime numbers.}$$

$$\therefore N^3 = a^3 b^6 c^9$$

$$\text{Number of factors} = (3+1) \times (6+1) \times (9+1) = 4 \times 7 \times 10 = 280.$$

60. B

Let D has coordinates (x, y)

$AD = BC$ [opposite sides of a parallelogram]

$$AD^2 = BC^2$$

$$(6-x)^2 + (1-y)^2 = (9-8)^2 + (4-2)^2 = 5$$

Also,

$CD = AB$ [opposite sides of a parallelogram]

$$CD^2 = BA^2$$

$$(9-x)^2 + (4-y)^2 = (6-8)^2 + (1-2)^2 = 5$$

On solving both equations

$$(x, y) = (7, 3)$$

D (7, 3) and C (9, 4)

$$DE: EC = 3: 2$$

$$x\text{-coordinate of E} = [3 \times 9 + 2 \times 7]/5 = 41/5$$

$$y\text{-coordinate of E} = [3 \times 4 + 2 \times 3]/5 = 18/5$$

Area of $\triangle ADE$ with vertices (6, 1), (7, 3) and $(41/5, 18/5)$

$$\begin{aligned} \text{Ar}(\triangle ADE) &= \frac{1}{2} [6(3 - 18/5) + 7(18/5 - 1) + 41/5 (1 - 3)] \\ &= \frac{1}{2} [6(-3/5) + 7(13/5) - 82/5] \\ &= 0.9 \text{ sq unit.} \end{aligned}$$

61. 32916

Let the total Profit = $100x$

If Aman keeps Rs 7500 for being an active member, A's total profit = Rs 7500 + $(100x - 7500)/2$
[Remaining profit will be divided equally]

If Aman keeps Rs $24x$ (24%), Aman's total profit = Rs $24x + (100x - 24x)/2 = 62x$
[Remaining profit will be divided equally]

As per question

$$62x - \{7500 + (100x - 7500)/2\} = 200$$

$$\Rightarrow 62x - 7500 - 50x + 3750 = 200$$

$$\text{So, } x = 329.16$$

Total Profit = Rs 32916

62. 4

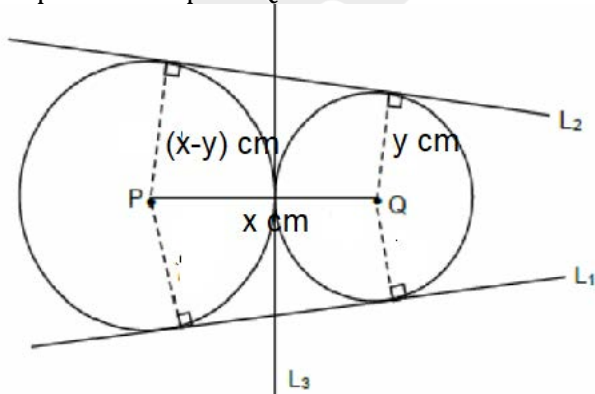
$$37600 = 2^5 \times 5^2 \times 47$$

Number of prime factors = 3

So, number of ways in which it can be written as product of two prime numbers = $2^{3-1} = 4$.

63. 3

All the common tangents drawn at the circles of radius y cm and $(x-y)$ cm are the lines equidistant from point P and point Q.



Three common tangents are the required answer as shown in figure.

Prime numbers less than 50 are 2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 43, 47

If p_1 and p_2 , both are odd:

64. 6

The difference between p_1 and p_2 must be 2.
Possible values for p_1 can be 5, 7, 13, 19, 31, 43.

If p_1 is odd and p_2 is 2:

$p_1 - 2$ must be a prime. If we check for all values.

p_1 can take values 5, 7, 13, 19, 31, 43

From above 2 cases, it is clear that p_1 can take 6 values.

65. 1

Case 1:

If $(36 - 3x) \geq 0$ i.e. $x \leq 12$, then $|36 - 3x| = 36 - 3x$

$$x = |x - |36 - 3x|| = |2x - 36|$$

again if $(2x - 36) \geq 0$, then $x = 2x - 36$ i.e. $x = 36$ which do not satisfy the above condition. So, cannot be the solution.

If $(2x - 36) \leq 0$, then $x = -2x + 36$ i.e. $x = 12$ which is a valid solution.

Case 2:

If $(36 - 3x) < 0$ i.e. $x > 12$, then $|36 - 3x| = -36 + 3x$

$$x = |x + 36 - 3x| = |-2x + 36|$$

again if $(-2x + 36) \geq 0$ i.e. $x \leq 18$, then $x = -2x + 36$ i.e. $x = 12$ which is a valid solution.

If $(-2x + 36) < 0$, then $x = 2x - 36$ i.e. $x = 36$ which is not a valid solution.

So, x can take only 1 value.

66. D

Series of numbers divisible by 7:

7, 14, ..., 294 (AP)

Number of terms = 42

$$\text{Sum} = 21[7 + 294] = 6321$$

Series of numbers divisible by 9:

9, 18, ..., 297 (AP)

Number of terms = 33

$$\text{Sum} = 33[5 + 297]/2 = 4983$$

$$\text{Difference} = 6321 - 4983 = 1338$$

MOCK TEST – 5

Section - 1 - Verbal Ability & Reading Comprehension

Directions for Questions 1 to 4: Read the passage given below and answer the questions that follow.

Passage-1

Since genuine information rests upon our belief in matters of fact, Hume was particularly concerned to explain their origin. Such beliefs can reach beyond the content of present sense-impressions and memory, Hume held, only by appealing to presumed connections of cause and effect. Consider Hume's favorite example: our belief that the sun will rise tomorrow. Clearly, this is a matter of fact; it rests on our conviction that each sunrise is an effect caused by the rotation of the earth. But our belief in that causal relation is based on past observations, and our confidence that it will continue tomorrow cannot be justified by reference to the past. So we have no rational basis for believing that the sun will rise tomorrow. Yet we do believe it!

Skepticism quite properly forbids us to speculate beyond the content of our present experience and memory, yet we find it entirely natural to believe much more than that. Hume held that these unjustifiable beliefs can be explained by reference to custom or habit. That's how we learn from experience. When I observe the constant conjunction of events in my experience, I grow accustomed to associating them with each other.

Although many past cases of sunrise do not guarantee the future of nature, my experience of them does get me used to the idea and produces in me an expectation that the sun will rise again tomorrow. I cannot prove that it will, but I feel that it must.

Remember that the association of ideas is a powerful natural process in which separate ideas come to be joined together in the mind. Of course they can be associated with each other by rational means, as they are in the relations of ideas that constitute mathematical knowledge. But even where this is possible, Hume argued, reason is a slow and inefficient guide, while the habits acquired by much repetition can produce a powerful conviction independently of reason. Although the truth of " $9 \times 12 = 108$ " can be established rationally in principle, most of us actually learned it by reciting our multiplication tables. In fact, what we call relative probability is, in Hume's view, nothing more than a measure of the strength of conviction produced in us by our experience of regularity.

Our beliefs in matters of fact, then, arise from sentiment or feeling rather than from reason. For Hume, imagination and belief differ only in the degree of conviction with which their objects are anticipated. Although this positive answer may seem disappointing, Hume maintained that custom or habit is the great guide of life and the foundation of all natural science.

According to Hume, our belief that events are causally related is a custom or habit acquired by experience: having observed the regularity with which events of particular sorts occur together, we form the association of ideas that produces the habit of expecting the effect whenever we experience the cause. But something is missing from this account: we also believe that the cause somehow produces the effect. Even if this belief is unjustifiable, Hume must offer some explanation for the fact that we do hold it. His technique was to search for the original impression from which our idea of the necessary connection between cause and effect is copied. The idea does not arise from our objective experience of the events themselves. All we observe is that events of the "cause" type occur nearby and shortly before

events of the “effect” type, and that this recurs with a regularity that can be described as a “constant conjunction.” Although this pattern of experience does encourage the formation of our habit of expecting the effect to follow the cause, it includes no impression of a necessary connection.

Q.1. The primary purpose of the passage is:

- A. to showcase how a particular theory explains the prevalence of habit over reason when it concerns our beliefs and ideas.
- B. to highlight how our subjective experiences dominate our objective evaluations when it concerns our beliefs and ideas.
- C. to prove that cause and effect relationships dominate our thinking and are the primary part of subjective past-driven beliefs and ideas.
- D. to show that, in developing our beliefs and ideas, customs and habits have a much greater role than objective reasoning.

Q.2. A likely source for the passage is:

- A. an essay on physiological sociology
- B. a work on nihilism and scepticism
- C. a book on the development of philosophical thought
- D. a personal exposition on beliefs and thoughts

Q.3. According to the information given in the passage, Hume would agree with which one of the following statements?

- A. in our experience, when we see two events happening in close proximity, we assume them to be dependent on one another.
- B. when it comes to our beliefs, when we see one event happening nearby and shortly before another, we convert their co-relation into causation.
- C. in our observations, when we see two events happening one after the other, our expectations convert two into a cause and effect experience.
- D. when it comes to our ideas, when we see two things happening without any reason, we immediately connect the two into a cause and effect relationship.

Q.4. According to Hume, when we link an effect to a cause, we depend on:

- A. our rational thinking
- B. our past experience
- C. our natural observations
- D. our innate reasoning

Directions for Questions 5 to 8: Read the passage given below and answer the questions that follow.

Passage-2

Every historian worries over presentism — the tendency for contemporary sentiment to distort the study of the past. Some call it projection, in graduate school, it's teleology, or what the French historian Marc Bloch dubbed "the most unpardonable of sins: anachronism." And so, lightly we tread, tippy-toed, when formulating a historical analogy. The historian Arthur Schlesinger Jr. censured such allusive fare. Analogy rips historical examples free of root, context, idiosyncrasy, and counterexample. Such evidence

plucked from the past suffers from "confirmation bias," speciously corroborating contemporary-minded hypotheses for the already predisposed. "History by rationalization," Schlesinger damned.

Nonetheless, the historical analogy persists. And for it, Moshik Temkin, an associate professor of history and public policy at the Harvard Kennedy School, took a great many of his fellow historians to the woodshed. "Historians Shouldn't Be Pundits," Temkin proclaimed in an op-ed in *The New York Times*. The peddling of historical analogy to understand current events might earn TV spots, but such spotty practice belied the historian's process. It was "useless," even falsely "reassur[ing]," not just bad scholarship but possibly "dangerous."

As the kind of historian criticized by Temkin and the anti-illusionists, I was taken aback by his harsh column. So charged were Temkin's charges that mere hours later, in *The Atlantic*, Julian Zelizer and Morton Keller, historians at Princeton and Brandeis respectively, hit back with "Why (Some) Historians Should Be Pundits," coyly puzzling over the contradiction of Temkin's "argument about avoiding punditry" appearing on the *Times* op-ed page.

By some historical coincidence, that same day, *The Washington Post* unveiled a new section, *Made by History*. The *Post* editors promised, "in an era seemingly defined by the word unprecedented," to deliver a steady diet of exactly the kind of historical analysis — "grappling with parallels between the past and present" — that Temkin had just rejected so vociferously. The game, it seemed, was afoot.

In the Age of Trump, historians have let historical analogies loose. Many have been the comparisons: Trump to Andrew Jackson, Trump to James Buchanan, Huey Long, George Wallace, Trump to Richard Nixon (I was one of those historians), to Hugo Chávez, even to Biff Tannen from *Back to the Future*, and King Aerys II of the House Targaryen — the "Mad King." The more grotesque Trump's presidency appears, "the more historians are called on to make sense of it, often in 30-second blasts on cable news or in quick-take quotes in a news article," Temkin grimaced.

For centuries, from Thucydides to Livy, Polybius to Edward Gibbon, historians have wielded the analogy as an instrument for inquiry and instruction. As the renowned Yale professor A. Dwight Culler described, "virtually every historian of antiquity and the Renaissance" forwarded to some degree the claim that history, at its core, is "philosophy teaching by example." That is, our discipline aims to illuminate issues at hand by scouring for lessons from analogous predicaments in the past. Machiavelli stipulated simply, without condition: "Whoever with diligence examines past events, it is an easy thing to foresee the future in any Republic, and to apply those remedies which had been used by the ancients, or ... to think of new ones from the similarity of events."

Q.5. The author of the passage is:

- A. in favour of historical analogies
- B. against historical analogies
- C. non-partisan with respect to historical analogies
- D. in favour of historic analogies

Q.6. The author of the passage will agree with the statement:

- A. Historical analogy has been used as a device for examination.
- B. Historical analogy has been used as a tool for educating.
- C. Both A and B
- D. Neither A nor B

Q.7. It can be derived from the passage with fair degree of certainty that:

- A. Philosophy is more pragmatic than history
- B. Philosophy lacks the example based approach that history adopts
- C. Philosophy does not use examples in the same way as history
- D. History is more analytical and pragmatic than philosophy

Q.8. All of the following can be inferred from the passage except:

- A. Some historians label the use of "historical analogy" as dangerous.
- B. Trump has given historians ample opportunities to make comparisons with numerous figures in history.
- C. A greater number of historians are in favour of historical analogy than those who are opposed to it.
- D. The instrument of historical analogy has been used for centuries.

Directions for Questions 9 to 12: Read the passage given below and answer the questions that follow.

Passage-3

Biopower is part related to what Foucault calls "a history of the present", "grasping the present in its contingency, unsettling it from its prejudices and exploding their hold on reality, understanding how we have become what we are rather than importing our prejudices on to the past, in the guise of their being eternal truths apprehended by a supra-historical intellect."

With the term 'biopower' Foucault designates the set of mechanisms, techniques and technologies through which the basic biological features of the human species become the object of political strategies in modern Western societies. Biopower is, then, for Foucault the application of power to the human considered as a living being:

To gain a clearer appreciation of Foucault's point, it is necessary to recall that prior to the first volume of *The History of Sexuality* Foucault's genealogies of the modern modalities of power had concentrated on identifying what he called, most notably in *Discipline and Punish*, "disciplinary technologies". These are techniques that emerge in seventeenth and eighteenth century Europe, and which are directed towards the individual human body understood as a machine, composed, or better, decomposable, into its various moving parts, which can then be rendered capable of performing work. According to Foucault, these technologies sought, through various regimens and measures, to rule a multiplicity of men, that is, to impose a particular mode of being on men, by dissolving that multiplicity in to individual bodies, and at the level of the individual body, optimize its capabilities, extorting from it various forces, increasing its utility and docility, and integrating it into systems of efficient and economic controls. Disciplinary techniques of power include all those apparatuses and institutions which ensure the distribution of individual bodies in space and time, and which organize around these bodies a whole field of visibility, ordering them or rendering them orderable, in institutions such as universities, secondary schools, military barracks, and workshops.

Like disciplinary techniques and procedures, the technologies of biopower are addressed to a multiplicity, but they are addressed to that multiplicity in so far as it forms a global mass affected by the biological processes of life itself: birth and death, health and illness. To the techniques of discipline that came to hold sway over the human body and which are individualising are added the techniques and technologies of biopower which, on the contrary, but in a complimentary way, are massifying, directed towards humans in the genetic and species sense....Biopower is thus tied to the emergence of the

discipline of statistical demography, and there begins the quantification of the phenomena of birth-rate, longevity, the reproductive rates and fertility of a given population, its state of health, patterns of diet and habitation.

Both disciplinary technologies and the techniques and mechanisms of biopower are forms of power over the body. The former, disciplinary technologies, centre on the individual body: they treat it as a machine, considering it as a being consisting of parts, organized in a certain fashion, requiring energy in order to operate and capable of producing certain effects, that is, of working. Decomposing it into its parts, and subjecting them to training, to discipline, it seeks to render the body both docile and utile. Biopower, on the other hand, focuses on the body as the vehicle of species life. Given the nature of the phenomena with which it is concerned it is regulatory rather than disciplinary.

Q.9. The author of the passage is:

- A. arguing in favour of biopower
- B. exposing the flaws of biopower
- C. describing biopower
- D. encouraging the use of biopower

Q.10. Paraphrase the main point of the first paragraph of the passage.

- A. According to Foucault, biopower is dominated by the history of the present, where one actively understands the present reality rather than just understanding it through one's biases of the past.
- B. According to Foucault, biopower is connected to the history of the present, where one actively understands the present reality rather than just understanding it through one's biases of the past.
- C. According to Foucault, biopower runs counter to the history of the present, where one actively understands the present reality and breaks away from one's biases of the past.
- D. According to Foucault, biopower is controlled by the history of the present, where one proactively understands the present reality rather than just passively understanding it through one's biases of the past.

Q.11. Which, out of the following, is not an example of the use of Biopower?

- A. family planning to control population growth
- B. measures to identify gene-based disorders affecting the population in general
- C. vaccination for pandemics
- D. the death penalty for homicide

Q.12. According to the information given in the passage, disciplinary technologies and biopower differ in the fact that:

- I. one relates to the larger population and the other does not.
- II. the former relates to controlling the human body and the latter deals with regulating it.
- III. the former treats the body as a machine while the latter treats it as an instrument medium that propagates life.

- A. only II
- B. only III

- C. I and II
- D. II and III

Direction for questions 13 to 16: Answer the questions on the basis of the information provided in the passage.

Passage-4

How smart is your pet? The book *Test Your Cat: The Cat IQ Test* claims to be able to tell you 'how smart your cat really is'. He or she might be an 'undiscovered genius'. Using the book, you score your cat on a variety of questions, perform a calculation, and this gives you the cat's IQ. The first question is whether the cat eats on a regular schedule. The second is whether it eats a variety of foods. There are many other questions. Now, I have no idea how seriously this book is intended to be taken. But it strikes me that there is something very odd about the idea that eating on a regular schedule and enjoying a varied diet have anything to do with intelligence, as we usually understand that term.

Similarly, you sometimes hear people say that a particular breed of dog is highly intelligent. But quite often, what people mean by this is that individuals of that breed are very obedient and can be trained to perform many tasks. This interest in 'trainability' is reflected in the British television show *Teach My Pet To Do That*. In each episode, two different pets are compared on their ability to learn a trick, like answering the doorbell or wiping their feet on a mat. The pets might be dogs, cats, miniature horses, even chickens or pigs. If one pet takes to the trick much faster than the other, it can be tempting to say that the first is more intelligent.

Perhaps in a sense they are. The tricks are taught using operant conditioning – when the animal performs the desired behaviour, they get a reward which 'positively reinforces' the behaviour. To learn a trick in this way involves latching on to the contingency between act and consequence – 'figuring out' just what behaviour the reward is tied to. This might be a component of intelligence, but it can't be all there is to it. After all, it's not as though we think that a child must be especially intelligent when we successfully reinforce her good behaviour through the award of gold stars. As well as this, there are any number of reasons an animal might not succeed in learning the trick. They might be insufficiently motivated by the reward, find the repetition frustrating, or simply be uninterested in what the trainer is up to. In any case, it's not obvious that any of these traits indicate a lack of intelligence.

Octopuses illustrate this point nicely, as Peter Godfrey-Smith notes in his book *Other Minds: The Octopus and the Evolution of Intelligent Life*. Godfrey-Smith writes that whilst in experimental settings, octopuses seem to be rather slow learners, this fits poorly with their behaviour in other scenarios. For instance, some octopuses seem to figure out quite quickly that they can put out the bright lights in an aquarium by squirting jets of water at them. This apparent mismatch may have its roots in a failure of experiments to tap into octopus motivation. In an early study on octopus learning, one octopus would repeatedly break or steal the equipment and squirt jets of water at experimenters. Godfrey-Smith suggests that in this case, 'the assumption that an octopus would be interested in pulling a lever repeatedly to get pieces of sardine,' was at least partly to blame. 'Rats and pigeons will do things like that, but octopuses [...] tend to lose interest. For at least some of them, taking the lamp down from above the tank and hauling it back to the den – that is more interesting. So is squirting the experimenters.'

So, we should not be too quick to draw conclusions about intelligence from an animal's success in learning through operant conditioning. More generally, we should be cautious about thinking that this kind of learning is what intelligence is all about. But that raises a tricky question: what is it all about? That's a difficult question. There probably isn't just one thing we're referring to when we talk about

intelligence – and the best way to define the term might depend on our goals in asking the question. So, for now, perhaps a better question is: why do we want to know how intelligent animals are?

Q.13. The main concern of the author of the passage is:

- A. to showcase the need for better care and understanding of non-humans
- B. to check the validity of an approach
- C. to highlight the stupidity of a book
- D. to understand how a certain brain function works

Q.14. According to the author of the passage, which out of the following statements is incorrect?

- A. Not being motivated by the reward does not mean that the animal is not intelligent.
- B. At times, people incorrectly identify certain traits to be signs of intelligence.
- C. The book Test Your Cat: The Cat IQ Test is not a book to be taken seriously.
- D. Both B and C
- E.

Q.15. According to the author of the passage, operant conditioning:

- A. is based on the ability to understand the consequence of one's act
- B. uses rewards to reinforce positive behaviour.
- C. is not necessarily the perfect guide for establishing intelligence.
- D. all of the above

Q.16. The example of octopuses illustrates:

- A. the efficacy of an approach
- B. the pitfalls of a method
- C. the outcomes for a practice
- D. the effects for a modus operandi

Directions for the Question: Identify the apt summary for the given paragraph. Enter the option number you deem as the correct answer.

Q17. Aggression in sport – in body language, conversation, and action – works for some. As both former greats Rahul Dravid and Adam Gilchrist pointed out, aggression gets the best out of Virat Kohli. But in trying to mould a team in his own image, Kohli should not demand that all his players be replicas of him. Neither should all young players look to blindly ape Kohli. His kind of overt aggression matches his personality; it will not necessarily suit the temperament of someone like Ajinkya Rahane.

- A. Aggression on the field can be good, but only within limits.
- B. Aggression is a great strategy in sports despite the player's personality.
- C. Rahul Dravid and Adam Gilchrist are not in agreement with all of Virat Kohli's traits.
- D. Aggression in sport can have its positives but it needs to be used carefully based on individual limitations and personality.

Directions for the Question: Identify the apt summary for the given paragraph. Enter the option number you deem as the correct answer.

Q18. A council of Native American leaders has offered partial amnesty to the estimated 220 million illegal white immigrants living in the United States. The "white" problem has been a topic of much debate in the Native American community for centuries, and community leaders have decided the time has come to properly address it. Daily Current reports, "At a meeting of the Native Peoples Council (NPC) in Albuquerque, New Mexico yesterday, Native American leaders considered several proposals on the future of this continent's large, unauthorized European population. The elders ultimately decided to extend a pathway to citizenship for those without criminal backgrounds."

- A. 220 million American citizens are living in the country illegally.
- B. Amnesty has been extended by Native Americans to the over 220 million white illegal immigrants currently residing in the United States.
- C. Native Americans are sick of fighting and have granted amnesty to Americans since they are done with war.
- D. Native Americans have been defeated in battle, and it is now safe for Americans to remain in the USA.

Directions for the Question: Identify the apt summary for the given paragraph. Enter the option number you deem as the correct answer.

Q19. President Abdel Fattah al-Sisi has made ending corruption – including graft in the wheat industry – one of his government's priorities. In 2014, his government rolled out a system of smart cards designed to stop unscrupulous bakeries selling government-subsidised flour on the black market. Cairo says the system has been a big success, saving millions of dollars in bread subsidies, reducing imports, and ending shortages that once prompted long queues outside bakeries across the country. Supplies Minister Khaled Hanafi told Egyptian reporters in late 2014 that roughly 50 percent of the country's flour supply was stolen. In December last year he told Reuters that the new system had saved more than 6 billion Egyptian pounds (\$766 million) worth of flour.

- A. As part of its plan to combat corruption, the government of Egypt has attempted a number of different approaches, but it has had very limited success.
- B. The Egyptian government, as part of its anti-corruption agenda, has deployed smart cards for the purchase of flour that is subsidized by the government.
- C. The Egyptian government has introduced the use of smart cards for the purchase of flour that is subsidized by the government.
- D. The government of Egypt has adopted smart cards for the purchase of flour subsidized by the government, although opinions on the success rate are divided.

Directions for the Question: The question below has a paragraph given with one sentence missing in at the end. From among the answer choices given, select the sentence that can fill the blank to form a coherent paragraph.

Q20. In 21st-century Britain, we should be able to hope for more than mere subsistence. But life for me and many others in my community has become geared solely around survival. Morale is low. One of the projects I attend provides hot meals and surplus food for a small donation – if you have it. After dinner, they bring a table full of donated food. It's always been a bit of a rush to get your hands on food once the table is open. That is understandable. I think many people are in survival mode; they're scared and desperate to ensure they have enough to get by. These are the basics, the essentials of life. It's sad to watch. At another provider of charitable food support in my area, there's less food available than at the beginning of this cost of living crisis. I think what there is has to go further than it did before as demand grows from more people. The third sector and charities, which originally stepped in to fill gaps in the benefits system, now make up most of the support given to people. The

responsibility of catering to sick people, unemployed people, pensioners and low-income workers increasingly falls on their shoulders. But their shoulders won't be able to bear this burden for much longer if things continue to regress. I am, on the whole, happy to be back at work, even though my health conditions can make it difficult at times.(_____)

- A. Still, at the back of my mind is a lingering fear that if my health deteriorates to the point where I can't work, I'll be back in abject despair.
- B. Still, at the back of my mind is a lingering fear that if my health deteriorates to the point where I can't work, I'll be back in abject hopelessness.
- C. Still, at the back of my mind is a lingering fear that if my health deteriorates to the point where I can't work, I'll be back in abject poverty.
- D. Still, at the back of my mind is a lingering fear that if my health deteriorates to the point where I can't work, I'll be back in abject despondency.

Directions for the Question: The question below has a paragraph given with one sentence missing in at the end. From among the answer choices given, select the sentence that can fill the blank to form a coherent paragraph.

Q21. Authors Mona Awad and Paul Tremblay are taking OpenAI to court for allegedly “ingesting” their books to refine its generative capabilities. It seems writers’ work is being used as anonymous mulch to feed the artificial intelligence sausage machine so it can poop out existentially threatening, nutritionless, virtual, fake chipolatas to replace us. I went on to one of these sites, typed in a story idea and clicked “generate”. The resulting yarn included the lines: “We took a school trip to the moon, our first trip there. The other students were at home, or on other planets.” And: “The vampire stood in front of me and looked into my eyes. I felt a chill. A chill that went to my toes.” One can laugh, but much of what we put online is being harvested by AI, from our photographs to our Instagram captions. AI is ingesting, scanning, scraping, ripping, absorbing, mining, assimilating.
(_____)

- A. Back in the day, writers used to write books with a quill. Then came the pen, then the pencil, then the typewriter, then the computer, and now ... artificial intelligence (AI)?
- B. It's the language of consumption, colonisation and metabolisation.
- C. Human-Artificial Intelligence (AI) collaborative creative systems based on Machine Learning are slowly making their way into people's creative artistic lives, such as music composition, creative illustration, and co-writing.
- D. In the meantime, I'll be working on my masterpiece: Moon Vampires.

Directions for questions 22 to 24: In the following questions, rearrange the five sentences in order to form a meaningful paragraph.

TITA

Q.22.

1. The impression is momentarily belied by his impressive résumé: At the age of 45, Moyn is teaching his first semester as a professor of history and law at Yale University, following appointments at Harvard and Columbia.
2. Slumped across a chair in jeans and Converse in his Harvard law office last winter, he ricocheted from the French philosopher Emmanuel Levinas (the topic of Moyn's dissertation and first book) to theories of political economy — something Moyn has devoted more attention to since the 2008 financial crisis — to Jonathan Littell's 2009 novel *The Kindly Ones*, which Moyn called "intentionally sickening and an

unquestionably brilliant success" in a review for The Nation. On the other hand, Moyn has a social-media habit rivaling that of most teenagers.

3. Samuel Moyn looks suspiciously like a teenager.

4. Moreover, even for an adult scholar, Moyn has well-informed views on a startling diversity of topics.

TITA

Q.23.

1. That has been the fundamental source of friction in the Indo-US relationship.

2. The degree of consonance with New Delhi's present strategic perspective was striking.

3. US Secretary of State Rex Tillerson outlined Washington's big picture view of the Indo-US relationship and the strategic core of the speech was his declaration that "the Indo-Pacific – including the entire Indian Ocean, the Western Pacific, and the nations that surround them – will be the most consequential part of the globe in the 21st century."

4. India and the United States are the world's largest democracies, separated by different world views.

TITA

Q.24.

1. This provision may bring this new law under the lenses of the judiciary and just like laws with a lot of lacunae, this will also get struck out by the judiciary with scathing remarks regarding the duty of the government to uphold personal freedom.

2. The bill points out that it will be applicable only to loan accounts with at least balance of Rs 100 crores or above and along with that the property of the accused can be attached under this law.

3. It very well strikes at the root of personal freedom that an accused is not the criminal and unless the crime is proved, it is not possible to take any punitive action against any such person

4. The Fugitive Economic Offenders bill was tabled in the Parliament in order to take care of the cases in which the offenders of economic crimes have fled the country without proper permission from the government.

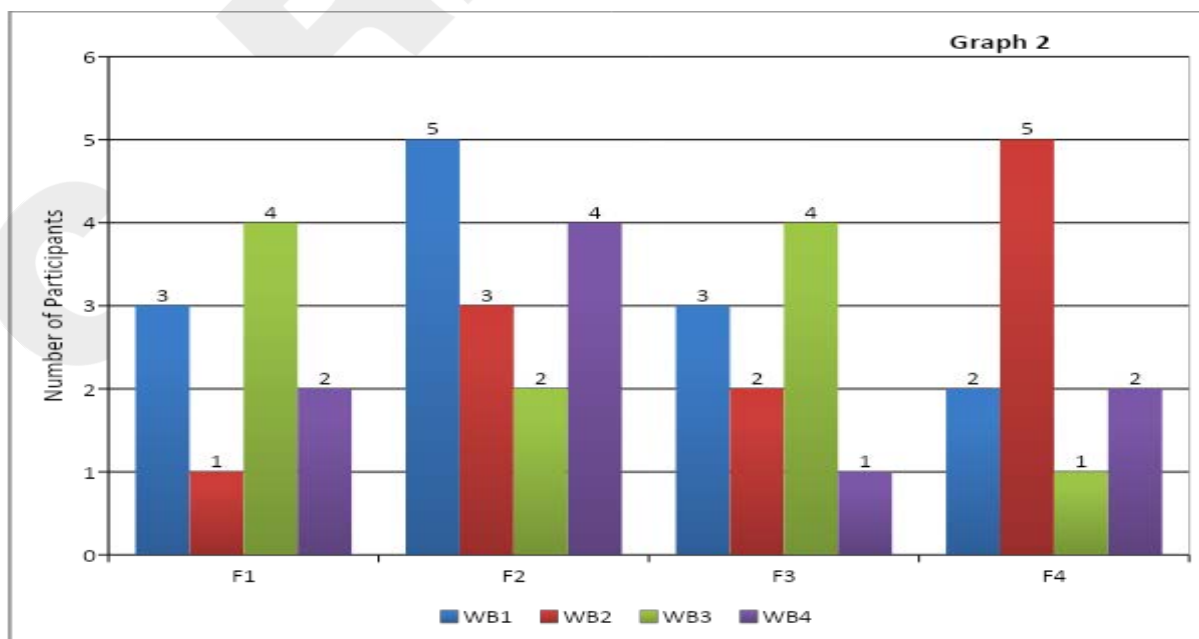
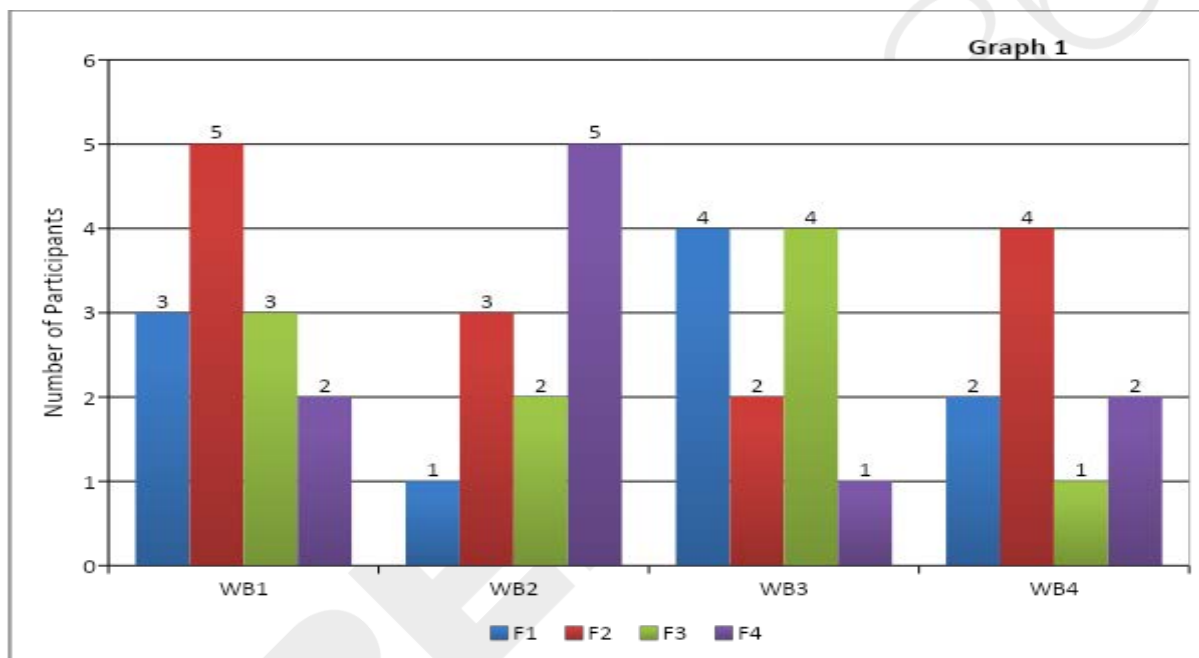
CAREERS360

Section - 2 - Data Interpretation and Logical Reasoning

Directions for questions from 25 to 29 :

In the internationally famed Agri-Horticulture Flower Show held in the winters of Alipore, Kolkata every year, 44 participants from West Bengal took part after the post pandemic reopening in January 2023. All of them participated in any one of the following four different categories of flowers namely Roses, Dahlias, Orchids and Lilies. Each participant was from one of the following four districts of 24-Parganas, Midnapore, Jalpaiguri and Nadia of West Bengal.

The first bar-graph shows the distribution of the participants according to the districts, with the names of the districts disguised as WB1, WB2, WB3 and WB4. The second bar-graph shows the distribution of the participants according to their category, with the names of the categories disguised as F1, F2, F3 and F4.



The following information were also known :

- a) Had there been one more participant from 24-Parganas and one less participant from Jalpaiguri, the number of participants from 24-Parganas and Jalpaiguri would be equal
- b) Had there been one more participant from Midnapore and one less participant from Nadia, the number of participants from Midnapore and Nadia would be equal
- c) Had there been two more participants in Orchids and two less participants in Dahlias, the number of participants in Orchids and Dahlias would be equal
- d) The number of participants from 24-Parganas in all the four categories was distinct natural numbers
- e) The number of participants from Nadia in Orchids was 1

Q 25 (TITA)

How many participants of the Agri-Horticulture Flower Show held in Alipore, Kolkata, in the category of Orchids, participated from Jalpaiguri ?

Q 26 (TITA)

How many participants of the Agri-Horticulture Flower Show held in Alipore, Kolkata, participated from Nadia and 24-Parganas in the category of Dahlias ?

Q 27 Which of the following is the highest ?

- A) Number of participants in Roses from Nadia
- B) Number of participants in Dahlias from 24-Parganas
- C) Number of participants in Dahlias from Jalpaiguri
- D) Number of participants in Orchids from Midnapore

Q 28 How many participants of the Agri-Horticulture Flower Show held in Alipore, Kolkata, in the category of Roses and Orchids, participated from Midnapore and Nadia ?

- A) 7
- B) 8
- C) 9
- D) Cannot be determined

Q 29 (TITA)

The number of participants of the Agri-Horticulture Flower Show held in Alipore, Kolkata, in all the four categories of flowers could get uniquely determined for how many of the four districts of West Bengal ?

Directions for questions from 30 to 34:

In the audition held in 1969 for the actors of the Satyajit Ray Bengali language classic 'Aranyer Din-Ratri', twenty five of the top actors of Bengali cinema took part. A merit list was prepared based on their score in the audition. The actor with the highest score got the first rank and the one with the lowest score the last rank. None of the twenty five actors had the same score in the audition.

Five actors – Mr Soumitra Chattopadhyay, Dr Subhendu Chattopadhyay, Mr Shamit Bhanja, Mr Pahari Sanyal and Mr Rabi Ghosh – who had appeared for the audition gave the following clues about their ranks when asked for it :

- a) For all five of them, the number of actors having a higher score than an actor was not the same as the number of actors having a lower score than that actor, or for that matter, any other actor
- b) Mr Shamit Bhanja had a higher score than Dr Subhendu Chattopadhyay, who in turn had a higher score than Mr Pahari Sanyal
- c) The number of actors between Mr Pahari Sanyal and Mr Shamit Bhanja in the merit list was the same as the number of actors between Mr Soumitra Chattopadhyay and Dr Subhendu Chattopadhyay.
- d) At least sixteen actors got a higher score than Mr Soumitra Chattopadhyay
- e) The number of actors having a lower score than Mr Pahari Sanyal was at least fifteen, which was at most seven more than the number of actors than those who had a higher score than him
- f) The number of actors ranked between Mr Pahari Sanyal and Mr Rabi Ghosh was twice the number of students ranked between Mr Pahari Sanyal and Mr Soumitra Chattopadhyay

Q 30 (TITA)

How many actors had a lower ranking than Mr Shamit Bhanja ?

Q 31 (TITA)

How many actors had a lower score than Dr Subhendu Chattopadhyay ?

Q 32 (TITA)

How many actors were ranked between Mr Soumitra Chattopadhyay and Mr Rabi Ghosh in the merit list ?

Q 33 In between which of the following pairs of actors were the difference in ranks the maximum ?

- A) Mr Soumitra Chattopadhyay and Mr Rabi Ghosh
- B) Mr Pahari Sanyal and Mr Soumitra Chattopadhyay
- C) Dr Subhendu Chattopadhyay and Mr Pahari Sanyal
- D) Mr Shamit Bhanja and Mr Rabi Ghosh

Q 34 The difference in ranks between a pair two actors is the same with that of another pair. How many such cases exist among the five actors referred to in the problem ?

- A) 2
- B) 1
- C) 0
- D) Cannot be determined

Directions for questions from 35 to 38:

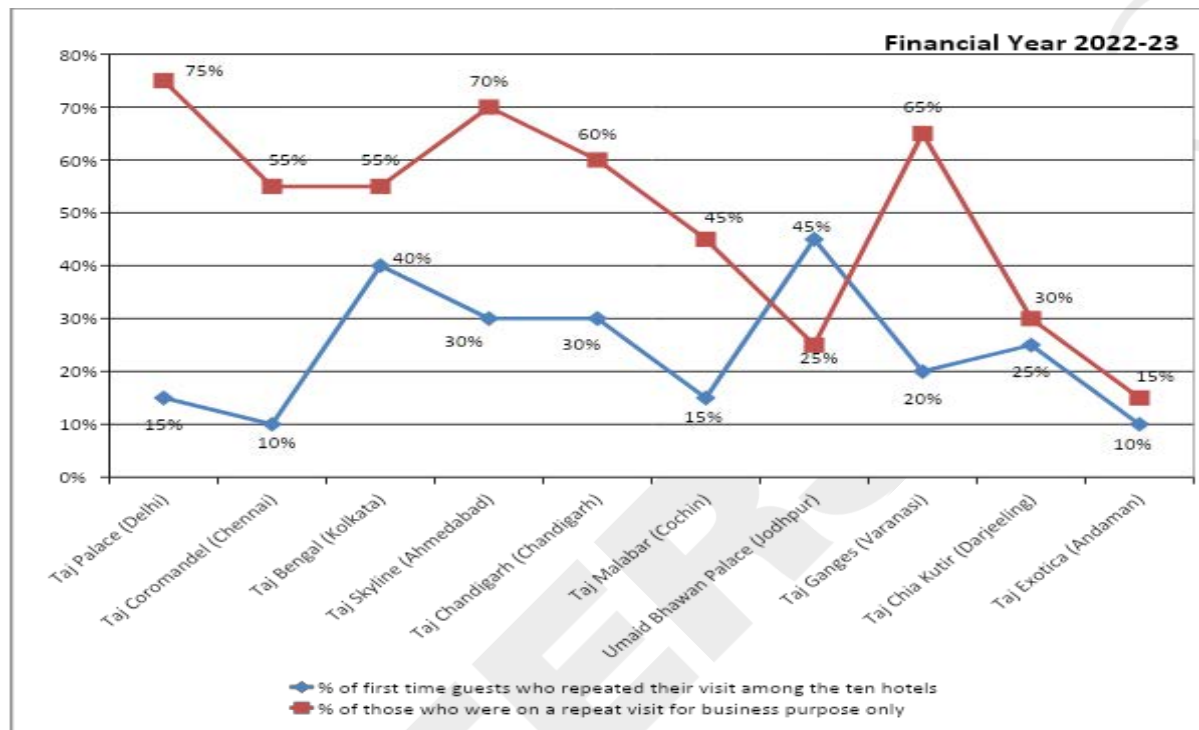
Mr N Chandrasekaran, Chairman of the Taj Group of Hotels, in the process of investigating the reason for the not so good financial performance of the top ten hotels of their group in the financial year 2022-23, initiated two surveys.

The survey was to be done specifically for the following top ten hotels of their group : 1) Taj Palace (Delhi), 2) Taj Coromandel (Chennai), 3) Taj Bengal (Kolkata), 4) Taj Skyline (Ahmedabad), 5) Taj Chandigarh (Chandigarh), 6) Taj Malabar (Cochin), 7) Umaid Bhawan Palace (Jodhpur), 8) Taj Ganges (Varanasi), 9) Taj Chia Kutir (Darjeeling) and 10) Taj Exotica (Andaman).

In 2021-22, a certain number of people went to these hotels (collectively) and in 2022-23, these people again visited one or more of these 10 hotels.

One of the surveys was to find out what percentage of the first time guests of these top ten hotels of their group repeated their visit at these ten hotels in the financial year 2022-23. The second was to find out what percentage of those who repeated their visit at these ten hotels in the financial year 2022-23, were there for business purposes.

The following was the result of the survey in the form of a line graph with two components :



Q 35 In which of the hotels in the Financial Year 2022-23, were the number of first time guests who were on a repeat visit for business purposes the same ?

- A) Umaid Bhawan Palace (Jodhpur) and Taj Palace (Delhi)
- B) Taj Chia Kutir (Darjeeling) and Taj Malabar (Cochin)
- C) Taj Skyline (Ahmedabad) and Taj Bengal (Kolkata)
- D) Cannot be determined

Q 36 What is the average number of times (rounded to the second decimal place) in the Financial Year 2022-23, each single first time guest at the ten hotels taken together, repeat their stay, but only for business purpose ?

- A) 0.86
- B) 1.18
- C) 2.38
- D) 3.95

Q 37 In which of the hotels in the Financial Year 2022-23, did the fourth lowest number of guests repeat their stay, but only for business purpose ?

- A) Taj Exotica (Andaman)
- B) Taj Coromandel (Chennai)
- C) Taj Chia Kutir (Darjeeling)
- D) Taj Malabar (Cochin)

Q 38 It was known that in the Financial Year 2022-23, the guests who repeated their stay at the Umaid Bhawan Palace (Jodhpur), and the guests who repeated their stay at another hotel out of the remaining nine (say the hotel is Taj Z), did not repeat their stay at any other hotel. Assuming that none of the repeat guests of the Umaid Bhawan Palace (Jodhpur) repeated their stay at Taj Z, and vice versa, how many of the nine hotels, excluding the Umaid Bhawan Palace (Jodhpur), can be Taj Z ?

- A) 1
- B) 2
- C) 3
- D) 4

Directions for questions from 39 to 44 :

Anirban, Biswajit, Charbak, Dibyendu and Emon were five good friends since their Jadavpur University days, and were having an offshore posting in Manila for M/s CTS for the last few years. They were all Bengalis and shared the same bachelor accommodation in Manila. The CTS South-East Asia Team Head Mr Chatterjee brought them a big earthen pot of rasgullas from Kolkata as a personal gift during his Manila visit on a Saturday.

They decided to enjoy the delicacy rare for a resident of Manila, on Sunday, an off day for them. They kept the pot in the refrigerator.

Now, Bengalis inherently have a sweet tooth, and hence are extremely fond of rasgullas. Being young men, they found it extremely difficult to curb their urge to have a taste of the sweet. During the night, at different times, they stealthily raided the refrigerator, without the knowledge of the others, to eat a few of the rasgullas.

Next morning, on the Sunday, during breakfast time the five friends found that only one-eighth of the original number of rasgullas remained in the pot.

It was also known that :

- a) Emon ate the rasgullas before Dibyendu did
- b) None of them ate more than half the number of rasgullas that were there in the pot when they went to eat it
- c) The friend who ate last ate only one-fourth of the rasgullas that were remaining in the pot when he went to eat it
- d) Emon ate half of the rasgullas that were left in the pot when he went to eat it
- e) Anirban ate the same number of rasgullas as Emon did
- f) Dibyendu ate the rasgullas after Charbak did
- g) When Anirban went to eat the rasgullas, only four-fifth of the original number of rasgullas were left in the pot
- h) When Dibyendu had finished eating, more than one-eighth of the original number of rasgullas was left

Q 39 Who was the last friend to eat the rasgullas on Saturday night ?

- A) Anirban
- B) Biswajit
- C) Dibyendu
- D) Cannot be determined

Q 40 If only fifteen rasgullas were left in the pot during breakfast on Sunday morning, how many rasgullas did Charbak eat on Saturday night ?

- A) 12
- B) 18
- C) 24
- D) 32

Q 41 Who among the following options ate the maximum number of rasgullas ?

- A) Emon
- B) Dibyendu
- C) Charbak
- D) Biswajit

Q 42 If only fifteen rasgullas were left in the pot during breakfast on Sunday morning, after which of the following friends had finished eating was less than sixty and more than twenty-four rasgullas remaining in the pot in the refrigerator ?

- A) Anirban
- B) Biswajit
- C) Dibyendu
- D) Emon

Q 43 Who among the following options had eaten the least percentage of the number of rasgullas compared to the number of rasgullas remaining when he went to eat it ?

- A) Anirban
- B) Biswajit
- C) Charbak
- D) Dibyendu

Q 44 If only fifteen rasgullas were left in the pot during breakfast on Sunday morning, how many rasgullas were remaining in the pot after Emon had finished eating the rasgullas on Saturday night?

- A) 25
- B) 32
- C) 42
- D) 48

Section - 3 - Quantitative Aptitude

Q45. (TITA)

If the greatest integer k for which 7^k is a factor of $n!$ is 6, what can be the difference between k and p if p has the largest possible value so that 5^p is a factor of $n!$?

Q46. (TITA) If we add all the integers from 2 to 29 (including both values), we get n , what is the sum of all the factors of n ?

Q47. Due to a 16.66% increase in the price of fuel, a person got n liters less quantity for \$50 than he was getting before the increase. If the initial price lies between \$10 to \$15 per liter. What can be the value of n if initial and final price should be a natural value?

- (a) 0.59 (b) 0.71 (c) 2.25 (d) 2.14

Q48. A set S consists of the integers $\{1, 2, 3, 4 \dots (2n + 1)\}$, where n is a positive integer. S' is the set of integers of the same numbers in set S but written in the reverse order. If X is the average of the values at odd places in set S and Y is the average of the values at even places in set S' , then If $X - Y$ is

- (a) a natural number (b) a whole number (c) a multiple of 3 (d) a negative integer

Q49. (TITA)

A driver completed the first 10 miles of a 40-mile trip at an average speed of 50 miles per hour. After 10 miles engine of car failed. Driver then called a Car mechanic, in what time car mechanic must reach so that average speed (in miles per hour) of the entire journey is 60 miles per hour if he drove the remaining distance at a speed of 80 miles per hour. (Write answer in minutes)

Q50. Point P is a point between A and B such that $PA: PB = 3: 4$. A bus starts from A and moves towards B . A Car starts from B towards A at the same time. Car reaches P one hour after the bus. If the speed of car is half that of bus, then which of the following can be distance (in Kilometers) between A and B if speeds and distances are integral?

- (a) 340 (b) 245 (c) 490 (d) 500

Q51. (TITA)

Expenses on four cats costing \$120 in 3-days trip. If expenses on a dog double the expenses on a cat, what would be the amount of expenses on 6 cats and 7 dogs in 4 days trip? (in Dollars)

Q52. A total of \$10,000 was invested in two certificates of deposit. At 1st certificate interest rate is 6% per annum for first year and 8% per annum for the coming years. While on the other is 6% per annum compounded annually. If the total interest on the two certificates was \$1318 at the end of two year, what fractional part of the 10,000 was invested at compound interest?

- (a) $\frac{3}{8}$ (b) $\frac{2}{5}$ (c) $\frac{1}{2}$ (D) $\frac{3}{5}$

Q53. The function f is defined by $f(x) = -1/(2x+1)$ for all non-negative numbers x . If $f(a) = -1/2$ and $f(a+b) = 1/6$, then $b =$

- (a) 3 (b) $1/3$ (c) $-1/3$ (d) -4

Q54. (TITA)

A pen stand manufacturing company manufactures two sizes of pen stand each in four colors: red, green, yellow and white. Packaging is done in two ways:

(i) Packages contain either two stands of the same size and the same color and 1 is of different size.

(ii) Package contains three stands of the same size and of three different colors.

If the order of the colors packed is not considered.

In how many different ways packaging can be done?

Q55. If a seller gives a discount of 20% on retail price along with buy 1 get 1 offer, she still makes a loss of 20%. Which of the following ensures that she makes a profit of 20%?

- (a) Give a discount of 50% on retail price
 (b) Give two successive discounts of 30% and 20%.
 (c) Increase the retail price by 10% and give a discount of 50%
 (d) Both a and b are correct.

Q56. Two polygons have diagonals in the ratio 19: 13. What can the ratio of number of sides in both polygons?

- (a) 13: 19 (b) 6: 7 (c) 7: 6 (d) 19: 13

Q57. An optometrist charges \$200 per pair for soft contact lenses and \$105 per pair for hard contact lenses. Last week she sold 'n' more pairs of hard lenses than soft lenses. If her total revenue of this week is 10.65% more than that of last week in which she sold 10 pairs of each. What can be the value of n

- (a) 4 (b) 15 (c) 6 (d) 9

Q58. Find the number of trailing zeroes in (TITA)

$$20!^{1*18!^{3*16!^{5*}} \dots *2!^{19}}$$

Q59. In an isosceles triangle PQR, if sum of the squares of the two sides is equal to the square of the third side. Which of the following is not correct?

I. If $\angle P$ is the largest, then equal sides of the triangles cannot be PQ and PR.

II. Measurement of $\angle P$ can be 45°

III. If $\angle P$ is the largest, then perpendicular drawn from P on opposite side is the angle bisector of angle P.

- (A) Only I
 (B) Only III
 (C) Only I and II
 (D) Only II and III

Q60. A thin piece of wire 40 meters long is cut into two pieces. One piece is used to form a circle with radius r , and the other is used to form a square. If no wire is left over, Perimeter of square is $3/2$ of circumference of circle. What is ratio of areas of square and circle respectively?

- (a) $9\pi:16$ (b) $1:\pi^3$ (c) $\pi^3:1$ (d) $\pi:4$

Q61. Angle between the diagonals on adjacent side of a cube meeting at one corner is?

- (a) 30° (b) 45° (c) 60° (d) 75°

Directions for Questions 62 and 63: Read the following and answer the questions that follow.

Dharmesh started from City M to City N at 8 p.m. at a speed of 60 km/h. Dharmendra, started from City N to City M at 5 a.m. next morning at a speed of 90 km/h. The distance between City M and N is 900 km.

Q62. (TITA)

If Dharmesh took a rest for 2 hrs after the journey of 4 hrs, how far from City N will they meet?

Q63. In previous question Dharmesh get to know that his child is in critical condition and took a U-turn to City A at 5 am. Who will reach at City M first.

- (a) Dharmesh (b) Dharmendra (c) both reaches at same time (d) Data is insufficient

Q64. (TITA)

Three persons A, B and C visits a temple at a regular interval of 16 days, 24 days and 30 days respectively. On a certain day, they met for the first time. A and B met for p times while B and C met for q times before all the three met again. find $(p+q)$

Q65. A two-digit number is 25 more than the product of its digits and 18 less than the sum of the squares of the digits. Find the number.

- (a) 63 (b) 72 (c) 27 (d) 67

Q66. $\log_{32} 81 = \frac{5}{4} \log_{11} 2 \times \log^{ab}$, then find the value of b given $3 \leq a \leq 11$.

- (a) $11 \leq b < 121$ (b) $11 \leq b < 1331$ (c) $3 \leq b \leq 11$ (d) $121 \leq b < 1331$

Answer Key - Mock Test 5

Section - Verbal Ability & Reading Comprehension

1- A, 2-C, 3-B, 4-B, 5-A, 6-C, 7-C, 8-C, 9-C, 10-B, 11-D, 12-D, 13-B, 14-C, 15-D, 16-B, 17-D, 18-B, 19-D, 20-C, 21-B, 22- 3142, 23-4132, 24-4231

Section - Data Interpretation & Logical Reasoning

25 -3, 26-7, 27-C, 28-D, 29-1, 30-24, 31-17, 32-5, 33-D, 34-A, 35-A, 36-B, 37-C, 38-D, 39-B, 40-C, 41-A, 42-D, 43-C, 44-B

Section - Quantitative Aptitude

45 -5, 46-1764, 47-A, 48-B, 49-220, 50-C, 51-125, 52-C, 53-C, 54-40, 55-A, 56-C, 57-C, 58-110, 59-A, 60-A, 61-C, 62-288, 63-A, 64-5, 65-D, 66-B

Solutions - Mock Test 5

Section - Verbal Ability & Reading Comprehension

1. A

This is a tricky question where you need to understand the subtext in order to identify the correct answer.

The passage is all about providing a justification/explanation/support for Hume's theory and explains how our beliefs and ideas are formed. This is done from the perspective of Hume. What did Hume emphasize? He emphasized past experience/habits dominating reason and these being the primary source of our beliefs and ideas.

This is explained by option A in the given case.

Option B is incorrect as there is no relative discussion between our subjective experiences and objective evaluations.

Option C is ruled out as the author does not say that cause and effect relationships are the primary part of our beliefs and ideals.

Option D is a close one but it is still incorrect. The mention of objective reasoning is incorrect here as this does not find a mention in the passage.

This is a question where options subtly change the implications of the author of the passage and distort the meaning given to us.

2. C

This is a tricky question where you need to be careful.

Option A is incorrect. Social physiology is concerned with such dynamic processes as religion, morals, law, economic and political aspects, each of which may be the subject matter of a special discipline.

Option B is incorrect. Nihilism refers to the belief that things (or everything, including oneself) do not exist; denial of objective reality; a sense that everything is unreal.

Scepticism refers to doubt about the truth of something. This can fit but then nihilism is incorrect here.

Options C and D are the tricky ones.

This is a passage about beliefs and ideas, and this comes under philosophy.

Which option do we pick in this case?

We pick option C and not option D for a specific reason.

This passage is not a personal reflection of the author of the passage. Rather, he is quoting and explaining the work of Hume. Hence, option D is ruled out here as it cannot be a personal exposition.

3. B

Refer to the lines: According to Hume, our belief that events are causally related is a custom or habit acquired by experience: having observed the regularity with which events of particular sorts occur together, we form the association of ideas that produces the habit of expecting the effect whenever we experience the cause.... The idea does not arise from our objective experience of the events themselves. All we observe is that events of the "cause" type occur nearby and shortly before events of the "effect" type, and that this recurs with a regularity that can be described as a "constant conjunction."

Option B is the clear answer here. As the above lines indicate, we convert the occurrence of two events (co-relation) into causation (cause and effect).

Option A is ruled out as it misses out on the sentiment of cause and effect.

Option C is incorrect as this is not about our expectations but rather our beliefs and experience.

Option D is ruled out as the author does not mention 'two things happening without any reason'. This completely mutilates the sentiment implied in the passage.

4. B

Refer to the lines: Consider Hume's favorite example: our belief that the sun will rise tomorrow. Clearly, this is a matter of fact; it rests on our conviction that each sunrise is an effect caused by the rotation of the earth. But our belief in that causal relation is based on past observations, and our confidence that it will continue tomorrow cannot be justified by reference to the past. So we have no rational basis for believing that the sun will rise tomorrow. Yet we do believe it!

The answer to this question is a simple one: we believe the sun will rise tomorrow because we have seen that happening in the past; there is no rational basis/reasoning involved in it. Hence, option B is the correct answer.

Options A and D are ruled out as there is no reference to reasoning.

Option C is ruled out as what classifies as a natural observation? The author does not divide observations into categories (natural/unnatural).

5. A

Refer to the lines: In the Age of Trump, historians have let historical analogies loose. Many have been the comparisons: Trump to Andrew Jackson, Trump to James Buchanan, Huey Long, George Wallace, Trump to Richard Nixon (I was one of those historians), to Hugo Chávez, even to Biff Tannen from Back to the Future, and King Aerys II of the House Targaryen — the "Mad King."

The author has also used historical analogies and has found them to be useful. Considering this, option A is the right answer.

Historic vs. Historical

Historic means famous, having great importance in history: "Signing of Shimla Pact by Indira Gandhi and Bhutto was a historic moment in the Indo-Pak border."

Historical, on the other hand, means connected with the past: "Historical buildings like the Taj Mahal, Red Fort, Jama Masjid etc. built by the Mughal kings are worth visiting."

6. C

The answer can be derived from the lines: For centuries, from Thucydides to Livy, Polybius to Edward Gibbon, historians have wielded the analogy as an instrument for inquiry and instruction.

Device and tool are synonyms for the word 'instrument'.

Examination is a synonym for the word inquiry.

Educating is a synonym for the word instruction.

7. C

Refer to the lines: As the renowned Yale professor A. Dwight Culler described, "virtually every historian of antiquity and the Renaissance" forwarded to some degree the claim that history, at its core, is "philosophy teaching by example." That is, our discipline aims to illuminate issues at hand by scouring for lessons from analogous predicaments in the past.

Now the two options which are close are options B and C. These are really tricky in the given case. Now the only issue with option B is that we cannot say that history adopts an example based approach. This is something that cannot be concluded from the lines above.

We can conclude that history combines philosophy and examples but it does not really imply that philosophy lacks such an approach.

On the other hand, option C is the diplomatic option and fits perfectly. We know this with certainty that philosophy and history differ in their use of examples and this is what is implied by this option.

8. C

Option A can be derived from the lines: Temkin proclaimed in an op-ed in The New York Times. The peddling of historical analogy to understand current events might earn TV spots, but such spotty practice belied the historian's process. It was "useless," even falsely "reassur[ing]," not just bad scholarship but possibly "dangerous."

Option B can be derived from the lines: In the Age of Trump, historians have let historical analogies loose.

Option C cannot be determined from the passage of the given context. The author does not provide any information with regards to which viewpoint is more popular.

Option D can be derived from the lines: For centuries, from Thucydides to Livy, Polybius to Edward Gibbon, historians have wielded the analogy as an instrument for inquiry and instruction.

9. C

The author of the passage is very simply describing what biopower is.

He is not favouring/attacking/exposing/encouraging biopower or its use.

Options A, B, and D adopt a positive or negative stance, which does not fit in the given context.

Hence, it is ruled out.

10. B

This is a close question where you need to closely go through each of the options to identify the correct answer.

Option B is the correct paraphrase here.

The paragraph essentially implies that Biopower is related to actively probing or studying the factors which have led to our present state, rather than seeing the whole thing through our biases of the past.

Option A is incorrect as there is no mention of biopower being dominated by the history of the present.

Option C is incorrect as the first paragraph does not say biopower runs counter to the history of the present.

Option D is incorrect as there is no mention of biopower being controlled by the history of the present. Also, there is no mention of proactive/passive understanding.

11. D

Refer to the lines: Like disciplinary techniques and procedures, the technologies of biopower are addressed to a multiplicity, but they are addressed to that multiplicity in so far as it forms a global mass

affected by the biological processes of life itself: birth and death, health and illness. To the techniques of discipline that came to hold sway over the human body and which are individualising are added the techniques and technologies of biopower which, on the contrary, but in a complimentary way, are massifying, directed towards humans in the genetic and species sense....Biopower is thus tied to the emergence of the discipline of statistical demography, and there begins the quantification of the phenomena of birth-rate, longevity, the reproductive rates and fertility of a given population, its state of health, patterns of diet and habitation.

You can solve this question by spotting the option that does not conform to the pattern.

Options A, B, and C all refer to things that impact the wider population and are dealing with the biological processes and controlling them.

Option D, on the other hand, is a disciplinary technique dealing with a social situation.

You simply need to spot the odd one out here.

12. D

Statement I is incorrect. Refer to the lines: Like disciplinary techniques and procedures, the technologies of biopower are addressed to a multiplicity, but they are addressed to that multiplicity in so far as it forms a global mass affected by the biological processes of life itself...

Statement II is correct. Refer to the lines: Given the nature of the phenomena with which it is concerned it is regulatory rather than disciplinary.

Statement III is correct. Refer to the lines: The former, disciplinary technologies, centre on the individual body: they treat it as a machine, considering it as a being consisting of parts, organized in a certain fashion, requiring energy in order to operate and capable of producing certain effects, that is, of working. Decomposing it into its parts, and subjecting them to training, to discipline, it seeks to render the body both docile and utile. Biopower, on the other hand, focuses on the body as the vehicle of species life.

13. B

This is not a difficult question. What is the main concern of the author of the passage? The author of the passage is essentially concerned with whether we can determine the intelligence of animals. The current method of determining the same is through operant conditioning (an approach). The author questions this and highlights how the same cannot be used. This makes option B the correct answer.

Option A is incorrect as the passage is not about better care/understanding.

Option C is too extreme in its nature and just singles out the book in concern.

Option D is incorrect as the passage is not about brain function but rather deals with the question whether we can determine the intelligence of animals.

14. C

Option A is correct. Refer to the lines: They might be insufficiently motivated by the reward, find the repetition frustrating, or simply be uninterested in what the trainer is up to. In any case, it's not obvious that any of these traits indicate a lack of intelligence.

Option B is correct. Refer to the lines: Similarly, you sometimes hear people say that a particular breed of dog is highly intelligent. But quite often, what people mean by this is that individuals of that breed are very obedient and can be trained to perform many tasks.....If one pet takes to the trick much faster than the other, it can be tempting to say that the first is more intelligent.

Option C is incorrect. Refer to the line: Now, I have no idea how seriously this book is intended to be taken.

The author does not know how seriously the book should be taken.

15. D

Option A is correct: To learn a trick in this way involves latching on to the contingency between act and consequence – ‘figuring out’ just what behaviour the reward is tied to

Option B is correct: The tricks are taught using operant conditioning – when the animal performs the desired behaviour, they get a reward which ‘positively reinforces’ the behaviour.

Option C is correct: As well as this, there are any number of reasons an animal might not succeed in learning the trick. They might be insufficiently motivated by the reward, find the repetition frustrating, or simply be uninterested in what the trainer is up to. In any case, it’s not obvious that any of these traits indicate a lack of intelligence.

16. B

The example of the octopuses has one simple purpose: it tells us how operant conditioning does not work; in other words, the pitfalls of the method. There is no other option which comes close to explaining this sentiment. Hence, option B is the correct answer here.

17. D

The paragraph is conveying that aggression should be used in limitations and would not suit everyone. This makes option D the correct choice.

Option A is limited in its nature as it only talks about aggression but not about suitability with respect to players.

Option B goes against the sentiment of the author of the passage.

Option C is not the summary of the paragraph and is also not correct in the given case.

18. B

The provision of a conditional amnesty to Americans by Native Americans is the most important idea discussed in the passage. Options C and D are inaccurate due to the fact that there is no mention of war or fighting in the passage.

Because it does not make any reference to Native Americans, Choice A is wrong. Thus, the best option to go with is option B.

19. D

Smart cards for free flour and a mixed success rate are the main points of the passage. Option D is the right choice because it gets all of these things right.

20. C

This is a question which you solve by using clever logic.

Despair/hopelessness/despondency more or less mean the same thing. Hence, this rules out these three options. We cannot have three correct answers.

Hence, the odd one out wins here: option C.

Also, the crisis is a cost of living crisis and if you lose your job, then you will recede into poverty.

21. B

In this question, we need an answer choice that continues the topic, sentiment, and tone of the passage.

Options A and C suffer from a common problem: instead of extending the paragraph, they give introductions to the topic, and hence, do not fit the given context.

Option D travels in a different tangent altogether and goes completely off topic.

Option B is the correct answer as it provides us with features of what AI is and what it stands for as a language.

22.3142

Statement 3 is the introductory sentence in this case.

Statement 1 then takes the sentiment forward by providing a counter-point.

Statement 4 introduces the subject of Moyn's views and statement 2 provides these views. The second half of Statement 2 then introduces the contradiction.

23.4132

Sentences 4 and 1 make a mandatory pair and will come together. Also, both are introductory in nature. They will be followed by sentences 32 in that order as these sentences point to what the US Secretary of State said and how that is good for the Indo-US relationship.

24. 4231

Statement 4 introduces the central theme of the passage as the passage of the bill in the parliament and that is why it comes at the beginning of the paragraph. It is followed by statement 2 because it explains the various provisions of the law as mentioned in the bill. Statement 3 comes after that in which the author has indicated that the new bill violates the provisions of personal freedom as envisaged in the constitution. Statement 1 will conclude the passage as it is about the possible fate of the bill with the judicial lens proving detrimental for its survival. This makes the proper sequence of sentences as 4-2-3-1

Section - Data Interpretation & Logical Reasoning

25. 3

Observing the data provided in both the first and second graphs, which is basically the same, we can conclude the following :

<i>Graph 1 & 2</i>	F1	F2	F3	F4
WB1	3	5	3	2
WB2	1	3	2	5
WB3	4	2	4	1
WB4	2	4	1	2

We can further go ahead with the totals :

<i>Graph 1 & 2</i>	F1	F2	F3	F4	TOTAL
WB1	3	5	3	2	13
WB2	1	3	2	5	11
WB3	4	2	4	1	11
WB4	2	4	1	2	9
TOTAL	10	14	10	10	44

Now, from information no (d), we can conclude that WB2 could only be 24-Parganas

From information no (a), and the knowledge that WB2 is 24-Parganas, we can conclude that WB1 could only be Jalpaiguri

From information no (b) we know that Midnapore had two participants more than Nadia. So we can conclude that WB3 could only be Midnapore and WB4 could only be Nadia

From information no (c) we know that the participants in Dahlias were four more than the participants in Orchids. Hence we can conclude that F2 could only be Dahlias.

From information no (e) and the knowledge that WB4 is Nadia, we can conclude that F3 could only be Orchids

However, there is no information to let us know who among F1 and F4 were Roses and Lilies respectively

Hence, we can finally conclude :

<i>Graph 1 & 2</i>	F1 (Roses/Lilies)	F2 (Dahlias)	F3 (Orchids)	F4 (Lilies/Roses)	TOTAL
WB1 (Jalpaiguri)	3	5	3	2	13
WB2 (24-Parganas)	1	3	2	5	11
WB3 (Midnapore)	4	2	4	1	11
WB4 (Nadia)	2	4	1	2	9
TOTAL	10	14	10	10	44

Hence, 3 participants of the Agri-Horticulture Flower Show held in Alipore, Kolkata, in the category of Orchids, participated from Jalpaiguri

26. 7

We know that :

<i>Graph 1 & 2</i>	F1 (Roses/Lilies)	F2 (Dahlias)	F3 (Orchids)	F4 (Lilies/Roses)	TOTAL
WB1 (Jalpaiguri)	3	5	3	2	13
WB2 (24-Parganas)	1	3	2	5	11

WB3 (Midnapore)	4	2	4	1	11
WB4 (Nadia)	2	4	1	2	9
TOTAL	10	14	10	10	44

27. C

We know that :

<i>Graph 1 & 2</i>	F1 (Roses/Lilies)	F2 (Dahlias)	F3 (Orchids)	F4 (Lilies/Roses)	TOTAL
WB1 (Jalpaiguri)	3	5	3	2	13
WB2 (24- Parganas)	1	3	2	5	11
WB3 (Midnapore)	4	2	4	1	11
WB4 (Nadia)	2	4	1	2	9
TOTAL	10	14	10	10	44

Now,

Number of participants in Roses from Nadia = 2, irrespective of which of F1 and F4 are Roses and Lilies respectively

Number of participants in Dahlias from 24-Parganas = 3

Number of participants in Dahlias from Jalpaiguri = 5

Number of participants in Orchids from Midnapore = 4

Hence the highest number of participants was in Dahlias from Jalpaiguri

28. D

We know that :

<i>Graph 1 & 2</i>	F1 (Roses/Lilies)	F2 (Dahlias)	F3 (Orchids)	F4 (Lilies/Roses)	TOTAL
WB1 (Jalpaiguri)	3	5	3	2	13
WB2 (24- Parganas)	1	3	2	5	11

WB3 (Midnapore)	4	2	4	1	11
WB4 (Nadia)	2	4	1	2	9
TOTAL	10	14	10	10	44

Now, the number of participants in Roses from Nadia is 2, irrespective of which of F1 and F4 are Roses and Lilies respectively. Also the number of participants in Orchids from Nadia is 1

Hence total = $2+1 = 3$

But, the number of participants in Roses from Midnapore cannot be commented upon as the values from Midnapore in F1 and F4 are different. So even though we know the number of participants in Orchids from Midnapore, the total cannot be established.

Hence, cannot be determined.

29. 1

We know that :

<i>Graph 1 & 2</i>	F1 (Roses/Lilies)	F2 (Dahlias)	F3 (Orchids)	F4 (Lilies/Roses)	TOTAL
WB1 (Jalpaiguri)	3	5	3	2	13
WB2 (24- Parganas)	1	3	2	5	11
WB3 (Midnapore)	4	2	4	1	11
WB4 (Nadia)	2	4	1	2	9
TOTAL	10	14	10	10	44

For Jalpaiguri, we can be sure of the number of participants in Dahlias and Orchids, but not for Roses or Lilies

For 24-Parganas, we can be sure of the number of participants in Dahlias and Orchids, but not for Roses or Lilies

For Midnapore, we can be sure of the number of participants in Dahlias and Orchids, but not for Roses or Lilies

But, for Nadia, we can be sure of the number of participants in Dahlias, Orchids, Roses as well as Lilies

Hence for only 1 district of West Bengal the number of participants of the Agri-Horticulture Flower Show held in Alipore, Kolkata, in all the four categories of flowers could get uniquely determined

30. 24

From (d) we can conclude that the rank of Mr Soumitra Chattopadhyay ranged from 17th to 25th.

Let the number of actors having a score lower than Mr Pahari Sanyal be x .

It is given in (e) that x was ≥ 15

Let the number of actors having a score higher than Mr Pahari Sanyal be y .

But then x had to be at most seven more than y (e).

Thus y could be either $(x-7)$ or $(x-6)$ or $(x-5)$ or $(x-4)$ or $(x-3)$ or $(x-2)$ or $(x-1)$

The total number of actors who had auditioned for 'Aranyer Din-Ratri' = 25

Case 1 : $x + 1 + (x-7) = 25$ or, $x = 15.5$. This case was not possible as x cannot be a fraction

Case 2 : $x + 1 + (x-6) = 25$ or, $x = 15$. This case was possible. Thus $x = 15$ means $y = (15-6) = 9$

Case 3 : $x + 1 + (x-5) = 25$ or, $x = 14.5$. This case was not possible as x cannot be a fraction

Case 4 : $x + 1 + (x-4) = 25$ or, $x = 14$. This case was not possible as x was ≥ 15

Case 5 : $x + 1 + (x-3) = 25$ or, $x = 13.5$. This case was not possible as x cannot be a fraction

Case 6 : $x + 1 + (x-2) = 25$ or, $x = 13$. This case was not possible as x was ≥ 15

Case 7 : $x + 1 + (x-1) = 25$ or, $x = 12.5$. This case was not possible as x cannot be a fraction

Thus Mr Pahari Sanyal's rank was 10th.

From (b), Mr Shamit Bhanja had a higher score than Dr Subhendu Chattopadhyay, who in turn had a higher score than Mr Pahari Sanyal.

So the range of the ranks of Mr Shamit Bhanja was from 1st to 8th, while that of Dr Subhendu Chattopadhyay was from 2nd to 9th.

The number of actors ranked between Mr Pahari Sanyal and Mr Shamit Bhanja in the merit list could be a minimum of 1 (as Dr Subhendu Chattopadhyay was between them), and a maximum of 8 (if Mr Shamit Bhanja had the 1st rank).

The number of actors ranked between Dr Subhendu Chattopadhyay and Mr Soumitra Chattopadhyay could be a minimum of $(17-10) = 7$ (if Dr Subhendu Chattopadhyay had the 9th rank and Mr Soumitra Chattopadhyay had the 17th rank) and a maximum of $(25-3) = 22$ (if Dr Subhendu Chattopadhyay had the 2nd rank and Mr Soumitra Chattopadhyay had the 25th rank)

But in (c) it is given that the number of actors between Mr Pahari Sanyal and Mr Shamit Bhanja in the merit list was the same as the number of actors between Mr Soumitra Chattopadhyay and Dr Subhendu Chattopadhyay.

So from the two deductions in the previous paragraph, we can be sure that the number of actors between them could be either 7 or 8 only.

Case 1 : Number of actors between them = 7

This case ensures that Dr Subhendu Chattopadhyay had the 9th rank and Mr Soumitra Chattopadhyay had the 17th rank, and simultaneously Mr Shamit Bhanja had the 2nd rank and Mr Pahari Sanyal had the 10th rank as we already know

The second situation was possible.

But the first situation implied that $(9-1) = 8$ actors had a higher score than Dr Subhendu Chattopadhyay, and $(25-17) = 8$ actors had a lower score than Mr Soumitra Chattopadhyay.

This violated condition (a) which states that for all five of the actors, the number of actors having a higher score than an actor was not the same as the number of actors having a lower score than that actor, or for that matter, any other actor

So Case 1 as a whole is rendered impossible.

Case 2 : Number of actors between them = 8

This case ensures that

A) Mr Shamit Bhanja had the 1st rank with Mr Pahari Sanyal as the 10th rank, and simultaneously Dr Subhendu Chattopadhyay had the 9th rank and Mr Soumitra Chattopadhyay had the 18th rank, or,

B) Mr Shamit Bhanja had the 1st rank with Mr Pahari Sanyal as the 10th rank, and simultaneously Dr Subhendu Chattopadhyay had the 8th rank and Mr Soumitra Chattopadhyay had the 17th rank

Case 2A:

Number of actors between Mr Pahari Sanyal (10th rank) and Mr Soumitra Chattopadhyay (18th rank) = 7

Hence, as per condition (f), the number of actors ranked between Mr Pahari Sanyal and Mr Rabi Ghosh = $2 \times 7 = 14$

Thus the rank of Mr Rabi Ghosh = 25th

But Mr Shamit Bhanja had the 1st rank

So zero actors had a score better than Mr Shamit Bhanja and zero actors had a score less than Mr Rabi Ghosh, which violated condition (a) which states that for all five of the actors, the number of actors having a higher score than an actor was not the same as the number of actors having a lower score than that actor, or for that matter, any other actor

So Case 2A is rendered impossible

Case 2B :

Number of actors between Mr Pahari Sanyal (10th rank) and Mr Soumitra Chattopadhyay (17th rank) = 6

Hence, as per condition (f), the number of actors ranked between Mr Pahari Sanyal and Mr Rabi Ghosh = $2 \times 6 = 12$

Thus the rank of Mr Rabi Ghosh = 23rd

No conditions are violated.

So Case 2B is possible

Hence finally, the rankings of the five actors in the audition held in 1969 for the actors of the Satyajit Ray Bengali language classic 'Aranyer Din-Ratri' were as follows :

Mr Shamit Bhanja = 1st rank

Dr Subhendu Chattopadhyay = 8th rank

Mr Pahari Sanyal = 10th rank

Mr Soumitra Chattopadhyay = 17th rank

Mr Rabi Ghosh = 23rd rank

Hence the number of actors who had a lower ranking than Mr Shamit Bhanja = 24

31. 17

The rankings of the five actors in the audition held in 1969 for the actors of the Satyajit Ray Bengali language classic 'Aranyer Din-Ratri' were as follows :

Mr Shamit Bhanja = 1st rank

Dr Subhendu Chattopadhyay = 8th rank

Mr Pahari Sanyal = 10th rank

Mr Soumitra Chattopadhyay = 17th rank

Mr Rabi Ghosh = 23rd rank

Hence the number of actors who had a lower score, and hence a lower ranking than Dr Subhendu Chattopadhyay = 17

32. 5

The rankings of the five actors in the audition held in 1969 for the actors of the Satyajit Ray Bengali language classic 'Aranyer Din-Ratri' were as follows :

Mr Shamit Bhanja = 1st rank
 Dr Subhendu Chattopadhyay = 8th rank
 Mr Pahari Sanyal = 10th rank
 Mr Soumitra Chattopadhyay = 17th rank
 Mr Rabi Ghosh = 23rd rank

Hence the number of actors who were ranked between Mr Soumitra Chattopadhyay and Mr Rabi Ghosh in the merit list = 5

33. D

The rankings of the five actors in the audition held in 1969 for the actors of the Satyajit Ray Bengali language classic 'Aranyer Din-Ratri' were as follows :

Mr Shamit Bhanja = 1st rank
 Dr Subhendu Chattopadhyay = 8th rank
 Mr Pahari Sanyal = 10th rank
 Mr Soumitra Chattopadhyay = 17th rank
 Mr Rabi Ghosh = 23rd rank

Hence the difference in ranks were maximum in between Mr Shamit Bhanja and Mr Rabi Ghosh

34. A

The rankings of the five actors in the audition held in 1969 for the actors of the Satyajit Ray Bengali language classic 'Aranyer Din-Ratri' were as follows :

Mr Shamit Bhanja = 1st rank
 Dr Subhendu Chattopadhyay = 8th rank
 Mr Pahari Sanyal = 10th rank
 Mr Soumitra Chattopadhyay = 17th rank
 Mr Rabi Ghosh = 23rd rank

The difference in rank between the lowest ranker Mr Rabi Ghosh and others above him
 = $(23-17) = 6$, $(23-10) = 13$, $(23-8) = 15$, $(23-1) = 22$

The difference in rank between the second lowest ranker Mr Soumitra Chattopadhyay and others above him
 = $(17-10) = 7$, $(17-8) = 9$, $(17-1) = 16$

The difference in rank between the third lowest ranker Mr Pahari Sanyal and others above him
 = $(10-8) = 2$, $(10-1) = 9$

The difference in rank between the fourth lowest ranker Dr Subhendu Chattopadhyay and others above him
 = $(8-1) = 7$

We can see that the difference of 7 has appeared for two pairs and the difference of 9 has also appeared for two pairs

Hence, 2 such cases exist among the five actors referred to in the problem

35. A

	Name of Hotel	% of the first time guests who repeated their visit among the hotels, in the financial year 2022-23	% of those who were on a repeat visit for business purpose only, in the Financial year 2022-23	% of the first time guests who were on a repeat visit for business purpose only, in the Financial year 2022-23
1	Taj Palace (Delhi)	15%	75%	$75\% \text{ of } 15\% = (75 \times 15)/100 = 11.25\%$
2	Taj Coromandel (Chennai)	10%	55%	$55\% \text{ of } 10\% = (55 \times 10)/100 = 5.50\%$
3	Taj Bengal (Kolkata)	40%	55%	$55\% \text{ of } 40\% = (55 \times 40)/100 = 22.00\%$
4	Taj Skyline (Ahmedabad)	30%	70%	$70\% \text{ of } 30\% = (70 \times 30)/100 = 21.00\%$
5	Taj Chandigarh (Chandigarh)	30%	60%	$60\% \text{ of } 30\% = (60 \times 30)/100 = 18.00\%$
6	Taj Malabar (Cochin)	15%	45%	$45\% \text{ of } 15\% = (45 \times 10)/100 = 6.75\%$
7	Umaid Bhawan Palace (Jodhpur)	45%	25%	$25\% \text{ of } 45\% = (25 \times 45)/100 = 11.25\%$
8	Taj Ganges (Varanasi)	20%	65%	$65\% \text{ of } 20\% = (65 \times 20)/100 = 13.00\%$
9	Taj Chia Kutir (Darjeeling)	25%	30%	$30\% \text{ of } 25\% = (30 \times 25)/100 = 7.50\%$
10	Taj Exotica (Andaman)	10%	15%	$15\% \text{ of } 10\% = (15 \times 10)/100 = 1.50\%$

From the above chart we can see that in both Taj Palace (Delhi) and Umaid Bhawan Palace (Jodhpur), the percentage of first time guests who were on a repeat visit for business purpose, was 11.25%, and hence, the same.

But the number of first time guests for the above listed top ten hotels of the group is a constant. Hence, the fact that the percentage of first time guests who were on a repeat visit for business purpose is the same, implies that the number of guests who were on a repeat visit for business purpose, too is the same.

Hence, the number of first time guests who were on repeat visits for business purposes were the same at the Umaid Bhawan Palace (Jodhpur) and Taj Palace (Delhi)

36. B

We know that :

	Name of Hotel	% of the first time guests who repeated their visit among the hotels, in the financial year 2022-23	% of those who were on a repeat visit for business purpose only, in the Financial year 2022-23	% of the first time guests who were on a repeat visit for business purpose only, in the Financial year 2022-23
1	Taj Palace (Delhi)	15%	75%	$75\% \text{ of } 15\% = (75 \times 15)/100 = 11.25\%$
2	Taj Coromandel (Chennai)	10%	55%	$55\% \text{ of } 10\% = (55 \times 10)/100 = 5.50\%$
3	Taj Bengal (Kolkata)	40%	55%	$55\% \text{ of } 40\% = (55 \times 40)/100 = 22.00\%$
4	Taj Skyline (Ahmedabad)	30%	70%	$70\% \text{ of } 30\% = (70 \times 30)/100 = 21.00\%$
5	Taj Chandigarh (Chandigarh)	30%	60%	$60\% \text{ of } 30\% = (60 \times 30)/100 = 18.00\%$
6	Taj Malabar (Cochin)	15%	45%	$45\% \text{ of } 15\% = (45 \times 10)/100 = 6.75\%$
7	Umaid Bhawan Palace (Jodhpur)	45%	25%	$25\% \text{ of } 45\% = (25 \times 45)/100 = 11.25\%$
8	Taj Ganges (Varanasi)	20%	65%	$65\% \text{ of } 20\% = (65 \times 20)/100 = 13.00\%$
9	Taj Chia Kutir (Darjeeling)	25%	30%	$30\% \text{ of } 25\% = (30 \times 25)/100 = 7.50\%$
10	Taj Exotica (Andaman)	10%	15%	$15\% \text{ of } 10\% = (15 \times 10)/100 = 1.50\%$

Let us take the example of Taj Palace (Delhi) :

It has been found out that the percentage of first time guests who were on a repeat visit for business purpose, was 11.25%.

It signifies that for every 100 first time guests at the top ten hotels listed above, 11.25 guests have repeated their visit for business purpose at Taj Palace (Delhi).

Taking the total of the individual percentages of first time guests who were on a repeat visit for business purpose, for all the top ten hotels as listed above, we get

$$= (11.25 + 5.50 + 22.00 + 21.00 + 18.00 + 6.75 + 11.25 + 13.00 + 7.50 + 1.50) \% \\ = 117.75\%$$

The above total of 117.75% signifies that for every 100 first time guests at the top ten hotels listed above, 117.75 guests have repeated their visit for business purpose at the same top ten hotels.

But those 117.75 guests are from the same 100 first time guests.

So the only logical explanation is that some or all guests out of the same 100 first time guests had repeat visited the top ten hotels as listed, for business purposes, for a total of 117.75 times.

Hence, on an average, number of times each single guest had had repeat visited the top ten hotels as listed, for business purposes
 $= 117.75/100$

= 1.1775
that is 1.18, times

37. C

We know that :

	Name of Hotel	% of the first time guests who repeated their visit among the hotels, in the financial year 2022-23	% of those who were on a repeat visit for business purpose only, in the Financial year 2022-23	% of the first time guests who were on a repeat visit for business purpose only, in the Financial year 2022-23
1	Taj Palace (Delhi)	15%	75%	$75\% \text{ of } 15\% = (75 \times 15)/100 = 11.25\%$
2	Taj Coromandel (Chennai)	10%	55%	$55\% \text{ of } 10\% = (55 \times 10)/100 = 5.50\%$
3	Taj Bengal (Kolkata)	40%	55%	$55\% \text{ of } 40\% = (55 \times 40)/100 = 22.00\%$
4	Taj Skyline (Ahmedabad)	30%	70%	$70\% \text{ of } 30\% = (70 \times 30)/100 = 21.00\%$
5	Taj Chandigarh (Chandigarh)	30%	60%	$60\% \text{ of } 30\% = (60 \times 30)/100 = 18.00\%$
6	Taj Malabar (Cochin)	15%	45%	$45\% \text{ of } 15\% = (45 \times 10)/100 = 6.75\%$
7	Umaid Bhawan Palace (Jodhpur)	45%	25%	$25\% \text{ of } 45\% = (25 \times 45)/100 = 11.25\%$
8	Taj Ganges (Varanasi)	20%	65%	$65\% \text{ of } 20\% = (65 \times 20)/100 = 13.00\%$
9	Taj Chia Kutir (Darjeeling)	25%	30%	$30\% \text{ of } 25\% = (30 \times 25)/100 = 7.50\%$
10	Taj Exotica (Andaman)	10%	15%	$15\% \text{ of } 10\% = (15 \times 10)/100 = 1.50\%$

From the above chart we can see that the fourth lowest value of the percentage of first time guests who were on a repeat visit for business purpose is 7.50% of Taj Chia Kutir (Darjeeling).

But the number of first time guests for the above listed top ten hotels of the group is a constant. Hence, the percentage of first time guests who were on a repeat visit for business purpose reflects the number of guests who were on a repeat visit for business purpose.

Hence, in the Financial Year 2022-23, it was in Taj Chia Kutir (Darjeeling) that the fourth lowest number of guests repeated their stay, but only for business purpose.

38. D

We know that :

	Name of Hotel	% of the first time guests who repeated their visit among the hotels, in the financial year 2022-23	% of those who were on a repeat visit for business purpose only, in the Financial year 2022-23	% of the first time guests who were on a repeat visit for business purpose only, in the Financial year 2022-23
1	Taj Palace (Delhi)	15%	75%	$75\% \text{ of } 15\% = (75 \times 15)/100 = 11.25\%$
2	Taj Coromandel (Chennai)	10%	55%	$55\% \text{ of } 10\% = (55 \times 10)/100 = 5.50\%$
3	Taj Bengal (Kolkata)	40%	55%	$55\% \text{ of } 40\% = (55 \times 40)/100 = 22.00\%$
4	Taj Skyline (Ahmedabad)	30%	70%	$70\% \text{ of } 30\% = (70 \times 30)/100 = 21.00\%$
5	Taj Chandigarh (Chandigarh)	30%	60%	$60\% \text{ of } 30\% = (60 \times 30)/100 = 18.00\%$
6	Taj Malabar (Cochin)	15%	45%	$45\% \text{ of } 15\% = (45 \times 10)/100 = 6.75\%$
7	Umaid Bhawan Palace (Jodhpur)	45%	25%	$25\% \text{ of } 45\% = (25 \times 45)/100 = 11.25\%$
8	Taj Ganges (Varanasi)	20%	65%	$65\% \text{ of } 20\% = (65 \times 20)/100 = 13.00\%$
9	Taj Chia Kutir (Darjeeling)	25%	30%	$30\% \text{ of } 25\% = (30 \times 25)/100 = 7.50\%$
10	Taj Exotica (Andaman)	10%	15%	$15\% \text{ of } 10\% = (15 \times 10)/100 = 1.50\%$

45% (which is the highest percentage) of the first time guests of the top ten hotels of the Taj group, as listed above, repeated their visit at Umaid Bhawan Palace (Jodhpur) in the Financial Year 2022-23. These 45% repeat guests did not stay in any other hotel out of the remaining nine.

Let the percentage of first time guests of the top ten hotels of the Taj group, as listed above, who repeated their visit at Taj Z in the Financial Year 2022-23 be $x\%$

In the Financial Year 2022-23, none of the guests of the top ten hotels who repeated their stay at the Umaid Bhawan Palace (Jodhpur) repeated their stay at Taj Z, and vice versa (as per condition).

Hence, we can say that $(45+x)\%$ of the first time guests of the top ten hotels of the group repeated their visit at these two hotels in the Financial Year 2022-23.

The remaining, that is, $100 - (45+x) = (55 - x)\%$ of the first time guests would have repeated their visit at the remaining eight hotels in the Financial Year 2022-23.

The second highest percentage of the first time guests of the top ten hotels of the Taj group, as listed above, who repeated their visit at any of the hotels is 40% (Taj Bengal, Kolkata).

Since we do not know which of the nine hotels, apart from Umaid Bhawan Palace (Jodhpur), Taj Z is, the value of $(55 - x)\%$ must be at least 40%. Hence the value of x can be at the most $(55 - 40) = 15\%$

The value of the percentage of first time guests of the top ten hotels of the Taj group who repeated their visit at the hotels is at most 15% for Taj Coromandel (Chennai), Taj Exotica (Andaman), Taj Palace (Delhi) and Taj Malabar (Cochin), that is four hotels.

Hence, Taj Z can be 4 of the nine hotels excluding the Umaid Bhawan Palace (Jodhpur)

39. B

From information number (b), (d) and (e) we can conclude that Emon ate the rasgullas after Anirban. Had the reverse been the case, then to eat the same number of rasgullas as Emon, Anirban would have to eat more than half the number of rasgullas, which is not possible as per (b).

From (a), Dibyendu ate the rasgullas after Emon.

From (g), we can conclude that Anirban was not the first friend to eat the rasgullas

Since at breakfast on Sunday morning exactly one-eighth of the original number of rasgullas were left, hence from (h) we can conclude that Dibyendu was not the last friend to eat the rasgullas

Hence, from (f) we can be sure that Charbak was the friend before Anirban and Dibyendu to eat the rasgullas.

The only friend left was Biswajit, who must have been the one to eat the rasgullas at the last.

The order of the friends eating the rasgullas on Saturday night was 1) Charbak, 2) Anirban, 3) Emon, 4) Dibyendu, and 5) Biswajit.

Hence, Biswajit was the last friend to eat the rasgullas on Saturday night

40. C

The order of the friends eating the rasgullas on Saturday night was 1) Charbak, 2) Anirban, 3) Emon, 4) Dibyendu, and 5) Biswajit.

During breakfast time on Sunday the five friends found that only one-eighth of the original number of rasgullas remained in the pot. But that was fifteen rasgullas. Hence original number of rasgullas was $15 \times 8 = 120$

Now, as per information (g), we can say that when Anirban went to eat the rasgullas on Saturday night, $120 \times (4/5) = 96$ rasgullas were left. The remaining must have been eaten by Charbak, who was the first to eat the rasgullas.

Hence, Charbak ate $(120 - 96) = 24$ rasgullas on Saturday night

41. A

From information number (c), the friend who ate last, that is Biswajit, ate only one-fourth of the number of rasgullas that were remaining in the pot. However, after Biswajit had finished, one-eighth of the original number of rasgullas remained in the pot. Hence, after Biswajit had finished, three-fourth of the number of rasgullas that were remaining in the pot before he started eating would be left. But that is one-eighth of the original number. Thus, the fraction of original number of rasgullas that were remaining in the pot before Biswajit started eating would be $(1/8)/(3/4) = 1/6$. Also Biswajit had eaten $(1/6 - 1/8) = 1/24$ of the original number of rasgullas.

As per information (g), fraction of rasgullas left in the pot when Anirban went to eat was four-fifth of the original number. Hence fraction of original number of rasgullas eaten by Charbak was one-fifth.

Let x be the fraction of rasgullas left after Anirban finished eating. As per information (d), the next friend, Emon, ate $x/2$ of the number of rasgullas. Hence Anirban, who ate the same number, also ate $x/2$ of the number of rasgullas.

Thus, we can say that

$$4/5 - x/2 = x$$

$$\text{or, } 3x/2 = 4/5$$

$$\text{or, } x = 8/15$$

So, Anirban ate $(8/15)/2 = 4/15$ of the original number of rasgullas, and so did Emon. Also after Anirban finished eating, $8/15$ of the original number of rasgullas was left. Also, after Emon finished eating $(8/15 - 4/15) = 4/15$ of the original number of rasgullas were left.

Now, the fraction of original number of rasgullas that were remaining in the pot before Biswajit started eating was $1/6$. Hence the fraction of original number of rasgullas that were remaining in the pot after Dibyendu had eaten was also $1/6$. So Dibyendu ate $(4/15 - 1/6) = 1/10$

Hence :

Order of eating rasgullas on Saturday night	Fraction before eating	Fraction after eating	Fraction eaten
Charbak	1	4/5	1/5
Anirban	4/5	8/15	4/15
Emon	8/15	4/15	4/15
Dibyendu	4/15	1/6	1/10
Biswajit	1/6	1/8	1/24

It can be seen that of all the fractions eaten, $4/15$ is the largest amount. So both Anirban and Emon ate the maximum number of rasgullas on Saturday night.

Hence, among the given options, Emon ate the maximum number of rasgullas

42. D

We know that :

Order of eating rasgullas on Saturday night	Fraction before eating	Fraction after eating	Fraction eaten
Charbak	1	4/5	1/5
Anirban	4/5	8/15	4/15
Emon	8/15	4/15	4/15
Dibyendu	4/15	1/6	1/10
Biswajit	1/6	1/8	1/24

If only fifteen rasgullas were left in the pot during breakfast on Sunday morning, the above would look like :

Order of eating rasgullas on Saturday night	Number before eating	Number after eating	Number eaten
Charbak	120	96	24
Anirban	96	64	32
Emon	64	32	32
Dibyendu	32	20	12
Biswajit	20	15	5

Hence, if only fifteen rasgullas were left in the pot during breakfast on Sunday morning, after Emon had finished eating, 32, that is, less than sixty and more than twenty-four rasgullas were remaining in the pot in the refrigerator

43. C

We can say that :

Order of eating rasgullas on Saturday night	Fraction before eating	Fraction after eating	Fraction eaten	Percentage eaten against number before eating
Charbak	1	$\frac{4}{5}$	$\frac{1}{5}$	20%
Anirban	$\frac{4}{5}$	$\frac{8}{15}$	$\frac{4}{15}$	33.33%
Emon	$\frac{8}{15}$	$\frac{4}{15}$	$\frac{4}{15}$	50%
Dibyendu	$\frac{4}{15}$	$\frac{1}{6}$	$\frac{1}{10}$	37.5%
Biswajit	$\frac{1}{6}$	$\frac{1}{8}$	$\frac{1}{24}$	25%

Hence, among the options given, Charbak at 20% had eaten the least percentage of the number of rasgullas compared to the number of rasgullas remaining when he went to eat it

44. B

We know that :

Order of eating rasgullas on Saturday night	Fraction before eating	Fraction after eating	Fraction eaten
Charbak	1	$\frac{4}{5}$	$\frac{1}{5}$
Anirban	$\frac{4}{5}$	$\frac{8}{15}$	$\frac{4}{15}$
Emon	$\frac{8}{15}$	$\frac{4}{15}$	$\frac{4}{15}$
Dibyendu	$\frac{4}{15}$	$\frac{1}{6}$	$\frac{1}{10}$
Biswajit	$\frac{1}{6}$	$\frac{1}{8}$	$\frac{1}{24}$

If only fifteen rasgullas were left in the pot during breakfast on Sunday morning, the above would look like :

Order of eating rasgullas on Saturday night	Number before eating	Number after eating	Number eaten
Charbak	120	96	24
Anirban	96	64	32
Emon	64	32	32
Dibyendu	32	20	12
Biswajit	20	15	5

Hence, if only fifteen rasgullas were left in the pot during breakfast on Sunday morning, thirty-two rasgullas were remaining in the pot after Emon had finished eating the rasgullas on Saturday night.

Section - Quantitative Aptitude

45. 5

The highest exponent of 7 in $n!$ can be calculated by adding the quotients (integer parts) when n is successively divided by 7:

If $[x]$ denotes the integer part of x , we have:

$$[n/7] + [n/49] + [n/343] + \dots = 8$$

Assuming that only $[n/7]$ equals 8, we have: $n = 7 \times 8 = 56$

However, for $n = 56$ the actual value of the exponent of 7 is $[56/7] + [56/49] = 9$ which is greater than the actual exponent. So, we decrease the n by 7 to get 49 and now the exponent of 7 is then exponent will be $[49/7] + [49/49] = 8$ which is what we want.

For maximum value of p , we should take $n = 55$ since at $n = 56$, exponents of 7 becomes 9. So, maximum value of n can be taken as 55.

Now, to find maximum value of p :

$$p = [55/5] + [55/25] = 11 + 2 = 13.$$

Therefore, difference between p and $k = 13 - 8 = 5$.

46. 1764

$$n = 2 + 3 + 3 + \dots + 29 = 30(30+31)/2 - 1 - 30 = 884$$

Do prime factorization of 884;

$$\text{So, } 884 = 2^2 \times 13 \times 17$$

$$\text{Sum of factors of } 884 = (1 + 2 + 4) \times (1 + 13) + (1 + 17) = 1764$$

47. A

Since both prices should be integers, initial price should be divisible by 6 since it has to be increased by 16.66%.

There is only 1 value between 10 and 15 which is divisible by 6 i.e. 12.

So, initial price = \$12; Amount of fuel purchased = $50/12 = 4.16$ liters

New Price = 116.66% of 12 = \$14; amount of fuel that can be purchased = $50/14 = 3.57$ liter
 $n = 4.16 - 3.57 = 0.59$ liter.

48. B

There will be $(n+1)$ numbers at odd places in set S.

$$X = (1 + 3 + 5 + \dots + (2n+1)) / (n+1)$$

$$= (1 + 2n + 1) / 2 = n+1$$

There will be n numbers at even places in set S'

$$Y = (2n + \dots + 4 + 2) / n$$

$$= n+1$$

$$X - Y = 0.$$

49. 220

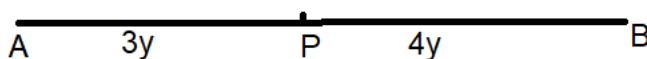
Average speed is calculated by total distance divided by total time taken.

Total time = $10/50 + 30/80 + t$ where t is the time taken by car mechanic to reach at the place.

$$\text{Total time} = (23+t)/40 \text{ hrs}$$

$$\text{So, } 60 = 40 / [(23+t)/40]$$

$$t = 220 \text{ minutes}$$

50. C

Let $AB = 7y$ Km, then $AP = 3y$ and $PB = 4y$.

Let speed of car is x Km/h and that of bus is $2x$ km/h.

Then ATQ

$$4y/x - 3y/2x = 1$$

$$\Rightarrow y/x (4 - 3/2) = 1$$

$$\Rightarrow y = 2x/5$$

$$\text{So, } 7y = 14x/5$$

Therefore, distance AB should be multiple of 2, 7 and 5.

51. 125

Expenses on 1 cat in 1 day = \$30

Expenses on 1 dog in 1 day = \$60

$$\text{Expenses on 6 cats and 7 dogs in 4 days trip} = (6 \times 30 + 7 \times 60) = \$600$$

52. C

Let \$ x was invested in certificate 1 and total interest for two years be 14% i.e. $14x/100$

\$ $(10000-x)$ was invested in certificate

$$\text{Interest} = (10000-x)[(106/100)^2 - 1]$$

ATQ

$$14x/100 + (10000-x)[(106/100)^2 - 1] = 1318$$

On solving, we get $x = 5000$

So, answer is $\frac{1}{2}$

53. C

$$f(a) = -1/(2a+1) = -1/2 \Rightarrow a = \frac{1}{2}$$

$$f(a+b) = f(1/2+b) = -1/(2(1/2 + b) + 1) = 1/6$$

$$\Rightarrow -1/(2+2b) = 1/6$$

$$\Rightarrow b = -4.$$

54. 40

Case 1:

Selections from size 1:

2 Pen stand from the size 1 and 1 from size 2 = 4 (we have 4 colors and all pen stands of 1 colour are identical) $\times {}^4C_1 = 16$ ways

Selections from size 2:

2 Pen stand from the size 2 and 1 from size 1 = 4 (we have 4 colors and all pen stands of 1 colour are identical) $\times {}^4C_1 = 16$ ways

Case 2:

Pen stands of the different colors = ${}^4C_3 = 4$ (we should choose 3 different colors out of 4). As we have two sizes then total for the different color = $4 \times 2 = 8$

$$\text{Total} = 16 + 16 + 8 = 40$$

55. A

Let Retail price of a article be Rs 100. So, retail price of two articles is Rs 200.

She sold two articles at 80% of 100 = Rs 80.

There is a loss of 20% in this transaction.

So, 80% of $2x$ = Rs 80 (where x is cost price of 1 article)

So, x = Rs 50.

She needs to sell it for Rs 60 to get profit of 20%.

Now go through options.

56. C

Let number of sides of two polygons are m and n respectively.

Then

$$({}^mC_2 - 2)/({}^nC_2 - 2) = 7:6$$

Solve through options.

(a) and (c) are straight away wrong since numerator is lesser than denominator. (Number of sides are greater in polygon with greater number of diagonals)

Verify the other two options and we get our answer.

57. C

$$\text{Revenue of last week} = 10 \times 200 + 105 \times 10 = \$3050$$

$$\text{Revenue of current week} = \$ (3050 + 10.65\% \text{ of } 3050) = \$3375.$$

Let x pairs of soft lenses be sold then $(x+n)$ pairs of hard lenses must be sold.

$$\text{Therefore, } x(200) + (x+n)105 = 3375$$

$$\text{On solving, we get } x = [3375 - 105n]/305$$

Put value of n from options, we get $n = 6$ so that x is integer.

58. 110

We need to count number of 5's as number of 2's are clearly greater.

In this series only even terms are there. So, we will get 5's in $20!$, $18!$, $16!$, ..., $6!$

Number of 5's in $20! = [20/5] = 4$ where $[x]$ denotes greatest integer function.

Number of 5's in $18! = [18/5] = 3$; in $18!$, it is 9.

Number of 5's in $16! = [16/5] = 3$; in $16!$, it is 15.

Number of 5's in $14! = [14/5] = 2$; in $14!$, it is 14.

Number of 5's in $12! = [12/5] = 2$; in $12!$, it is 18.

Number of 5's in $10! = [10/5] = 2$; in $10!$, it is 22.

Number of 5's in $8! = [8/5] = 1$; in $8!$, it is 13.

Number of 5's in $6! = [6/5] = 1$; in $6!$, it is 15.

So, total number of trailing zeroes are $(4 + 9 + 15 + 14 + 18 + 22 + 13 + 15) = 110$

59. A

Since PQR is an isosceles right-angle triangle, only I is incorrect.

60. A

Perimeter of square = $\frac{3}{5} (40) = 24$ m

Side of square = 6 m

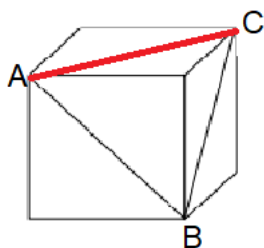
Area of square = 36 sq m

Circumference of circle = $40 - 24 = 16 = 2\pi r$

$\Rightarrow r = \frac{8}{\pi}$

Area of circle = $\pi \left(\frac{8}{\pi}\right)^2 = \frac{64}{\pi}$

Area of square: Area of circle = $36: \frac{64}{\pi} = 9\pi: 16$

61. C

We need to find $\angle ABC$. If we join A and C; ABC will be an equilateral triangle in space.

So, $\angle ABC = 60^\circ$

62. 288

Dharmesh covers $4 \times 60 = 240$ Kms in 4 hrs.

He waited for 2 hrs. It means he covered 240 Kms in 6 hrs which implies that at 2 am in the next morning He will be $900 - 240 = 660$ kms far away from Dharmendra.

In 3 more hrs till 5 a.m., Dharmesh will be 480 Kms far from City N.

Time of meeting = $480 / (60 + 90) = 3$ hrs 12 minutes

Distance from N = $(480/150) \times 90 = 288$ Kms

63. A

Dharmesh's distance from city M at 5 am = $900 - 480 = 420$ km (since he took rest for 2 hrs)
 Time taken by Dharmesh from that point to city M = $420/60 = 7$ hrs

Dharmendra's distance from city M at 5 am = 900 km
 Time taken by Dharmendra from that point to city M = $900/90 = 10$ hrs

Clearly, Dharmesh will reach first.

64. 5

All the three meets after every [LCM (16, 24, 30)] days i.e. 240 days.

A and B meets after every [LCM (16, 24)] days i.e. 48 days. So, they will meet for 4 times before 240 days.

So, $p = 4$.

B and C meets after every [LCM (24, 30)] days i.e. 120 days. So, they will meet for 1 time before 240 days.

So, $q = 1$.

$p + q = 5$

65. D

From the options it is very clear that 67 satisfies above conditions.

66. B

$$\log_3 2^5 = \frac{5}{4} \log_{11} 2 \times \log_a b$$

$$\Rightarrow \frac{5}{4} \log_3 2 = \frac{5}{4} \log_{11} 2 \times \log_a b$$

$$\Rightarrow \log_3 2 = \log_{11} 2 \times \log_a b$$

$$\Rightarrow \frac{1}{\log_2 3} = \frac{1}{\log_2 11} \times \log_a b$$

$$\Rightarrow \log_2 11 / \log_2 3 = \log_a b$$

$$\Rightarrow \log_3 11 = \log_a b; \text{ if } a=3, \text{ then } b=11$$

$$\text{Also, } \log_3 11 > \log_3 9$$

$$\Rightarrow \log_3 11 > 2$$

$$\Rightarrow \log_a b > 2, \text{ if } a=3, b > 9$$

$$\text{and } \log_3 11 < \log_3 27$$

$$\Rightarrow \log_3 11 < 3$$

$$\Rightarrow \log_a b < 3, \text{ if } a=11, b < 1331$$

From above, we can say that $11 \leq b < 1331$

MOCK TEST – 6

Section - 1 - Verbal Ability & Reading Comprehension

Directions for Questions 1 to 5: Read the passage given below and answer the questions that follow.

Passage-1

During the opening months of the First World War, in the midst of the incendiary jingoism roiling Britain, the poet Dorothea Hollins of the Women's Labour League proposed that an unarmed, 1,000-strong 'Women's Peace Expeditionary Force' cross Europe 'in the teeth of the guns' and interpose itself between the warring armies in the trenches. Hollins's grand scheme did not materialise, but neither did it emerge in a vacuum; it was nurtured by a century of activism largely grounded in maternal love. Or, as her fellow peace activist Helena Swanwick wrote: the shared fear that in war 'women die, and see their babies die, but theirs is no glory; nothing but horror and shame unspeakable'.

Swanwick helped to found the Women's International League for Peace and Freedom, an organisation dedicated to eliminating the causes of war. She hoped for 'a world in the far-off future that will not contain one soldier'. Many activists believed that if women had political power, they would not pursue war. But how true is this? Do incidences of violent conflict alter when women become leaders, or when their share of parliamentary representation rises? In what sense do women mother wars?

If you ask this question out loud, not a minute will pass before someone says 'Margaret Thatcher', the British prime minister who waged a hugely popular war in the Falklands that led to her landslide 1983 election victory. Thatcher is hardly the only woman leader celebrated for her warmongering. Think of Boudicca, the woad-daubed Queen of the Iceni people of eastern England, who led a popular uprising against the Roman invaders; or Lakshmi Bai, Queen of Jhansi and a leader of the 1857-58 Indian Mutiny against the British; or even Emmeline Pankhurst, who led British suffragettes on a militant campaign of hunger strikes, arson and window-smashing, then, in 1914, became a vociferous supporter of Britain's entry into the Great War.

But these examples are anecdotal because, throughout history, women leaders have been extremely rare. Between 1950 and 2004, according to data compiled by Katherine W Phillips, professor of leadership and ethics at Columbia Business School, just 48 national leaders across 188 countries – fewer than 4 percent of all leaders – have been female. They included 18 presidents and 30 prime ministers. Two countries, Ecuador and Madagascar, had a woman leader, each of whom served for a mere two days before being replaced by a man.

Given the tiny sample size, does it even make sense to ask if, given power, women are more or less likely than men to wage wars? The medical anthropologist Catherine Panter-Brick, who directs the conflict, resilience and health programme at the MacMillan Center for International and Area Studies at Yale University, thinks not. 'It stereotypes gender, and assumes leadership is uncomplicated,' she told me. Perhaps she had thinkers such as Stephen Pinker in her sights. In *The Better Angels of Our Nature* (2011), his study of violence throughout history, Pinker wrote: 'women have been, and will be, the pacifying force'. That assumption is not always grounded in reality, says Mary Caprioli, a professor of political science at the University of Minnesota Duluth. Along with Mark A Boyer at the University of

Connecticut, she counted 10 military crises in the 20th century involving four female leaders (seven of which were handled by Golda Meir, Israel's prime minister from 1969 to 1974). To assess the behaviour of women leaders during crises, they say, one needs a large sample – 'which history cannot provide'.

Q. 1. The author of the passage is essentially raising the question:

- a. Would the world be less peaceful if there were more women leaders?
- b. Would the world be more peaceful if there were more women leaders?
- c. Would the world be more peaceful if there were more men leaders?
- d. Would the world be less peaceful if there were more men leaders?

Q2. The views of Catherine Panter-Brick and Mary Caprioli can be inferred to be:

- a. divergent
- b. dichotomous
- c. along similar lines
- d. completely unrelated

Q3. The author of the passage will agree with the statement/s

- a. Margaret Thatcher advocated war.
- b. If we look at history, then the instances of women leading countries are rare.
- c. Both A and B
- d. Neither A nor B

Q4. According to the information provided in the passage:

- a. women are more aggressive than men when it comes to circumstances prevailing in wars.
- b. men lead to far greater number of wars than women
- c. women, by virtue of their pacifying effect, do not engage vigorously in war.
- d. women, though pacifist in nature, cannot be assumed engaged in fewer wars than men.

Q5. Paraphrase the line 'in the midst of the incendiary jingoism roiling Britain'

- a. Fanatical patriotism gripping the people of Britain
- b. Heightened xenophobia impacting the people of Britain
- c. Rabid nationalism meant to rouse the people of Britain
- d. Provocative chauvinism brought to the shores of Britain

Direction for questions 6 to 8: Answer the questions on the basis of the information provided in the passage.

Passage 2

Tyrants like Vladamir Putin and Kim Jong Un seem to win a lot of their geopolitical contests against democratic governments. How do they do it? A common explanation is that these tyrants are better at playing the game. They are strategic geniuses leading governments with decades of experience in foreign affairs and characterised by single-mindedness and a long-term horizon. Of course they are going to make better geopolitical moves than democratic governments riven by political factionalism and only able to think as far ahead as the next election.

This explanation is wrong. Tyrants don't succeed because they are especially skilled at the game of geopolitics, but because they are baddies. Tyrants make bold moves because they are willing to subject their country (and the whole world) to more risk. They can do that because they care less than democrats, and hence worry less, about bringing harm to their people. Like a hedge fund manager, they can afford to take big risks because they are not playing with their own money. When tyrants win it is because of luck, not brilliance. This is easier to see when tyrants lose – as they nearly all do in the end, when their luck runs out.

Q.6. According to the author of the passage

- A. Tyrants are essentially ingenious individuals.
- B. Tyrants are essentially ingenuous individuals.
- C. Tyrants are similar to wagerers and punters.
- D. Tyrants are similar to convicts and con men.

Q.7. The author of the passage presents a:

I. dichotomy

II. fable

III. conception

IV. polarity

V. divergence

How many of the above are valid in the given context?

- A. 1
- B. 2
- C. 3
- D. 4

Q.8. It can be deduced from the passage:

- A. those who are against tyrants see them for the gamblers they are.
- B. those who favour tyrants see their dynamism and strategic brilliance.
- C. the success of tyrants is not correlated with their skill or ability.
- D. tyrants can only lose when their luck runs out.

Directions for Questions 9 to 12: Read the passage given below and answer the questions that follow.

Passage-3

What does love mean, exactly? We have applied to it our finest definitions; we have examined its psychology and outlined it in philosophical frameworks; we have even devised a mathematical formula for attaining it. And yet anyone who has ever taken this wholehearted leap of faith knows that love remains a mystery — perhaps the mystery of the human experience. Learning to meet this mystery with the full realness of our being — to show up for it with absolute clarity of intention — is the dance of life. That's what legendary Vietnamese Zen Buddhist monk, teacher, and peace activist Thich Nhat Hanh explores in *How to Love*— a slim, simply worded collection of his immeasurably wise insights on the most complex and most rewarding human potentiality.

Indeed, in accordance with the general praxis of Buddhist teachings, Nhat Hanh delivers distilled infusions of clarity, using elementary language and metaphor to address the most elemental concerns of

the soul. To receive his teachings one must make an active commitment not to succumb to the Western pathology of cynicism, our flawed self-protection mechanism that readily dismisses anything sincere and true as simplistic or naïve — even if, or precisely because, we know that all real truth and sincerity are simple by virtue of being true and sincere.

At the heart of Nhat Hanh's teachings is the idea that "understanding is love's other name" — that to love another means to fully understand his or her suffering. ("Suffering" sounds rather dramatic, but in Buddhism it refers to any source of profound dissatisfaction — be it physical or psychoemotional or spiritual.) Understanding, after all, is what everybody needs — but even if we grasp this on a theoretical level, we habitually get too caught in the smallness of our fixations to be able to offer such expansive understanding. He illustrates this mismatch of scales with an apt metaphor: If you pour a handful of salt into a cup of water, the water becomes undrinkable. But if you pour the salt into a river, people can continue to draw the water to cook, wash, and drink. The river is immense, and it has the capacity to receive, embrace, and transform. When our hearts are small, our understanding and compassion are limited, and we suffer. We can't accept or tolerate others and their shortcomings, and we demand that they change. But when our hearts expand, these same things don't make us suffer anymore. We have a lot of understanding and compassion and can embrace others. We accept others as they are, and then they have a chance to transform.

The question then becomes how to grow our own hearts, which begins with a commitment to understand and bear witness to our own suffering: When we feed and support our own happiness, we are nourishing our ability to love. That's why to love means to learn the art of nourishing our happiness. Understanding someone's suffering is the best gift you can give another person. Understanding is love's other name. If you don't understand, you can't love.

And yet because love is a learned "dynamic interaction," we form our patterns of understanding — and misunderstanding — early in life, by osmosis and imitation rather than conscious creation. Echoing what Western developmental psychology knows about the role of "positivity resonance" in learning love, Nhat Hanh writes: If our parents didn't love and understand each other, how are we to know what love looks like? ... The most precious inheritance that parents can give their children is their own happiness. Our parents may be able to leave us money, houses, and land, but they may not be happy people. If we have happy parents, we have received the richest inheritance of all.

Q.9. The passage highlights that:

- I. Our hearts have the ability to expand and offer compassion and understanding.**
- II. Early in life, some of our key learnings are learnt through the process of unconscious assimilation.**
- III. Our obsession with small or irrelevant things blocks our understanding on occasions.**

- a. I & II
- b. II & III
- c. I & III
- d. All of the above

Q.10. What does the word 'praxis' mean in the given context?

- a. Accepted theory
- b. Accepted practice
- c. Accepted supposition
- d. Accepted hypothesis

Q11. The author of the passage highlights love as:

- a. An unsolvable mystery
- b. An unfathomable abyss
- c. An intricate ruse
- d. A mysterious emotion

Q12. The given passage can be identified as:

- a. an impactful dissertation
- b. an insightful disquisition
- c. a coherent monograph
- d. a detailed exposition

Directions for Questions 13 to 16: Read the passage given below and answer the questions that follow.

Passage-4

My history with bubble universes began in 1968 when I met Robert Kirshner while we were both undergraduates at Harvard in Massachusetts. He was a lively, funny, interesting fellow. We met up again a few years later, when he was a graduate student at Caltech in California and I was a new postdoc there. At Caltech, he had a piece of good luck that changed the direction of his career and, ultimately, helped reshape modern cosmology.

While he was at Caltech, a bright supernova (an exploding star ending its life) became visible, and Kirshner was able to study it using the huge 200-inch-diameter Hale telescope on Palomar Mountain. Combining his findings with some innovative contemporary methods, he developed a clever way to measure its distance. The distance scale of the Universe was poorly known at the time, and getting more accurate numbers was critical to developing a better understanding of cosmic structure and evolution. Beginning in the mid-1990s, now as a member of Harvard's faculty, Kirshner started a group using supernovae to measure the expansion rate of the Universe – a particularly telling indication of how the cosmos is changing over time. Astronomers presumed that the expansion had been slowing down ever since the Big Bang, running down due to the gravitational pull between galaxies. The big question was: how quickly was this cosmic deceleration happening?

To get an answer, Kirshner and his team measured distances to supernovae near and far away, and compared those distances with their velocities of recession. In essence, they were using supernovae as standard lampposts of known intrinsic luminosity, whose distance you could ascertain from their apparent brightness. Then you could look at how much that light had been stretched (shifted toward the red end of the spectrum) by cosmic expansion, and compare the rate of expansion for supernovae of different distances.

Because of the finite velocity of light, the farther out we look, the farther back in time we see. A light-year, about 10 trillion kilometres, is the distance light can travel in a year. If we look out at a distance of 65 million light-years, we would be seeing a supernova that exploded 65 million years ago, when ancient dinosaurs still roamed the Earth. Kirshner was looking back hundreds of millions or even billions of years. A competing team formed at Berkeley in California to perform the same kinds of measurements, using similar techniques.

Then things got strange. The two groups found that the expansion of the Universe is not slowing down at all, but speeding up! Kirshner's former students Adam Riess and Brian Schmidt, as well as Saul Perlmutter at Berkeley, shared the 2011 Nobel Prize in Physics for this discovery. The supernova data

indicated that there was something different and unaccounted for in the make-up of our Universe. Those results also suggested something strange about cosmic geometry: the Universe that we know might be just one of many different cosmic bubbles that could live independently – or that could, under certain conditions, interact and even destroy each other.

Q.13. The author of the passage will not agree with which of the following statements?

- a. The prevailing viewpoint of the 1990s with respect to Universe expansion was challenged with contradictory evidence.
- b. The author alleges that Kirshner was lucky with his discoveries in cosmology.
- c. In cosmology, the brightness of the object can be used to figure out its distance.
- d. All of the above

Q.14. The tone of the author of the passage can be identified as:

- a. purely factual
- b. majorly descriptive
- c. highly analytical
- d. mildly critical

Q.15. The author of the passage _____ Robest Krishner.

- a. has a soft spot for
- b. fawns over
- c. holds in esteem
- d. is obsequious to

Q.16. The author of the passage :

- a. labels the findings 'strange' in the last paragraph as these were not in accordance with what was expected.
- b. highlights how certain studies point to the fact our universe might be just of many that exist and could possibly be related to or fighting with one another.
- c. Both A and B
- d. Neither A nor B

Directions for the Question: Identify the apt summary for the given paragraph. Enter the option number you deem as the correct answer.

Q.17. The move by the Supreme Court to seek an explanation from the government about the delay in finalising a fresh Memorandum of Procedure (MoP) for the appointment of judges in the higher judiciary raises more questions than answers. We do not know, for instance, what is holding up the process. It is not clear whether the government and the five-member Supreme Court Collegium have been unable to agree on some significant aspects of the MoP. It is possible that the consultative process has broken down and the government requires a nudge from the court to both explain the delay and expedite the process.

- A. The supreme court collegium has proved to be detrimental to our democracy.
- B. The appointment of judges is a big problem facing our country.
- C. The process of appointment of judges has forced the government to raise many questions.

- D. The process of appointment of judges should be more transparent as there are many questions that need to be answered.

Directions for the Question: Identify the apt summary for the given paragraph. Enter the option number you deem as the correct answer.

Q.18. People frequently complain that tax rates are way too high. Actually, they are probably even higher than you think. This is because, in addition to the income tax, there are many other types of federal, state, and municipal taxes, such as sales taxes, inheritance taxes, state income taxes, personal property taxes, real estate taxes, and others that we are analyzing. These are but a few examples among many.

- A. The tax rate is excessive.
- B. Our tax burden is heavier than you might think.
- C. Taxes on real estate and inheritance are regressive.
- D. Some taxes are not obvious.

Directions for the Question: The question below has a paragraph given with one sentence missing in at the end. From among the answer choices given, select the sentence that can fill the blank to form a coherent paragraph.

Q.19. Imagine that you could choose between living two lives. Option 1 promises amazing beauty, wealth, power, fame, and health. But you would have zero friends. Option 2 offers only average beauty, wealth, reputation, and health. But you would have profound friendships. Ancient Greek philosopher Aristotle (384–322 BC) bet that no one would choose the first option. He argued that we need friends to live a good life. After all, when life is bad, they help us. And when life is good, they celebrate with us. (_____)

- A. Aristotle's claims about friendship settled debates that continue today.
- B. Aristotle's claims about friendship ignited debates that can never get settled.
- C. Aristotle's claims about friendship began debates that never existed in the first place.
- D. Aristotle's claims about friendship began debates that continue today.

Directions for the Question: The question below has a paragraph given with one sentence missing in at the end. From among the answer choices given, select the sentence that can fill the blank to form a coherent paragraph.

Q.20. The world will be transformed. By 2050, we will be driving electric cars and flying in aircraft running on synthetic fuels produced through solar and wind energy. New energy-efficient technologies, most likely harnessing artificial intelligence, will dominate nearly all human activities from farming to heavy industry. The fossil fuel industry will be in the final stages of a terminal decline. Nuclear fusion and other new energy sources may have become widespread. Perhaps our planet will even be orbited by massive solar arrays capturing cosmic energy from sunlight and generating seemingly endless energy for all our needs. That is one possible future for humanity. (_____)

- A. Despite this bleak vision of the future, there are reasons for optimists to hope due to progress on cleaner sources of renewable energy, especially solar power.
- B. It's an optimistic view of how radical changes to energy production might help us slow or avoid the worst outcomes of global warming.

- C. Experts believe that, by 2027, due to falling costs, better technology and exponential growth in new installations, solar power will become the largest global energy source for producing electricity.
- D. Since then, we've dithered and doubted and argued about what to do, but still have not managed to take serious action to reduce greenhouse gas emissions, which continue to rise.

Directions for the Question: The question below has a paragraph given with one sentence missing in at the end. From among the answer choices given, select the sentence that can fill the blank to form a coherent paragraph.

Q21. Since 1859, when Charles Darwin's *On the Origin of Species* was first published, the theory of natural selection has dominated our conceptions of evolution. As Darwin understood it, natural selection is a slow and gradual process that takes place across multiple generations through successive random hereditary variations. In the short term, a small variation might confer a slight advantage to an organism and its offspring, such as a longer beak or better camouflage, allowing it to outcompete similar organisms lacking that variation. Over longer periods of time, Darwin postulated, an accumulation of advantageous variations might produce more significant novel adaptations – or even the emergence of an entirely new species. Natural selection is not a fast process.

(_____)

- A. It takes place shambolically through random variations, or 'mutations' as we call them today, which accumulate over decades, centuries, or millions of years.
- B. It takes place extensively through random variations, or 'mutations' as we call them today, which accumulate over decades, centuries, or millions of years.
- C. It takes place egregiously through random variations, or 'mutations' as we call them today, which accumulate over decades, centuries, or millions of years.
- D. It takes place gradually through random variations, or 'mutations' as we call them today, which accumulate over decades, centuries, or millions of years.

Directions for questions 22 to 24: In the following questions, rearrange the five sentences in order to form a meaningful paragraph.

TITA

Q.22.

1. What can doctors do to ease emotional pain? The physicians of ancient and medieval times found many plants and plant-derived substances (ie, drugs) that soothed mental as well as physical ills.
2. Modern medicine has confirmed the overlap of bodily and mental maladies through painstaking research
3. Rarely did they draw a line between the psychological and physiological benefits of their remedies.
4. Still, the treatment for psychological problems lags far behind a cascade of stunning advances in the treatment of physical ills – advances that have doubled the human lifespan and improved our quality of life immeasurably.

TITA

Q.23

1. Seville ranked first in the cities category due to its relatively new network of biking paths and a slate of special local activities related to the anniversary of legendary painter Bartolomé Esteban Murillo.
2. Seville, Spain took top honours in the Lonely Planet's annual Best in Travel roundup, which names both cities and countries worth visiting in the coming year.
3. The city has also enjoyed some screen love lately; Lonely Planet notes some interesting points about

Seville.

4. Seville was featured on “Game of Thrones” this year and will host the European Film Awards in 2018.

TITA

Q.24

1. This not only includes your preferred method of working out, but how easily you’re able to reach weight loss goals and how dedicated you are to physical activity.

2. But you might be surprised at just how deep it goes. It includes how you work out.

3. It’s no secret that your character traits directly affect how you interact with the world.

4. Personality research and experts on the subject say your personality and even your mood can play a pivotal role in how you exercise.

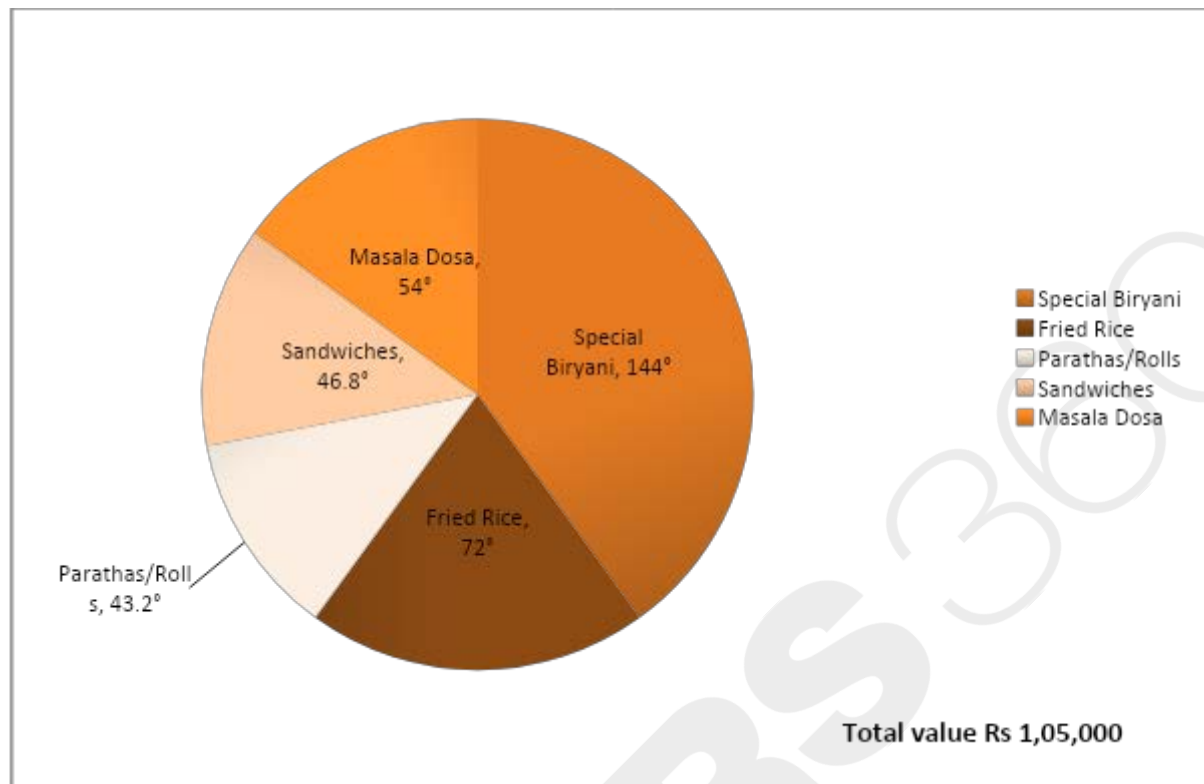
Section - 2 - Data Interpretation and Logical Reasoning

Directions for questions from 25 to 30 :

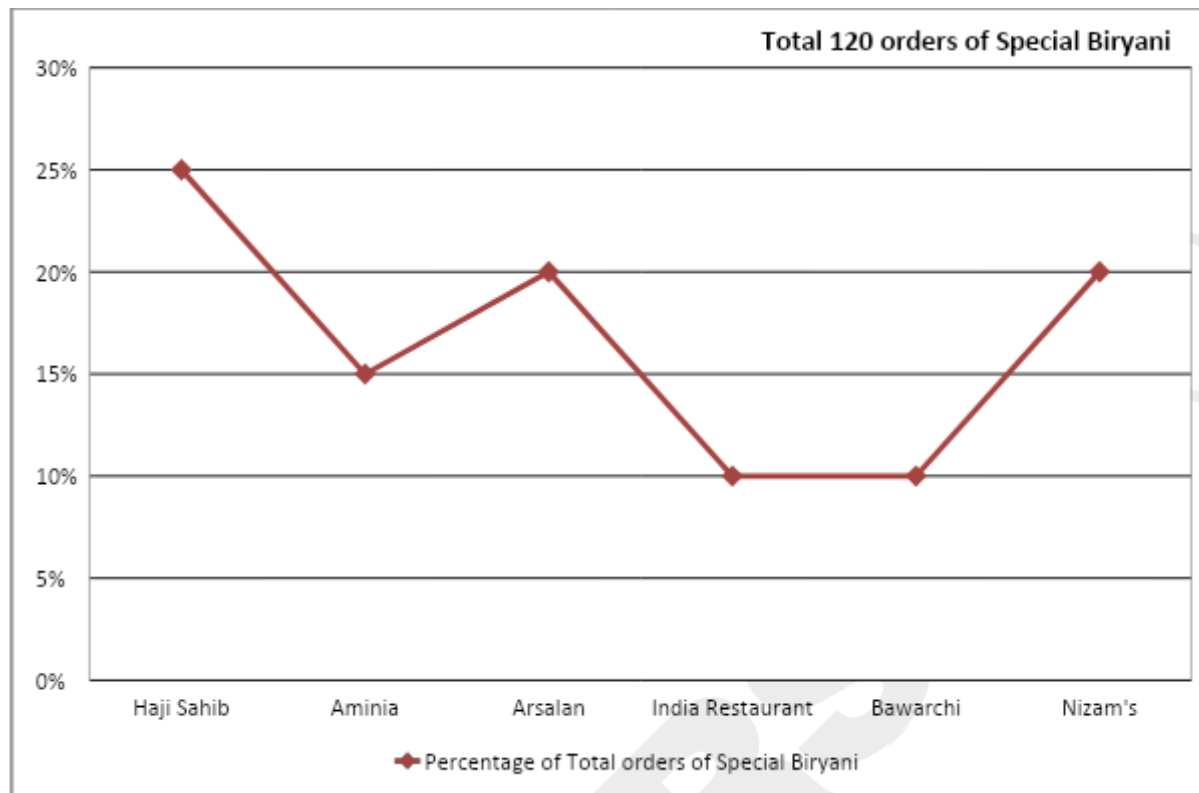
The Student Affairs Committee Chairman of the Student Council at IIM Calcutta noticed a strange but consistent phenomenon among the boarders of the Ramanujan Hall (Old Hostel), located in the campus. It was the consistent rise in the obesity levels of the boarders due to which their performance in the sporting events at IIM Calcutta was going down steadily. After a lot of brainstorming, the reason for such narrowed down to their food habit.

While the Ramanujan Hall mess provided very healthy, and wholesome meals three times a day plus high-tea, which was quite well accepted by all the boarders, everyday all the boarders missed the 8 to 9 pm dinner slot due to assignment pressures. Hence they all resorted to using the Swiggy food-delivery service to get their dinner delivered from outside the campus eateries and restaurants. And these oily and rich dinners were the root cause of obesity.

A quick survey by the Security on the 10th August 2022 at the Hostel gate revealed the following dinners being delivered by value (in Rs) :



On further investigation into the most harmful dinner of the lot – Special Biryani, by enquiring from the food-delivery personnel, the following information about the total orders of Special Biryani, the restaurant's the orders were being delivered from, with the percentage of the total number of orders from each was also derived :

**Q25 (TITA)**

What was the value (in Rs) of a single order of Masala Dosa ordered on 10th August 2022, if 125 orders of Masala Dosa were made on that day, all from the Tenali Raman South Indian Bistro, which prepared only a single type of Masala Dosa ?

Q 26 The Sandwiches on 10th August 2022 were all ordered from either The Krazy Grills or The Café Latte, with the ratio of the orders being 2 : 1, while the value of each order was in the ratio of 3 : 4. Which of the following options could be the correct combination of the number of orders and the value of each order respectively from The Krazy Grills ?

- A) 195 & Rs 70
- B) 42 & Rs 195
- C) 150 & Rs 91
- D) 63 & Rs 130

Q 27 (TITA)

All the Fried Rice on 10th August 2022 was ordered from the Hatari Chinese Restaurant, and the orders were equally distributed among Vegetable Fried Rice, Chicken Fried Rice, Prawn Fried Rice and Mixed Fried Rice. The values of a Chicken Fried rice, a Prawn Fried Rice and a Mixed Fried Rice were 33.33%, 66.67% and 200.00% respectively more than the price of a Vegetable Fried Rice. How many orders of Mixed Fried Rice were made on the on 10th August 2022, if the total value of one order each of Vegetable and Chicken Fried Rice was Rs 350 ?

Q 28 The value of one order of Special Biryani at Haji Sahib was 14.28% less, and that at Nizam's was 7.14% more than the overall average value per order of Special Biryani ordered on 10th August 2022.

What percentage more or less than the overall average value could be the average value per order of the Special Biryani from the remaining four restaurants together ?

- A) 21.42% less
- B) 21.42% more
- C) 7.14% less
- D) 3.90% more

Q 29 (TITA)

If on 10th August 2022, all the boarders of Ramanujan Hall of IIM Calcutta had exactly one order of dinner each, and assuming that all orders irrespective of the type of dinner had the same value per order, what was the number of boarders at Ramanujan Hall ?

Q 30 If the total value of all the orders of Special Biryani at Bawarchi was 26.19% of the total value of all the orders of Parathas/Rolls, and the value of each order of Parathas/Rolls was 80% of the value of each order of Special Biryani at Bawarchi, how many boarders (rounded to the nearest integer) ordered Parathas/Rolls on 10th August 2022 ?

- A) 71
- B) 57
- C) 41
- D) 23

Directions for questions from 31 to 34 :

About eighty metres inside from Gate No 4 of the Jadavpur University Campus was the iconic 'Milan Da's Canteen', the oldest out of the eight canteens in the campus, catering to students, researchers, faculties, staff and even ex-students of the university for decades since the 60's, especially for the engineering and art departments. Milan Da, the owner, was quite an innovative chef, and churned out tasty, innovative delicacies with equally innovative names, so popular and iconic, that even NRI ex-students on a visit to Kolkata would line up to savour them.

Milan Da's wife, the 'Boudi' (sister-in-law in Bengali) to all – young or old, student or faculty – handled the cash and had a memory and calculation prowess which was extraordinary. She could exactly remember who ordered what at what time of the day and how much dues were carried forward for each customer.

One month of a particular year she decided to check out which of the snack items of the canteen were being preferred more, and hence started to keep a note of what all the customers – students, faculties and staff of the engineering and arts department – were ordering during snack times. After one month of continuous watch, she came to the following conclusions :

a) Three of the snack items were the clear best-sellers :

- Chicken stuffed bread pakora named 'Dhoper Chop' or 'a chop of lies',
- Very spicy vegetable chops named 'Bom' or 'a bomb', and
- Chick-pea curry with shredded boiled egg and sprinkled with puffed rice named 'Ghorar Dim' or 'the egg of a horse'.

b) The number of customers preferring all the three snack items was the same as that preferring none of the three

- c) The number of residents preferring any two of the three was the same as those preferring any other two, which in turn was the same as those preferring none of the three
- d) The number of customers preferring only the 'Dhoper Chop' was the same as those preferring only the 'Ghorar Dim', and each were twice the number of customers preferring only the 'Bom'
- e) Half the number of customers who preferred the 'Bom' preferred at least one of either the 'Dhoper Chop' or the 'Ghorar Dim'.

Q 31 (TITA)

If the number of customers who preferred only the 'Bom' was 300, then what was the total number of customers at Milan-Da's Canteen ?

Q 32 (TITA)

If 105 customers did not prefer any one of the three snack items, then what was the total number of customers at Milan-Da's Canteen ?

Q 33 (TITA)

What percentage of the customers preferred to have 'Dhoper Chop' or 'Ghorar Dim', but not a 'Bom'?

Q 34 If the number of customers at Milan-Da's Canteen were 2500, how many of the customers preferred at least one of the three best-selling snack items at the canteen ?

- A) 500
- B) 1875
- C) 2250
- D) 2375

Directions for questions from 35 to 39:

The 2022 Wimbledon Junior Tennis tournament had 20 junior players taking part. The players were seeded from 1 to 20. The first stage of the tournament was the Pool Stage, the second the Super Ten Stage, then the Semi-finals and the last stage was the Final.

In the Pool Stage, all the 20 seeds were divided into five pools. Seeds 1, 6, 11 and 16 were in Pool A, seeds 2, 7, 12 and 17 were in Pool B, seeds 3, 8, 13 and 18 were in Pool C, seeds 4, 9, 14 and 19 were in Pool D and seeds 5, 10, 15 and 20 were in Pool E. Each seed in a pool played all the other seeds in the pool exactly once. The top two players from each pool based on their number of points qualified to the Super Ten Stage. A player qualifying for the Super Ten Stage carried forward only those points that he gained in the Pool Stage match against the other player that qualified for the Super Ten Stage from his own pool.

In the Super Ten stage each player played one match each with all the other qualifiers, excepting the one from his own pool. The top four players at the end of this stage competed in the Semi Finals. The winners got elevated to the Finals, and the losers of the semi finals competed for the third position.

In every stage, two points were awarded to a player for a win and zero points for a loss. If two players ended the Pool Stage or Super Ten Stage with the same number of points, one of the players was selected based upon a complex algorithm of match points conceded and aces served by the two players.

There can be no tie in a tennis match. In a tennis match, when a lower seeded player wins against a higher seeded one, it is called an upset.

Q 35 What were the number of matches played in the Super Ten Stage of the Wimbledon Junior Tennis tournament in 2022 ?

- A) 40
- B) 36
- C) 30
- D) 27

Q 36 What were the total number of matches played in the Wimbledon Junior Tennis tournament in 2022 ?

- A) 75
- B) 74
- C) 55
- D) 54

Q 37 What was the minimum number of points with which it was possible for a player to reach the Semi Finals in the Wimbledon Junior Tennis tournament in 2022 ?

- A) 2
- B) 4
- C) 6
- D) 8

Q 38 If the Pool Stage had only a single upset, what could be the lowest seeded player who could win the Wimbledon Junior Tennis tournament in 2022 ?

- A) Seed 12
- B) Seed 14
- C) Seed 18
- D) Seed 20

Q 39 For a player that had reached the Super Ten Stage of the Wimbledon Junior Tennis tournament, what was the minimum total number of points required, including the carried forward points from the Pool Stage, so that he could be sure of a place in the Semi Finals ?

- A) 10
- B) 12
- C) 14
- D) 16

Directions for questions from 40 to 44:

There were eight colleagues in an office namely a) Anirban, b) Biplab, c) Chintu, d) Dipesh, e) Ehsaan, f) Farhad, g) Gautam and h) Hitesh. Each of them stayed in Kolkata, but in different localities namely i) Behala, ii) Jadavpur, iii) Alipore, iv) Bhawanipur, v) Khidderpore, vi) Shyambazar, vii) Tollygunge and viii) Maniktala, in no particular order.

On the evening of 14th of February, Valentine's Day, of 2022, after office, each of them went to their locality's florist to purchase roses for their wife. Each of them bought exactly a dozen roses of any one of

the colours among Red, Mauve or Yellow. The number of colleagues who bought the same coloured roses was not less than two and not more than three.

It was also known that :

- 1) Ehsaan did not go to the florist in Jadavpur
- 2) Hitesh went to the florist in Tollygunge and bought a dozen Mauve roses
- 3) Chintu went to the florist in Bhawanipur and bought a dozen Red roses
- 4) Farhad went to the florist in Khidderpore and bought a dozen Red roses
- 5) The colleague who bought a dozen Yellow coloured roses did not do so at the florist in Behala or Shyambazar
- 6) Ehsaan and Anirban went to the florists at Behala and Jadavpur in any order
- 7) The colour of the one dozen roses bought by Hitesh and Gautam were the same and no other colleague purchased the a dozen of the same coloured roses
- 8) Dipesh did not go to the florist in Maniktala

Q 40 What was the locality of the florist that Ehsaan went to ?

- A) Behala
- B) Maniktala
- C) Alipore
- D) Tollygunge

Q 41 What was the colour of the dozen roses that Gautam bought ?

- A) Red
- B) Mauve
- C) Yellow
- D) Cannot be determined

Q 42 What was the locality of the florist that Dipesh went to ?

- A) Behala
- B) Maniktala
- C) Alipore
- D) Tollygunge

Q 43 Which one of the options provide the correct match of the arrangements ?

- A) Dipesh – Shyambazar – Yellow
- B) Gautam – Alipore – Red
- C) Ehsaan – Behala – Mauve
- D) Biplab – Maniktala – Yellow

Q 44 What was the colour of the roses purchased by Anirban ?

- A) Red
- B) Mauve
- C) Yellow
- D) Cannot be determined

Section - 3 - Quantitative Aptitude

Q45. The total cost of 5 books is Rs 30 more than 10 notebooks. If a fountain pen cost Rs 15 more than the cost of 1 book. By what amount cost of 3 fountain pens more than the cost of 6 notebooks?

- (a) Rs 20 (2) Rs 63 (c) Both are equal (d) Cannot be determined

Q46. (TITA)

Three friends started their own companies A, B, and C. Profits made by A, B and C are in the ratio 7: 12: 6. The ratio of capital of A, B and D is 4: 7: 8. If D made a profit of 25%. What is difference between profit percentages of A and B. (Write integer value only without rounding off)

Q47. The number of girls appearing for CAT are half of that of boys. If 20% of the girls and 25% of the boys cleared the CAT cut off. If only 40% of students who cleared the cutoff got admission in IIMs, candidates who cleared the cut off but did not get admission in IIMs is what percent of who did not cleared the cutoff?

- (a) 9.59 (b) 10.71 (c) 2.25 (d) 12.14

Q48. If Shailja sells 40 identical pencils at a 30% discount on the printed price, then she makes 10% profit. few of these pencils are lost during cleaning. While selling the rest, at 18.18% discount on the printed price so that she makes the same amount of profit, find the number of pencils lost.

- (a) 14 (b) 26 (c) 16 (d) 18

Q49. If ABCD is a square and BCE is an isosceles triangle such that E lies on AD. what is the measure of $\angle BEC$?

- (a) $\tan^{-1} 2$ (b) $180^\circ - 2\tan^{-1} 2$ (c) $180^\circ - \tan^{-1} 2$ (d) $\sin^{-1} 2/\sqrt{5}$

Q50. From a Square sheet of paper with a side 12 cm, four circles of diameter $\sqrt{2}$ cm each are cut out. What is the ratio of the uncut to the cut portion?

- (a) 3: 4 (b) 11: 61 (c) 61: 11 (d) 4: 3

Q51. The cost of a precious stone varies directly as the cube of its weight. Once, this precious stone broke into 5 pieces with weights in the ratio 1: 2: 3: 4: 5 When the pieces were sold, the merchant got Rs. 63000 less. Find the original price of the precious stone.

- a. Rs. 1.4 lakh b. Rs. 22500 c. Rs. 63000 d. Rs. 67500

Q52. If a and b are integers of opposite signs such that $9/(a+2)^2$: $b^2 = 9: 1$ and a^2 : $(b - 1)^2 = 4: 1$, then the a/b is

- (a) a positive integer (b) a negative integer
(c) a positive fraction (d) a negative fraction

Q53. From a triangle ABC with sides of lengths 20 ft, 35 ft and 45 ft, a triangular portion PAC is cut off where P is the centroid of ABC. The area, in sq ft, of the remaining portion of triangle ABC is what percent of the area of PAC?

- (a) 50 (b) 200 (c) 33.33 (d) 133.33

Q54. A hemispherical ball of diameter 4 cm is joined to the base of a cone of height 10 cm such that base of cone and base of hemisphere are identical. If this solid is immersed in a cylinder of radius of 4 cm filled completely with water $20\pi \text{ cm}^3$ water was remaining the cylinder. Find the height of cylinder. (in meters)

- (a) 2.42 (b) 242 (c) 0.0242 (d) 0.242

Q55. Suppose, $\log_3 x^{1/2} + \log_9 y = a$, where x, y are positive numbers. If G is the geometric mean of x and y , and $\log_{81} G$ is equal to

- (a) a (b) $2a$ (c) $4a$ (d) $a/4$

Q56. Find the equation of the circle that touches the coordinate axes at the points (6, 0) and (0, -6).

- a) $x^2 + y^2 = 36$
 b) $x^2 + y^2 + 12x + 12y = 36$
 c) $x^2 + y^2 = 12(x + y)$
 d) $x^2 + y^2 - 12x + 12y + 36 = 0$

Q57. If $f(x) - f(y) = f(x - y)$, where $f(t) > 0$ for any $t > 0$, find the value of $f(1) + f(3) + f(5) + f(7) + \dots + f(19)$, given $f(10) = 1024$.

- a) $1022/3$ b) $2[(4^9 - 1)/3]$ c) 1024 d) $2046/3$

Ans: [b]

Q58. (TITA)

How many integral values of x satisfy the equation $x = |x^2 - |3x - 48||$?

Q59. Thirty workers can complete a piece of work in 20 days. All of them started the work together, but on every alternate day, starting from the 4th day, some workers did not turn up for the work. The number of workers who did not turn up for the work on the 4th day was 6, on the 6th day was 8, on the 8th day was 10 and so on. In how many days was the work completed?

- a) In 26 days b) In 25 days
 c) More than 25 days but less than 26 days d) less than 25 days

Q60. (TITA)

Read the following and answer the questions that follow.

A certain sum of money was lent under the following repayment scheme based on Simple Interest:

6.25% per annum for the initial 3 years

12.5% per annum for the next 4 years

14% per annum for the next 3 years

17% per annum after the first 10 years

Find the amount which a sum of Rs 16000 taken for 7 years becomes at the end of 7 years if he repaid 6000 after 3.5 years. [Integer value only]

Q61. In how many ways can 7 similar chocolates of dairy milk costing Rs 20 each be distributed among 3 kids such that nobody gets more than 3 chocolates?

- (a) $2 \times 3!$ (b) $3!/2!$ (c) 6 (d) 12

Q62 If $11^{4x-4} + 121^{2x+1} = 1342$, then 256^x is

- (a) 512 (b) 64 (c) 1024 (d) 16

Q63. Raju was born on 29 Feb 1992. What is the probability that he will celebrate his birthday if a year is selected at random from 1994 to 2110 [both included]?

- (a) $1/4$ (b) $7/112$ (c) $27/28$ (d) $27/112$

Q64.(TITA)

A swimming pool is of length 100 m. A and B enter a 600 m race starting simultaneously at one end of the pool at speeds of 6 m/s and 10 m/s. How many times will they meet (excluding when they start the race) while travelling in same directions before B completes the race?

Q65. There are four cities A, B C and D, not on the same straight road. Two buses P and Q start simultaneously from A and B respectively towards C and D. By the time Q reaches C, P is exactly halfway to D. Immediately after Q reaches C, it starts travelling towards D and both reaches at same time at city D. The ratio of the speeds of P and Q is 3: 5. What is the ratio of distances from A to C and C to D?

- (a) 1: 1 (b) 3: 5 (c) 5: 6 (d) 6: 6

Q66.(TITA)

A natural number n is such that $120 < n \leq 240$. If HCF of n and 240 is 12, how many values of n are possible?

Answer Key - Mock Test 6

Section - Verbal Ability & Reading Comprehension

1- B, 2-C, 3-C, 4-D, 5-A, 6-C, 7-B, 8-C, 9-D, 10-B, 11-D, 12-D, 13-B, 14-B, 15-C, 16-C, 17-D, 18-B, 19-D, 20-B, 21-D, 22-1324, 23-2134, 24-3241

Section - Data Interpretation & Logical Reasoning

25 -126, 26-B, 27-20, 28-D, 29-300, 30-B, 31-2000, 32- 2000, 33-65, 34-D, 35-A, 36-B, 37-C, 38-D, 39-D, 40-A, 41-B, 42-C, 43-D, 44-C

Section - Quantitative Aptitude

45-B, 46-1, 47-D, 48-B, 49-B, 50-C, 51-D, 52-D, 53-B, 54-C, 55-C, 56-D, 57-B, 58-2, 59-C, 60-19750, 61-C, 62-C, 63-A, 64-5, 65-S, 66-4

Solutions - Mock Test 6

Section - Verbal Ability & Reading Comprehension

1.B

In this case, the central concern of the author is the relationship of women leaders with peace. He is probing whether any such relationship exists and highlights the need for more data to establish such a conclusion.

2. C

Refer to the lines: The medical anthropologist Catherine Panter-Brick, who directs the conflict, resilience and health programme at the MacMillan Center for International and Area Studies at Yale University, thinks not. 'It stereotypes gender, and assumes leadership is uncomplicated,' she told me. Perhaps she had thinkers such as Stephen Pinker in her sights. In *The Better Angels of Our Nature* (2011), his study of violence throughout history, Pinker wrote: 'women have been, and will be, the pacifying force'. That assumption is not always grounded in reality, says Mary Caprioli, a professor of political science at the University of Minnesota Duluth.

We can take out the following information from the above lines:

1. Catherine Panter-Brick does not agree with Stephen Pinker
2. Mary Caprioli does not agree with Stephen Pinker

Therefore, we can infer that option C is the correct answer here. You need to adopt some clever thinking in this

3. C

Option A can be derived from the lines: Thatcher is hardly the only woman leader celebrated for her warmongering.

Option B can be derived from the lines: But these examples are anecdotal because, throughout history, women leaders have been extremely rare.

4. D

In this case, option D is the correct answer. Remember, there is no certain conclusion that can be drawn and the author states that more data is required to come to any definite answers.

5. A

In this case, you need to know the meanings of the following words:

Midst: The location of something surrounded by other things

Incendiary: Designed to cause fires/ Causing strong feelings or violence

Jingoism: Fanatical patriotism/ A strong belief that your own country is the best, especially when this is expressed in support of war with another country

Roiling: Agitated vigorously; in a state of turbulence

From the above, we can see that option A best represents the meaning of the given phrase. Remember, the given line states that Britain was in the middle of this jingoism.

6. C

You need to keep in mind:

- The author does not regard tyrants as bright or skilled.
 - The author regards them in a negative way; he uses two descriptions for them: baddies and risk takers.
- Let us look at the words used in answer options now:

Ingenious: Showing inventiveness and skill (ruled out as this is a positive word)

Ingenuous: naive, trusting, without guile, unsuspecting (again ruled out as the author does not rule out these qualities)

Wagerer/Punter: Someone who bets (this fits the sentiment of risk taking)

Convicts/Con man: A person serving a sentence in jail or prison/A swindler who exploits the confidence of his victim (the author does regard them as bad individuals but does not use this sentiment in the passage)

7. B

Dichotomy means: a division or contrast between two things that are or are represented as being opposed or entirely different.

Fable means: a short moral story (often with animal characters)

Conception means: The creation of something in the mind/an abstract or general idea inferred or derived from specific instances; an understanding.

Polarity: the state of having two opposite or contradictory tendencies, opinions, or aspects.

Divergence: the act of moving away in a different direction from a common point.

In the passage, the author highlights two opposing sentiments. In the given context, dichotomy and polarity are the words that fit. This makes option B the best fit here.

8. C

Options A and B are rejected as the author does not present supporters/opponents of tyrants in the passage.

Option D is ruled out as we cannot assume that this is the only case when tyrants lose. This is an extreme sentiment.

Option C perfectly fits the sentiments of the author of the passage.

9. D

Statement I can be derived from the lines: But when our hearts expand, these same things don't make us suffer anymore. We have a lot of understanding and compassion and can embrace others. We accept others as they are, and then they have a chance to transform.

Remember, if our hearts have this ability, then only can they expand. This is essentially the assumption operating behind this statement.

Statement II can be derived from the lines: And yet because love is a learned "dynamic interaction," we form our patterns of understanding — and misunderstanding — early in life, by osmosis and imitation rather than conscious creation.

Osmosis means: the process of gradual or unconscious assimilation of ideas, knowledge, etc.

Statement III can be derived from the lines: Understanding, after all, is what everybody needs — but even if we grasp this on a theoretical level, we habitually get too caught in the smallness of our fixations to be able to offer such expansive understanding.

10. B

Refer to the lines: Indeed, in accordance with the general praxis of Buddhist teachings, Nhat Hanh delivers distilled infusions of clarity, using elementary language and metaphor to address the most elemental concerns of the soul.

The word praxis means:

1. practice, as distinguished from theory.

"modern political praxis is now thoroughly permeated with a productivist ethos"

2. accepted practice or custom.

"patterns of Christian praxis in Church and society"

Also, the root 'praxis' is your clue here. It means 'doing'.

11. D

The answer to this question lies in the first paragraph of the passage. The author of the passage highlights how love is a mystery and how different attempts have been made to understand it. Despite these attempts, love remains a mystery. But the author does not say it is unsolvable/unfathomable. Love is difficult to understand but the sentiments in options A and B are too extreme in nature.

The element of love being a mystery is best reflected by option D in the given case.

Abyss means: A bottomless gulf or pit; any unfathomable (or apparently unfathomable) cavity or chasm or void extending below (often used figuratively)

Ruse means: A deceptive manoeuvre (especially to avoid capture)

12. D

In order to identify the answer, you need to know the meanings of the given options:

Dissertation: A treatise advancing a new point of view resulting from research; usually a requirement for an advanced academic degree.

Disquisition: A long or elaborate essay or discussion on a particular subject.

Monograph: a detailed written study of a single specialized subject or an aspect of it.

Exposition: A systematic interpretation or explanation (usually written) of a specific topic

From the above, we can see that option D is the best fit. Remember, the topic of love is the main concern here (love is not a subject).

13. B

Option B is incorrect and the author won't agree with it. It mutilates the sentiment in the line: At Caltech, he had a piece of good luck that changed the direction of his career and, ultimately, helped reshape modern cosmology.

Option A is an easy to identify deduction. It is clearly implied in the passage.

Option C can be derived from the lines: In essence, they were using supernovae as standard lampposts of known intrinsic luminosity, whose distance you could ascertain from their apparent brightness.

14. B

In this case, the two close options are: A and B.

The author of the passage does share facts with us but he is not purely factual in the article. He also adds his viewpoints on some occasions (like describing the people concerned).

The author of the passage can be said to be majorly descriptive (you can see how the word majorly leaves room for other sentiments in the given case)

Options C and D are incorrect as the author is neither analytical nor critical in this article.

15. C

The only definite sentiment that we can ascribe to the author of the passage here is that he admires the work of Robert Krishner and gives a positive description of the work done by him and his students. Considering this, option C is the correct answer.

Option A implies a certain personal liking and weakness for someone, something that cannot be concluded in the given case.

Options B and D are clearly incorrect.

Fawns means to try to gain favour by flattering.

Obsequious means attempting to win favour from influential people by flattery.

16. Option A can be derived from the lines: Then things got strange. The two groups found that the expansion of the Universe is not slowing down at all, but speeding up! Kirshner's former students Adam Riess and Brian Schmidt, as well as Saul Perlmutter at Berkeley, shared the 2011 Nobel Prize in Physics for this discovery.

Option B can be derived from the lines: Those results also suggested something strange about cosmic geometry: the Universe that we know might be just one of many different cosmic bubbles that could live independently – or that could, under certain conditions, interact and even destroy each other.

17. D

The paragraph is raising questions about the process and also asking for clarity on certain issues which focuses on the need for more transparency.

18. B

This is a simple paragraph to read, but the answer choices can be deceptive. The paragraph simply states that taxes are more than what we think or realize.

Option A is ruled out as this is about taxes being too much

Option B is the correct answer as it explains the sentiment of the paragraph: the fact that we don't realize the taxes that we are paying.

Options C and D are again ruled out as these are about taxes and not the sentiment of us not realizing that we are over-taxed.

19. D

Option A goes against the generic nature of the paragraph. There is no final or settled opinion on the issue offered, just that the two arguments are mentioned.

Option B is too extreme in its nature.

Option C is redundant as it makes no sense. If there is a debate, it does exist.

Option D is the perfect fit as it explains the topic's current status.

20. B

Option A is ruled out as there is no bleak vision mentioned so far in the paragraph.

Option B is the valid answer here as it summarizes the positive outlook maintained till this point of time in the passage.

Option C randomly introduces the date 2027 in the context. There is no connection with the previous content and we cannot make a link up with the other sentences in the paragraph.

Option D introduces the new topic of greenhouse gas emissions, something that does not find mention previously.

21. D

Remember, this is a question where one word is different in each of the four options:

shambolically (this is a negative sentiment)

extensively (we do not know the extent)

egregiously (in an outstandingly bad way; shockingly)

gradually (this is the only word that correlates with the sentiment of time in the previous statement)

22. 1324

The question posed in 1 is the starting point of this discussion. It will be followed by the second half of sentence 1, which answers the question. Sentence 3 relates directly to the second part of sentence 1.

Finally, 4 and 2 make a pair as they criticise modern medicine for lagging in treatment of psychological problems unlike plant derived substances.

23. 2134

The sentence that introduces the places and their rankings is sentence 2. This will be followed by 1 as that explains the reason for the same. 34 make a pair, as it mentions what Lonely Planet wrote.

24. 3241

The most general sentences are 3 and 2. They also make a pair with 3 preceding 2. They will be followed by sentences 4 and 1 which elaborate the impact of personality on exercise.

Section - Data Interpretation & Logical Reasoning**25.126**

From the data of the value of the dinners being delivered on 10th August 2022 at the Ramanujan Hall expressed in the pie-chart of total value of Rs 1,05,000, we can deduce the following :

Special Biryani	144 deg	$(144/360)*1,05,000$ = Rs 42,000
Fried Rice	72 deg	$(72/360)*1,05,000$ = Rs 21,000
Parathas/Rolls	43.2 deg	$(43.2/360)*1,05,000$ = Rs 12,600
Sandwiches	46.8 deg	$(46.8/360)*1,05,000$ = Rs 13,650
Masala Dosa	54 deg	$(54/360)*1,05,000$ = Rs 15,750

On 10th August 2022, 125 orders of Masala Dosa were made, all from the Tenali Raman South Indian Bistro.

It was also the only type of Masala Dosa prepared there. Hence the price would be the same for every order.

Total value of the Masala Dosa delivered = Rs 15,750

Hence, the value of a single order of Masala Dosa ordered on 10th August 2022 = $(15750/125) = \text{Rs } 126$

26. B

We already know that the value of the dinners being delivered on 10th August 2022 at the Ramanujan Hall of total value of Rs 1,05,000, is as below :

Special Biryani	144 deg	$(144/360)*1,05,000$ = Rs 42,000
Fried Rice	72 deg	$(72/360)*1,05,000$ = Rs 21,000
Parathas/Rolls	43.2 deg	$(43.2/360)*1,05,000$ = Rs 12,600
Sandwiches	46.8 deg	$(46.8/360)*1,05,000$ = Rs 13,650
Masala Dosa	54 deg	$(54/360)*1,05,000$ = Rs 15,750

The ratio of the orders of Sandwiches delivered on 10th August 2022 from The Krazy Grills and The Café Latte = 2 : 1

The ratio of the value of each order of Sandwiches delivered on 10th August 2022 from The Krazy Grills and The Café Latte = 3 : 4

Hence, the ratio of the value of all the orders of Sandwiches delivered on 10th August 2022 from The Krazy Grills and The Café Latte

$$= 2*3 : 1*4$$

$$= 6 : 4$$

$$= 3 : 2$$

Total value of the Sandwiches delivered = Rs 13,650

Hence, total value of the Sandwiches delivered from The Krazy Grills = $(3/5)*13650 = \text{Rs } 8,190$

Since the correct combination of the number of orders and the value of each order respectively from The Krazy Grills has been asked, the product must be equal to Rs 8,190.

In option A and C, the products are $195 \times 70 = \text{Rs } 13,650$ and $150 \times 91 = \text{Rs } 13,650$ respectively. Hence they are eliminated.

In option B and D, the products are $42 \times 195 = \text{Rs } 8,190$ and $63 \times 130 = \text{Rs } 8,190$ respectively. Hence they are kept in consideration.

The ratio of the orders of Sandwiches delivered on 10th August 2022 from The Krazy Grills and The Café Latte = 2 : 1

Hence the number of orders must be a multiple of 2.

Only 42 orders fulfill the criterion. 63 do not.

Hence, the correct combination of the number of orders of Sandwiches and the value of each order respectively from The Krazy Grills on 10th August 2022 can be 42 orders and Rs 195 per order

27. 20

We already know that the value of the dinners being delivered on 10th August 2022 at the Ramanujan Hall of total value of Rs 1,05,000, is as below :

Special Biryani	144 deg	$(144/360) \times 1,05,000$ = Rs 42,000
Fried Rice	72 deg	$(72/360) \times 1,05,000$ = Rs 21,000
Parathas/Rolls	43.2 deg	$(43.2/360) \times 1,05,000$ = Rs 12,600
Sandwiches	46.8 deg	$(46.8/360) \times 1,05,000$ = Rs 13,650
Masala Dosa	54 deg	$(54/360) \times 1,05,000$ = Rs 15,750

Since all the Fried Rice on 10th August 2022 was ordered from the Hatari Chinese Restaurant, and the orders were equally distributed among Vegetable Fried Rice, Chicken Fried Rice, Prawn Fried Rice and Mixed Fried Rice, we can consider the number of orders of each item as 1 unit respectively, with the total orders from the Hatari Chinese Restaurant being 4 units.

Let the value of one order of Vegetable Fried Rice be 1 unit

Because $33.33\% = 1/3$, so the value of one order of Chicken Fried Rice = $(1 + 1/3) = 4/3$ units

Because $66.67\% = 2/3$, so the value of one order of Prawn Fried Rice = $(1 + 2/3) = 5/3$ units

Because $200.00\% = 2$, so the value of one order of Mixed Fried Rice = $(1 + 2) = 3$ units

Hence, the ratio of the total values of the orders of Vegetable Fried Rice, Chicken Fried Rice, Prawn Fried Rice and Mixed Fried Rice from the Hatari Chinese Restaurant on 10th August 2022

$$= 1 \times 1 : 1 \times (4/3) : 1 \times (5/3) : 1 \times (3)$$

$$= 1 : 4/3 : 5/3 : 3$$

$$= 3 : 4 : 5 : 9$$

Total value of the Fried Rice delivered = Rs 21,000

Hence, total value of the Mixed Fried Rice delivered on 10th August 2022 = $(21000 \times 9) / (3+4+5+9) = (21000 \times 9) / 21 = \text{Rs } 9,000$

The total value of one order each of Vegetable and Chicken Fried Rice was Rs 350.

Hence,

$(1 + 4/3)$ units = Rs 350

or, $7/3$ units = Rs 350

or, 1 unit = Rs 150

Hence, the value of one order of Mixed Fried Rice = $(3) \times 150 = \text{Rs } 450$

Hence, the number of orders of Mixed Fried Rice that were made on the on 10th August 2022 = $9000 / 450 = 20$

28. D

We already know that the value of the dinners being delivered on 10th August 2022 at the Ramanujan Hall of total value of Rs 1,05,000, is as below :

Special Biryani	144 deg	$(144/360) \times 1,05,000$ = Rs 42,000
Fried Rice	72 deg	$(72/360) \times 1,05,000$ = Rs 21,000
Parathas/Rolls	43.2 deg	$(43.2/360) \times 1,05,000$ = Rs 12,600
Sandwiches	46.8 deg	$(46.8/360) \times 1,05,000$ = Rs 13,650
Masala Dosa	54 deg	$(54/360) \times 1,05,000$ = Rs 15,750

From the data of the percentage of total number (120) of orders of Special Biryani from individual restaurants being delivered on 10th August 2022 at the Ramanujan Hall as expressed in the line-graph, we can deduce the following :

Haji Sahib	25%	$(25/100) \times 120 = 30$
Aminia	15%	$(15/100) \times 120 = 18$
Arsalan	20%	$(20/100) \times 120 = 24$
India Restaurant	10%	$(10/100) \times 120 = 12$
Bawarchi	10%	$(10/100) \times 120 = 12$
Nizam's	20%	$(20/100) \times 120 = 24$

Total value of the 120 orders of Special Biryani delivered = Rs 42,000

So, average value per order of Special Biryani delivered = $42000 / 120 = \text{Rs } 350$

Because $14.28\% = 1/7$, so the value of one order of Special Biryani from Haji Sahib is $(1 - 1/7) = 6/7$ of the average value per order

Value of one order of Special Biryani from Haji Sahib = $(350 \times 6)/7 = \text{Rs } 300$

Because $7.14\% = 1/14$, so the value of one order of Special Biryani from Nizam's is $(1 + 1/14) = 15/14$ of the average value per order

Value of one order of Special Biryani from Nizam's = $(350 \times 15)/14 = \text{Rs } 375$

Number of orders of Special Biryani delivered from Haji Sahib and Nizam's = 30 and 24 respectively.

So value of the total orders delivered from Haji Sahib on 10th August 2022 = $30 \times 300 = \text{Rs } 9,000$

Also value of the total orders delivered from Nizam's on 10th August 2022 = $24 \times 375 = \text{Rs } 9,000$

Hence total value of the orders delivered from Haji Sahib and Nizam's on 10th August 2022 = $(9000 + 9000) = \text{Rs } 18,000$

Hence total value of the orders delivered from the other four restaurants together = $(42000 - 18000) = \text{Rs } 24,000$

Total number of orders delivered from the other four restaurants together = $(18+24+12+12) = 66$

Hence average value per order of the Special Biryani from the remaining four restaurants together = $24000/66 = \text{Rs } 363.64$

Hence, the average value per order of the Special Biryani from the remaining four restaurants together is more than the overall average value per order of Special Biryani delivered, by $(363.64 - 350) \times 100/350 = 3.90\%$

29. 300

We already know that the value of the dinners being delivered on 10th August 2022 at the Ramanujan Hall of total value of Rs 1,05,000, is as below :

Special Biryani	144 deg	$(144/360) \times 1,05,000$ = Rs 42,000
Fried Rice	72 deg	$(72/360) \times 1,05,000$ = Rs 21,000
Parathas/Rolls	43.2 deg	$(43.2/360) \times 1,05,000$ = Rs 12,600
Sandwiches	46.8 deg	$(46.8/360) \times 1,05,000$ = Rs 13,650
Masala Dosa	54 deg	$(54/360) \times 1,05,000$ = Rs 15,750

Total value of the 120 orders of Special Biryani delivered = Rs 42,000

So, average value per order of Special Biryani delivered = $42000/120 = \text{Rs } 350$

On 10th August 2022, all the boards of Ramanujan Hall of IIM Calcutta had exactly one order of dinner each, and all orders irrespective of the type of dinner had the same value per order.

Hence the value per order irrespective of the type of dinner = Rs 350

Total value of all the dinner orders delivered on 10th August 2022 = Rs 1,05,000

Hence, the number of boarders at Ramanujan Hall of IIM Calcutta = $105000/350 = 300$

30. B

We already know that the value of the dinners being delivered on 10th August 2022 at the Ramanujan Hall of total value of Rs 1,05,000, is as below :

Special Biryani	144 deg	$(144/360)*1,05,000$ = Rs 42,000
Fried Rice	72 deg	$(72/360)*1,05,000$ = Rs 21,000
Parathas/Rolls	43.2 deg	$(43.2/360)*1,05,000$ = Rs 12,600
Sandwiches	46.8 deg	$(46.8/360)*1,05,000$ = Rs 13,650
Masala Dosa	54 deg	$(54/360)*1,05,000$ = Rs 15,750

We also know that the percentage of total number (120) of orders of Special Biryani from individual restaurants being delivered on 10th August 2022 at the Ramanujan Hall is as follows :

Haji Sahib	25%	$(25/100)*120 = 30$
Aminia	15%	$(15/100)*120 = 18$
Arsalan	20%	$(20/100)*120 = 24$
India Restaurant	10%	$(10/100)*120 = 12$
Bawarchi	10%	$(10/100)*120 = 12$
Nizam's	20%	$(20/100)*120 = 24$

Total value of the Parathas/Rolls delivered = Rs 12,600

So the total value of all the 12 delivered orders of Special Biryani at Bawarchi = $12600*(26.19/100) = \text{Rs } 3,300$

Hence the value of each delivered order of Special Biryani at Bawarchi = $3300/12 = \text{Rs } 275$

Hence the value of each delivered order of Parathas/Rolls = $275*(80/100) = \text{Rs } 220$

Hence, the number of boarders who ordered Parathas/Rolls on 10th August 2022 at the Ramanujan Hall = $12600/220 = 57$ (rounded to the nearest integer)

31. 2000

Let the total number of customers at Milan-Da's canteen be represented by 100%.

Let the number of customers preferring all the three snack items be represented as x

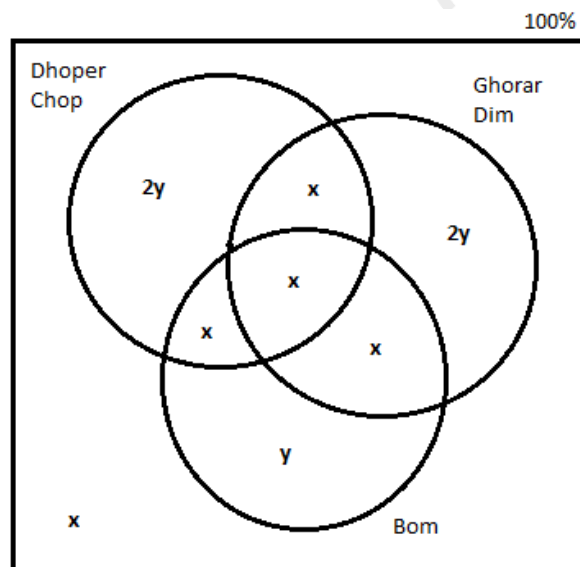
Hence, as per (b), the number of customers preferring none of the three snack items = x

Also, as per (c), the number of customers preferring the Dhooper Chop and Ghorar Dim = the number of customers preferring the Dhooper Chop and Bom = the number of customers preferring the Ghorar Dim and Bom = x

Let the number of customers preferring only the Bom be represented by y

Hence, as per (d), the number of customers preferring only the Dhooper Chop = the number of customers preferring only the Ghorar Dim = $2y$

Expressing the above relations in a Venn Diagram we get :



Now, $(x+x+x+x+x) + (y+2y+2y) = 100\%$

or, $5x + 5y = 100\%$

or, $x + y = 20\%$ (1)

The number of customers who preferred the Bom = $(3x+y)$

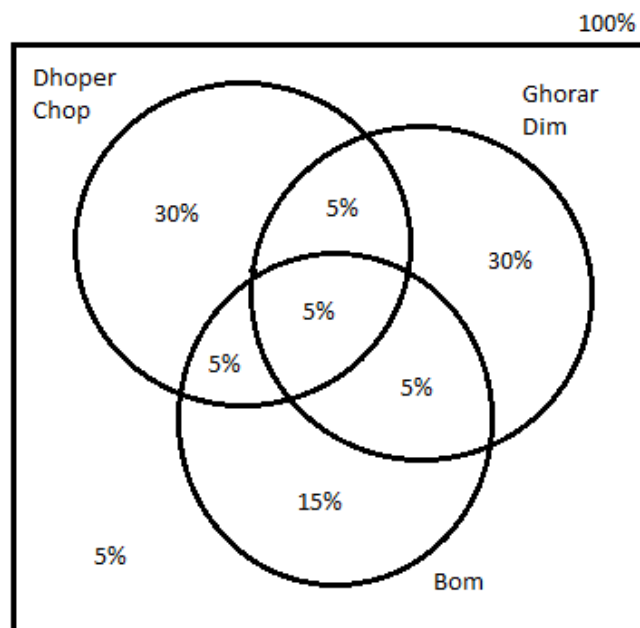
But, from (e), it is clear that $(3x+y)/2 = 3x$

or, $3x - y = 0\%$ (2)

Solving both the equations we get

$x = 5\%$ and $y = 15\%$

Hence the Venn diagram becomes :

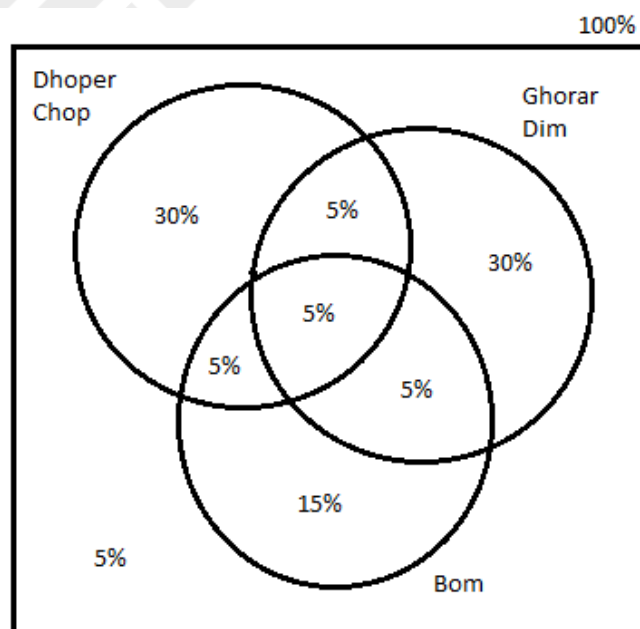


If the number of customers who preferred only the 'Bom' was 300,
 then 15% of the total customers = 300 customers
 or, 100% of the total customers = $(300 \times 100) / 15 = 2000$

Hence, if the number of customers who preferred only the 'Bom' was 300, then the total number of customers at Milan-Da's Canteen = 2000

32. 2100

We know that the Venn diagram representing the distribution of preferences at Milan-Da's Canteen is :



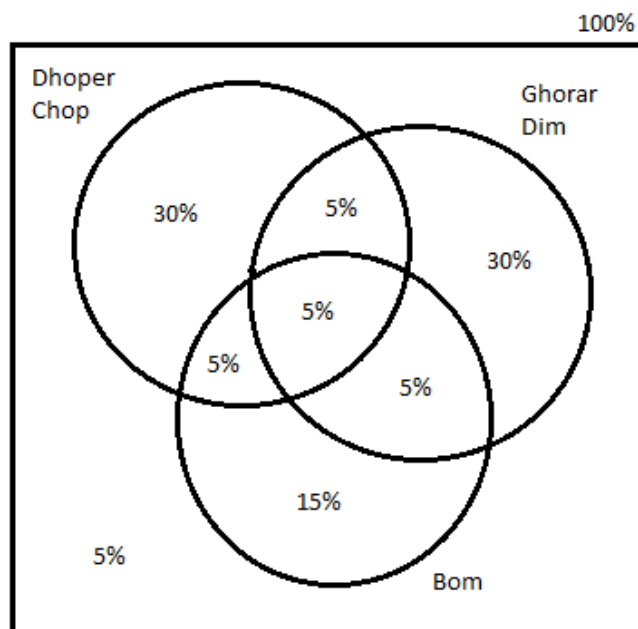
If 105 customers did not prefer any one of the three snack items, it implies that
 5% of the customers = 105 customers

or, 100% of the customers = $(105 \times 100) / 5 = 2100$ customers

Hence, if 105 customers did not prefer any one of the three snack items, then the total number of customers at Milan-Da's Canteen = 2100

33. 65

The percentage of customers who preferred to have 'Dhoper Chop' or 'Ghorar Dim', but not a 'Bom' is represented by the shaded part of the Venn Diagram as shown below :

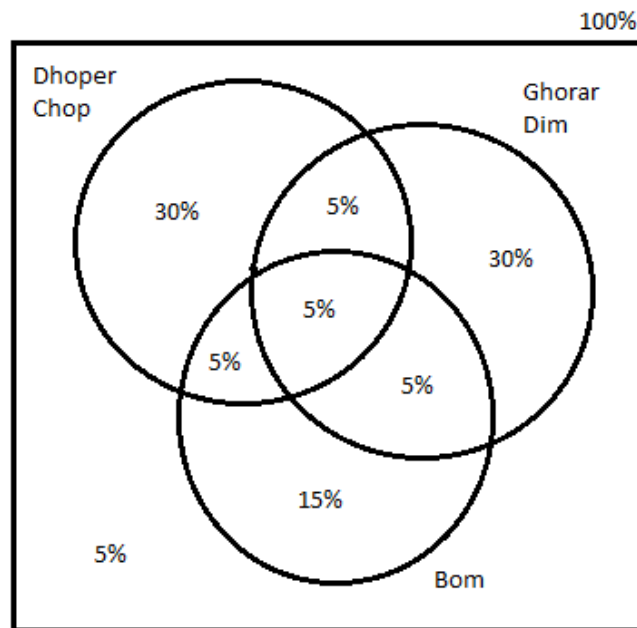


Hence, the percentage of the customers who preferred to have 'Dhoper Chop' or 'Ghorar Dim', but not a 'Bom' is represented by the shaded part of the Venn Diagram as shown below :

= $(30\% + 5\% + 30\%) = 65\%$

34. D

We know that :



The number of customers who preferred at least one of the three best-selling snack items will be represented by all the areas except the area representing the number of customers who preferred none of the three best-selling snack items, that is, $(100\% - 5\%) = 95\%$

Now, 100% of the customers = 2500

or, 95% of the customers = $(2500 \times 95) / 100 = 2375$

Hence, if the number of customers at Milan-Da's Canteen were 2500, the number of customers who preferred at least one of the three best-selling snack items at the canteen = 2375

35. A

The Pool Stage player distribution was as below :

Pool A	Pool B	Pool C	Pool D	Pool E
Seed 1	Seed 2	Seed 3	Seed 4	Seed 5
Seed 6	Seed 7	Seed 8	Seed 9	Seed 10
Seed 11	Seed 12	Seed 13	Seed 14	Seed 15
Seed 16	Seed 17	Seed 18	Seed 19	Seed 20

There were ten players in the Super Ten Stage. Each player played one match each with all the other qualifiers, excepting the one from his own pool.

However, if each player played one match each with all the other players in this stage, the total number of matches would have been $= {}^{10}C_2 = 45$.

But actually, players from the same pool did not play any matches.

Thus, because two players got selected from each pool, so 5 matches should be deducted from the above total.

Hence, the number of matches played in the Super Ten Stage of the Wimbledon Junior Tennis tournament in 2022 = $45 - 5 = 40$

36. B

The Pool Stage player distribution was as below :

Pool A	Pool B	Pool C	Pool D	Pool E
Seed 1	Seed 2	Seed 3	Seed 4	Seed 5
Seed 6	Seed 7	Seed 8	Seed 9	Seed 10
Seed 11	Seed 12	Seed 13	Seed 14	Seed 15
Seed 16	Seed 17	Seed 18	Seed 19	Seed 20

Number of matches played in each pool = ${}^4C_2 = 6$

Hence number of matches played in the Pool Stage = $6 \times 5 = 30$

Number of matches played in the Super Ten Stage (as deduced in previous question) = 40

Number of matches played in the Semi Finals = 2

Match for third place = 1

Number of matches played in the Finals = 1

Hence the total number of matches played in the Wimbledon Junior Tennis tournament in 2022 = $30 + 40 + 2 + 1 + 1 = 74$

37. C

The Pool Stage player distribution was as below :

Pool A	Pool B	Pool C	Pool D	Pool E
Seed 1	Seed 2	Seed 3	Seed 4	Seed 5
Seed 6	Seed 7	Seed 8	Seed 9	Seed 10
Seed 11	Seed 12	Seed 13	Seed 14	Seed 15
Seed 16	Seed 17	Seed 18	Seed 19	Seed 20

We already know that the number of matches played in the Super Ten Stage = 40

Per match the total points distributed = $2 + 0 = 2$

Hence the total number of points that could be distributed among 40 matches = $40 \times 2 = 80$

Now, players of the same pool did not play any matches in the Super Ten Stage, which meant 5 matches did not get played.

But in the Pool Stage each player had played one match with the same player from his pool, whose points had got carry-forwarded.

So technically, it was the points of the same 5 matches which did not get played in the Super Ten Stage which got carry-forwarded.

Points from 5 matches = $5 \times 2 = 10$

Hence total points after the Super Ten Stage = $80 + 10 = 90$

Four players advanced to the Semi Finals.

Let us consider that the top three players got the maximum possible number of points.

Maximum points were obtained when a player won all the 8 matches he played, plus had won the 1 match against the player of his own pool in the Pool Stage.

Hence maximum points = $9 \times 2 = 18$

The second maximum points were obtained either when a player won all the 8 matches he played, but had lost the 1 match against the player of his own pool in the Pool Stage, or, when a player won 7 of the 8 matches he played, plus had won the 1 match against the player of his own pool in the Pool Stage.

Hence second most maximum points = $8 \times 2 = 16$

Likewise, the third maximum points were obtained either when a player won 7 of the 8 matches he played, but had lost the 1 match against the player of his own pool in the Pool Stage, or, when a player won 6 of the 8 matches he played, plus had won the 1 match against the player of his own pool in the Pool Stage.

Hence third most maximum points = $7 \times 2 = 14$

Total points distributed between the top three players = $18 + 16 + 14 = 48$

Total points left = $90 - 48 = 42$.

Suppose all the other seven players ($10 - 3 = 7$) had the 42 points distributed equally among them.

Hence each player got $42/7 = 6$ points.

One of them by dint of match points conceded and aces served moved forward to the Semi Final as the fourth player.

Hence, the minimum number of points with which it was possible for a player to reach the Semi Finals of the Wimbledon Junior Tennis tournament = 6

38. D

The Pool Stage player distribution was as below :

Pool A	Pool B	Pool C	Pool D	Pool E
Seed 1	Seed 2	Seed 3	Seed 4	Seed 5
Seed 6	Seed 7	Seed 8	Seed 9	Seed 10
Seed 11	Seed 12	Seed 13	Seed 14	Seed 15
Seed 16	Seed 17	Seed 18	Seed 19	Seed 20

Every pool from A to E has four different seeds in each of them.

Considering any one pool, say Pool A :

Say Seed 1 beat Seed 6, Seed 11 and Seed 16, resulting in no upset.

Points of Seed 1 = $3 \times 2 = 6$

Say Seed 6 beat Seed 11, but lost to Seed 1 and Seed 16, resulting in one upset.

Points of Seed 6 = $1 \times 2 = 2$

Say Seed 11 beat Seed 16 and lost to Seed 1 and Seed 6, resulting in no upset.

Points of Seed 11 = $1 \times 2 = 2$

Hence Seed 16 had beaten Seed 6 and lost to Seed 1 and Seed 11.

Points of Seed 16 = $1 \times 2 = 2$

Out of Seed 6, 11 and 16, all of whom had 2 points each, Seed 16 could move forward to the Super Ten Stage by dint of match points conceded and aces served.

So, it was possible for the lowest seed in a pool to advance to the Super Ten Stage with only one upset in the Pool Stage.

If the same happened in Pool E, we could likewise say that Seed 20, who was the lowest seed in the tournament, could proceed to the Super Ten Stage.

From there Seed 20 could move on to the Semi Finals causing more upsets, then proceed to the Finals and also win the tournament by causing further upsets.

Hence, if the Pool Stage had only a single upset, the lowest seeded player who could win the Wimbledon Junior Tennis tournament in 2022 was Seed 20.

38. D

The Pool Stage player distribution was as below :

Pool A	Pool B	Pool C	Pool D	Pool E
Seed 1	Seed 2	Seed 3	Seed 4	Seed 5
Seed 6	Seed 7	Seed 8	Seed 9	Seed 10
Seed 11	Seed 12	Seed 13	Seed 14	Seed 15
Seed 16	Seed 17	Seed 18	Seed 19	Seed 20

Here the player had to be sure of a place in the Semi Finals, and not depend upon the performance of the other players.

We have to find the minimum number of points this is possible with.

To do so, we need to find out the maximum points a player could score and yet get eliminated in the Super Ten Stage.

There were ten players in the Super Ten Stage.

Let us suppose the bottom five of them lost to all the other five players in points tally, and whatever wins they had were in matches between themselves.

Number of points by the bottom five players in points tally = ${}^5C_2 * 2 = 10 * 2 = 20$

(Though players of the same pool did not play any matches in the Super Ten Stage, but in the Pool Stage each player had played one match with the same player from his pool, whose points had got carry-forwarded. So, technically it was the points of the same matches which did not get played in the Super Ten Stage which got carry-forwarded to the points tally)

Total points after the Super Ten Stage (as deduced in question number 3) = 90

Number of points left = $90 - 20 = 70$

Suppose the top five players had these 70 points distributed equally among them.

Hence each player got $70/5 = 14$ points.

Four of them by dint of match points conceded and aces served moved forward to the Semi Final, and one player got eliminated.

So, the maximum number of points with which it was possible for a player to still get eliminated in the Super Ten Stage = 14

Thus, If a player got 2 points more (as there are no ties in a tennis match), he was ensured of a berth in the Semi Finals.

Hence, the minimum total number of points required, including the carried forward points from the Pool Stage, so that a player could be sure of a place in the Semi Finals of the Wimbledon Junior Tennis tournament in 2022 = $14+2 = 16$

40. A

From the conditions given in (1), (2), (3), (4) and (6), we can say as follows :

Colleague	Locality of florist	Colour of roses
Anirban	Jadavpur	
Biplab		
Chintu	Bhawanipur	Red
Dipesh		
Ehsaan	Behala	
Farhad	Khidderpore	Red
Gautam		
Hitesh	Tollygunge	Mauve

As per (7) we can say that only Gautam and Hitesh bought one dozen each of the Mauve roses
Hence there must be three colleagues who purchased a dozen Red roses and three colleagues who purchased a dozen Yellow roses

From (5) we can conclude that Ehsaan, who went to the florist at Behala did not purchase a dozen Yellow roses. So Ehsaan had purchased a dozen Red roses.

Also, from (5) we can conclude that Gautam, who bought a dozen Mauve roses did so from Shyambazar

The number of colleagues who bought the same coloured roses was not less than two and not more than three.

Hence, the three colleagues – Anirban, Biplab and Dipesh – must have purchased Yellow roses

Hence, we get :

Colleague	Locality of florist	Colour of roses
Anirban	Jadavpur	Yellow
Biplab		Yellow
Chintu	Bhawanipur	Red

Dipesh		Yellow
Ehsaan	Behala	Red
Farhad	Khidderpore	Red
Gautam	Shyambazar	Mauve
Hitesh	Tollygunge	Mauve

From (8) we know that Dipesh did not go to the florist in Maniktala

Hence Dipesh must have gone to the florist at Alipore.

Hence Biplab had gone to the florist at Maniktala.

Hence the final arrangement is as follows :

Colleague	Locality of florist	Colour of roses
Anirban	Jadavpur	Yellow
Biplab	Maniktala	Yellow
Chintu	Bhawanipur	Red
Dipesh	Alipore	Yellow
Ehsaan	Behala	Red
Farhad	Khidderpore	Red
Gautam	Shyambazar	Mauve
Hitesh	Tollygunge	Mauve

Hence, the locality of the florist that Ehsaan went to was Behala

41. B

From the previous question we know that the final arrangement is :

Colleague	Locality of florist	Colour of roses
Anirban	Jadavpur	Yellow
Biplab	Maniktala	Yellow
Chintu	Bhawanipur	Red
Dipesh	Alipore	Yellow
Ehsaan	Behala	Red
Farhad	Khidderpore	Red
Gautam	Shyambazar	Mauve
Hitesh	Tollygunge	Mauve

Hence, the colour of the dozen roses that Gautam bought was Mauve

42. C

We know that the final arrangement is :

Colleague	Locality of florist	Colour of roses
Anirban	Jadavpur	Yellow
Biplab	Maniktala	Yellow
Chintu	Bhawanipur	Red
Dipesh	Alipore	Yellow
Ehsaan	Behala	Red
Farhad	Khidderpore	Red
Gautam	Shyambazar	Mauve
Hitesh	Tollygunge	Mauve

Hence, the locality of the florist that Dipesh went to was Alipore

43. D

We know that the final arrangement is :

Colleague	Locality of florist	Colour of roses
Anirban	Jadavpur	Yellow
Biplab	Maniktala	Yellow
Chintu	Bhawanipur	Red
Dipesh	Alipore	Yellow
Ehsaan	Behala	Red
Farhad	Khidderpore	Red
Gautam	Shyambazar	Mauve
Hitesh	Tollygunge	Mauve

Hence, the correct match of the arrangements is Biplab – Maniktala – Yellow

44. C

We know that the final arrangement is :

Colleague	Locality of florist	Colour of roses

Anirban	Jadavpur	Yellow
Biplab	Maniktala	Yellow
Chintu	Bhawanipur	Red
Dipesh	Alipore	Yellow
Ehsaan	Behala	Red
Farhad	Khidderpore	Red
Gautam	Shyambazar	Mauve
Hitesh	Tollygunge	Mauve

Hence, the colour of the roses purchased by Anirban was Yellow

Section - Quantitative Aptitude

45. B

Let cost of 1 book is Rs x, cost of 1 note book is Rs y and cost of 1 fountain pen is Rs z. According to given conditions

$$5x = 10y + 30 \Rightarrow x = 2y + 6$$

$$\Rightarrow 2y = x - 6$$

$$\text{And } z = x + 15$$

$$\text{Cost of 6 notebooks} = 6y = 3x - 18$$

$$\text{Cost of 3 fountain pens} = 3z = 3x + 45$$

$$\text{Difference} = 3x + 45 - (3x - 18) = 63$$

46. 1

Let the profits of A, B and C be 7x, 12x and 6x respectively.

Investments of A, B and C be 4y, 7y and 8y respectively.

$$\text{Profit of C} = 25\% \text{ of } 8y = 6x$$

$$\Rightarrow 2y = 6x$$

$$\Rightarrow y = 3x$$

$$\text{Profit made by A} = 7x = 7y/3$$

$$\text{Percentage profit of A} = ((7y/3)/4y) \times 100 = 58.33\%$$

$$\text{Profit made by B} = 12x = 4y$$

$$\text{Percentage profit of B} = (4y/7y) \times 100 = 57.14\%$$

$$\text{Difference} = 1.19\%$$

47. D

	Girls	Boys	Total
Appeared	50	100 (Let)	150

Cleared the cut off	10	25	35
Not Cleared the cut off	40	75	115

40 % of cleared candidates got admitted in IIMs, i.e. 14

Not cleared = 115

Require answer = $(14/115) \times 100 = 12.17\%$

48. B

Shailja sells 40 identical pencils at a 30% discount on the printed price, then she makes 10% profit.

This will gives MP: CP = 10: 7 and CP: SP= 10: 11

It will give MP: CP: SP = 110: 70: 77

Profit on 1 pencil = 7 then profit on 40 = 280.

Let x pencils were lost.

at 18.18% discount on the printed price so that she makes the same amount of profit

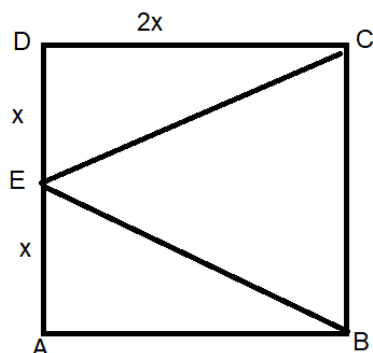
New selling price = $110 - 18.18\% \text{ of } 110 = 90$

Profit on 1 pencil = 20

Profit on $(40-x) = 20(40-x) = 280$

So, $x = 26$

49. B



By symmetry $\angle CED = \angle BEA = (180^\circ - \angle CEB)/2$

$\tan \angle CED = 2x/x$

$\tan [(180^\circ - \angle CEB)/2] = 2$

$(180^\circ - \angle CEB)/2 = \tan^{-1} 2$

$\angle CEB = 180^\circ - 2 \tan^{-1} 2$

50. C

Area of 4 circles = $4 \times (22/7) \times (\frac{\sqrt{2}}{2})^2 = 22 \text{ cm}^2$

Area of uncut portion = $12^2 - 22 = 122 \text{ cm}^2$

Required ratio = $122: 22 = 61: 11$

51. D

Let the weights of broken pieces be $1x, 2x, 3x, 4x$ and $5x$ respectively and their cost being $1x^3, 8x^3, 27x^3, 64x^3$ and $125x^3$ respectively.

Weight of unbroken stone be $(1x+2x+3x+4x+5x= 15x)$ and cost being $3375x^3$

Difference between cost = $3375x^3 - (1x^3 + 8x^3 + 27x^3 + 64x^3 + 125x^3) = 3150x^3 = 63000$

So, $x^3 = 20$.

Cost of original stone = $3375x^3 = 3375 \times 20 = \text{Rs } 67500$

52. D

Solving $9/(a+2)^2: b^2 = 9: 1$

$b^2/(a+2)^2 = 1$

$\Rightarrow b/(a+2) = 1$ or $b/(a+2) = -1$

$\Rightarrow b = a+2$ or $b = -(a+2)$

Similarly

$a^2: (b-1)^2 = 4: 1$

$\Rightarrow a: (b-1) = 2$ or $a: (b-1) = -2$

$\Rightarrow a = 2(b-1)$ or $a = -2(b-1)$

Case 1: Solving $b = a+2$ and $a = 2(b-1)$, we get $b = 0$ which cannot be possible.

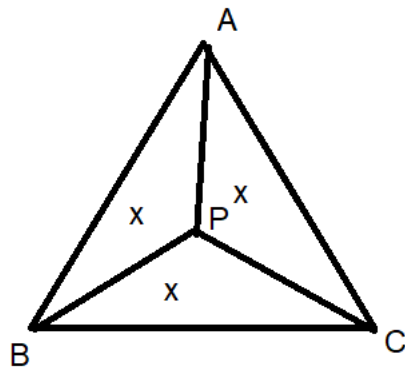
Case 2: Solving $b = a+2$ and $a = -2(b-1)$, we get $b = 4/3$ and $a = -2/3$. So, $a/b = -1/2$ is a negative fraction.

Case 3: Solving $b = -(a+2)$ and $a = 2(b-1)$, we get $b = 0$ which cannot be possible.

Case 4: Solving $b = -(a+2)$ and $a = -2(b-1)$, we get $b = 4$ and $a = -3/2$. So, $a/b = -1/2$ is a negative fraction.

53. B

Centroid divides the triangle in three equal parts.



Area of three parts be x square units each. (Since P is centroid of the triangle)

$(\text{Area of } PBC + \text{Area of } PAB) \times 100 / \text{Area of } PAC = 2x(100)/x = 200\%$

54. C

Volume of hemisphere = $\frac{2}{3} \pi r^3$

Volume of cone = $\frac{1}{3} \pi r^2 h$

Volume of cylinder = $\pi r^2 h$

According to question

Volume of hemisphere + Volume of cone = Volume of cylinder - 20π

$\frac{2}{3} \pi 2^3 + \frac{1}{3} \pi 2^2 \times 10 = \pi 4^2 \times h - 20\pi$

$h = 2.42 \text{ cm}$

or $h = 0.024 \text{ m}$

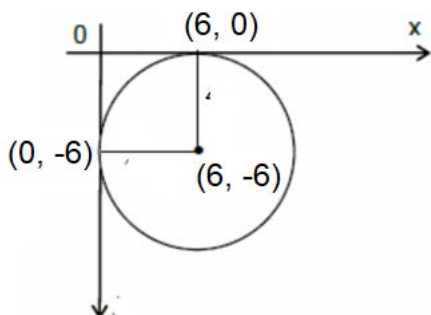
55. C

$$\begin{aligned}
 \log_3 x^{1/2} + \log_9 y &= a \\
 \Rightarrow \log_3 x^{1/2} + \log_{3^2} y &= a \\
 \Rightarrow \log_3 x^{1/2} + (1/2) \log_3 y &= a \\
 \Rightarrow \log_3 x^{1/2} + \log_3 y^{1/2} &= a \\
 \Rightarrow \log_3 (xy)^{1/2} &= a
 \end{aligned}$$

Also, $G = (xy)^{1/2}$ since G is geometric mean of x and y .

$$\begin{aligned}
 \text{So, } \log_3 (xy)^{1/2} &= a \\
 \Rightarrow (1/4) \log_{3^4} (xy)^{1/2} &= a \\
 \Rightarrow (1/4) \log_{81} (xy)^{1/2} &= a \\
 \Rightarrow \log_{81} (xy)^{1/2} &= 4a
 \end{aligned}$$

56. D



$$\begin{aligned}
 \text{Equation of Circle is } (x-6)^2 + (y+6)^2 &= 6^2 \\
 \Rightarrow x^2 + y^2 - 12x + 12y + 36 &= 0.
 \end{aligned}$$

57. B

$$\text{Take } x=2, y=1; f(2) - f(1) = f(1) \Rightarrow f(2) = 2f(1)$$

$$\text{Take } x=3, y=2; f(3) - f(2) = f(2) \Rightarrow f(3) = 2f(2) = 4f(1)$$

Similarly $f(4) = 8f(1)$ and so on.

$$\text{Also, } f(10) = 2^9 f(1)$$

$$\text{So, } f(1) = f(10)/2^9 = 1024/512 = 2.$$

$$\text{Therefore, } f(1) + f(3) + f(5) + f(7) + \dots + f(19) = f(1)[1 + 2^2 + 2^4 + 2^6 + \dots + 2^{18}]$$

Forming a GP of 10 terms with 1st term $f(1)$ and with common ratio of 2^2 .

On solving

$$\text{So, } f(1) + f(3) + f(5) + f(7) + \dots + f(19) = f(1) [(2^2)^9 - 1]/[2^2 - 1]$$

$$\Rightarrow f(1) + f(3) + f(5) + f(7) + \dots + f(19) = 2 [(4^9 - 1)/3]$$

58. 2

Case 1:

$$\text{If } (3x-48) \geq 0 \text{ i.e. } x \geq 16, \text{ then } |3x-48| = 3x-48$$

$$x = |x^2 - |3x-48|| = |x^2 - 3x + 48|$$

again if $(x^2 - 3x + 48) \geq 0$, then $x = x^2 - 3x + 48$; no integral solutions are there. (since Discriminant < 0)

If $(x^2 - 3x + 48) \leq 0$, then $x = -x^2 + 3x - 48$ i.e. $x^2 - 2x + 48 = 0$; no integral solutions are there. (since Discriminant < 0)

Case 2:

$$\text{If } (3x-48) < 0 \text{ i.e. } x < 16, \text{ then } |3x-48| = 48-3x$$

$$x = |x^2 - |3x-48|| = |x^2 + 3x - 48|$$

$$\text{again if } (x^2 + 3x - 48) \geq 0, \text{ then } x = x^2 + 3x - 48$$

On solving this quadratic equation, we get two values of $x = 6$ and $x = 8$.

(Two integral solutions)

If $(x^2 + 3x - 48) < 0$, then $x = -x^2 - 3x + 48$.

On solving this quadratic equation, we will not get any integral solutions.

So, x can take only 2 values.

59. C

If 1 worker did 1 unit work in a day.

Total Work = $30 \times 20 = 600$

On day 1, day 2, day 3, day 5, day 7, ... Work be completed 30 units per day.

On day 4, day 6, day 8, ... work be completed 24, 22, 20 per day respectively

If we see the options work will be completed in 20 or more days.

From day 1, day 2, and day 3 to day 25 on alternate days 30 workers are doing work, so work be completed in these 14 days = $14 \times 30 = 420$ units

from day 4 to day 24, on alternate day 24, 22, 20....., workers are doing work. Then total work completed in these 11 days = $11 [2 \times 24 - 8 \times 2] / 2 = 176$ units.

In 25 days work completed = $420 + 176 = 596$.

Remaining 4 units work will be completed by 30 workers in $2/15$ day.

Total time = 25 and $\frac{1}{2}$ days.

60. 19750

Interest for first 3 years = $3 \times 16000 / 16 = \text{Rs } 3000$

Interest for next 0.5 years = $\frac{1}{2} \times 16000 / 8 = \text{Rs } 1000$

Now principal becomes Rs 10000 (since he repaid 6000)

Interest for next 3.5 years = $3.5 \times 12.5\% \text{ of } 10000 = \text{Rs } 3750$

Amount after 7 years = Principal + total interest = Rs $(12000 + 3000 + 1000 + 3750) = \text{Rs } 19750$

61. C

Following two combinations are possible

3 3 1 or 3 2 2

Number of possible ways = $3!/2! + 3!/2! = 6$

62. C

$$11^{4x-4} + 121^{2x+1} = 1342$$

$$\Rightarrow 11^{4x} (1/11^4 + 1/121) = 1342$$

$$\Rightarrow 11^{4x} (122/11^4) = 1342$$

$$\Rightarrow 11^{4x} = 11^5$$

$$\Rightarrow 4x = 5$$

$$\Rightarrow x = 5/4$$

So, $256^x = 1024$

63. A

February of 29 days means, the year must be leap year.

Total year = 117

1st leap year = 1996

Last leap year = 2108

After every 4 years a leap year occurs but 2100 is not a leap year.
 So, number of leap year = 26 (from 1996 to 2096) + 2 (2100 to 2110) = 28.

Probability = $28/112 = 1/4$

64. 5

All the three meets after every [LCM (16, 24, 30)] days i.e. 240 days.

A and B meets after every [LCM (16, 24)] days i.e. 48 days. So, they will meet for 4 times before 240 days.

So, $p = 4$.

B and C meets after every [LCM (24, 30)] days i.e. 120 days. So, they will meet for 1 time before 240 days.

So, $q = 1$.

$p+q = 5$

65. A

Let distances $AC = x$, $BD = y$ and $CD = z$
 and speed of P and Q be $3a$ and $5a$ respectively.

In t time Q covers x distance and in the same time P covers $y/2$

So, $x/(y/2) = 5at/3at = 5/3$

So, $x/y = 5/6$.

In t time Q covers z distance and in the same time P covers $y/2$

So, $z/(y/2) = 5at/3at = 5/3$

Therefore $x : z = 1 : 1$

66. 4

Prime factorization of $240 = 2^4 \times 3 \times 5$

and prime factorization of $12 = 2^2 \times 3$

the numbers between 120 and 240 having exactly 2 times 2 and at least 1 time 3 and no 5's will give fcf = 12 with 240.

So, required numbers are 12×11 , 12×13 , 12×17 , 12×19 .

12×21 is greater than 240.

So, possible numbers are 132, 156, 204, 228

MOCK TEST – 7

Section - 1 - Verbal Ability & Reading Comprehension

Directions for questions 1 to 4: The passage given below is followed by a set of questions. Choose the most appropriate answer to each question.

Passage-1

If you turn on a light at night in the mountains of Papua New Guinea, says Paul Hebert, you will collect some 2,000 species of moth. Moving up the mountain a bit will net you a different but equally daunting crowd. As a young postdoc in the 1970s, Hebert, now an evolutionary biologist at the University of Guelph in Ontario, spent five years trying to make sense of that fluttering confusion, before finally deciding it was beyond his or any human's capacity. For two decades after that he retreated to water fleas, of which there are only 200 species. Then in 2003 he did something new. In a paper that year he began by describing the diversity of life as a "harsh burden" for biologists, and proceeded to suggest some relief: Every species on Earth could be assigned a simple DNA barcode, Hebert wrote, so it would be easy to tell them apart.

The barcode Hebert suggested is part of a gene called *CO1*, which helps produce the energy-carrying molecule ATP. *CO1* is so essential that every multicellular organism has it. But there is enough variation in its sequence—each of the 600-odd spots in the barcode region can be filled by any of four different DNA bases—that two species rarely have the exact same one. Such differences in a gene are readily scanned by machine even when the animals themselves might confound an expert; Hebert's group is now sequencing a thousand specimens a day. They've barcoded nearly 40,000 species of moth and butterfly already. The technique has commercial as well as scientific promise. Mislabeling of fish on menus is rampant, it turns out.

Barcoding has spread throughout the animal kingdom and even to plants and fungi. With a seal of approval from the United Nations, which has declared 2010 the International Year of Biodiversity, researchers in 25 countries are now aiming to barcode 500,000 species—of the 1.7 million already named on Earth—by 2015. "I'm convinced this approach is scalable to the planet," says Hebert. "Any species humans encounter frequently will be barcoded by 2025."

Some biologists dislike that grand plan; they worry that barcoding, which is best at identifying species that have already been described, will steal scarce research dollars from the more valuable work of describing unnamed species. Hebert sees the technique as popularizing biodiversity at a time when it is vanishing fast. People are now sending him specimens from their backyard to identify, but within ten years, he thinks, the technology will follow the path of GPS: Someone will invent a handheld DNA barcoder. "I can imagine every kid getting one of these in his or her Christmas stocking," Hebert says. When those kids grow into postdocs, they'll be better equipped to plunge into the wilds of New Guinea and sort out the moths.

Q1. It can be inferred from the passage that the possible advantages of the barcoding technology for identifying different species is/are:

- I. It helps reduce the manual labor involved in the work.

- II. It may make technology accessible even to little kids, who can carry out the process in their own backyard.
- III. It helps in identifying DNA differences which might baffle scientists at times.
- IV. It reduces the cost of operations to minimalistic levels.

- A. I & II
- B. II & III
- C. II, III & IV
- D. I & IV
- E. All of the above

Q2. The objection against bar coding is based on which of the following reasoning principles:

- A. It appeals to a higher authority to settle the dispute.
- B. It points out a faulty presupposition in the main argument.
- C. It provides an alternate line of thinking that many subscribe to.
- D. It highlights an alternate fallout of the actions mentioned in the passage.

Q3. Which of the following statements are not true as per the passage?

- I. DNA barcoding holds the potential of popularizing biodiversity at a time when it is vanishing fast.
- II. There is limited variation in the sequence of *CO1*
- III. Two species rarely have the exact same sequence of *CO1*.
- IV. The technique has commercial as well as scientific promise.

- A. I and II
- B. II, III and IV
- C. Only II
- D. Only III

Q.4. The purpose of this statement, 'Mislabelling of fish on menus is rampant, it turns out', is:

- A. elucidating rampant myths.
- B. rhetorical emphasis.
- C. lending clarity to the argument.
- D. as a euphemistic agent.

Directions for questions 5 to 8: The passage given below is followed by a set of questions. Choose the most appropriate answer to each question.

Passage-2

If you believed the copious alarmist commentary in the newspapers, you'd fear for the future of our species. Today's children, we're told, are more hyperactive and technology addicted than ever before. They've lost any ability to sit still, instead craving constant stimulation from digital devices and exhausted parents.

What might this mean for their performance on the most famous psychological measure of childhood self-control, Walter Mischel's Marshmallow Test? Surely, kids of today will struggle far more than previous generations to resist the lure of one marshmallow (or other treat) now for the promise of two in ten minutes or so, as the task requires? In a new survey, the majority of child development experts certainly believed so. Yet based on his analysis of 50 years' worth of performance data on the Marshmallow Test – released as a preprint at the Open Science Framework – John Protzko at the

University of California, Santa Barbara, concludes that in fact children of today are capable of more self-restraint than previous generations, with their ability to delay gratification having increased by about a minute per decade over the last 50 years.

Protzko combined the results from every published and unpublished use of the Marshmallow Test that he could find, starting with Mischel's seminal work first published in 1968 and including 4 studies in the 1970s, 3 in the 1990s, 6 in the 2000s, and 16 in our current decade, all involving children aged ten or younger. Protzko speculates that the gap in the 1980s is due to the introduction at that time of a rival test of self-regulation which is quicker to administer – the so-called gift-delay task.

Before crunching the numbers, Protzko polled 260 members of the Cognitive Development Society Listserv about how they thought the results would come out. Just over 50 per cent predicted that Protzko would find children's powers of self-restraint would be lower today than the in past; 20 percent predicted no change over time; and just 16 per cent believed that children today would outperform the children of the past (the others said there wouldn't be enough data to answer the question).

Protzko found a statistically significant linear trend – children's ability to resist immediate temptation and wait for a greater reward seems to have increased over the decades. The increase in delay of gratification ability is similar in size to the known increase in average IQ seen over the same timescale, possibly reflecting shared mechanisms, though this is speculation at this stage. Meanwhile, variation in Marshmallow Test performance has stayed the same over the decades, which means that average improvement has been seen across the spread of ability, not just among those children who are more self-restrained.

How could the experts have got it so wrong? Protzko suggests they are prone to the same bias as the rest of us, what he calls the "kids these days" phenomenon: "people's memories for their own and others' abilities in childhood are unduly influenced by their current abilities. While it is easy to look at kids these days and deride their inability to control themselves and decry the downfall of civilisation, it is much harder to accurately recall our own selves as children."

Does the apparent improvement in children's powers of self-control bode well for the future, for instance in terms of reduced criminality and addiction? Protzko thinks not, speculating that it is probably one's ability relative to others, rather than one's absolute ability, that is relevant to future behaviour – the lowest performers will remain at risk, he suggests. "These [unhealthy and dangerous] behaviours have been with humans for thousands of years, and will be with us for thousands more," he predicts. The causes and consequences of the apparent increase in children's powers of self-restraint over time remain to be uncovered by future research. For now, Protzko says the data show that "Contrary to historical and present complaints, kids these days appear to be better than we were. A supposed modern culture of instant gratification has not stemmed the march of improvement."

Q.5. Out of the following statements, which are correct as per the information provided by Protzko?

- I. At one point of time, in all probability, another test was preferred to the Marshmallow Test.
- II. Experts can also suffer from certain biases.
- III. Though not certain, the future certainly seems brighter with kids having better self-control.

- A. I & II
- B. II & III
- C. I & III
- D. All of the above

Q.6. The author of the passage will agree with the statement:

- A. Children of today are worse off at delaying gratification than previous generations
- B. Children of today are no better at delaying gratification than previous generations
- C. Children of today are better at delaying gratification than previous generations
- D. Children of today are fractionally worse off at delaying gratification than previous generations

Q7. In the given context of the passage, the word 'alarmist' means:

- A. someone who exaggerates a danger and causes needless worry.
- B. someone who deflects a danger and removes needless worry.
- C. someone who creates a danger and causes needless panic.
- D. someone who fabricates a problem and causes needless worry.

Q8. According to the information given in the passage:

- A. At all levels of ability, the average improvement in self-restraint has been observed for children.
- B. The causes of increase in children's self-restraint, even though exposed to far greater technology, need to be established through further research.
- C. Both A and B
- D. Neither A nor B

Passage-3

When I got depressed for the first time, at age 27, what surprised me most was the sheer physicality of it. My arms and legs, numb and pendulous as dumbbells, resisted my half-hearted attempts to animate them, and my perception was equally leaden. Taking in the world felt like gazing through a stained-glass pane, trying to make out the wavy shapes on the other side.

After a few rounds of cognitive-behavioural therapy (CBT) – which helped, but not quite enough – I gave in and tried Prozac, which resolved the depression so completely that I felt baptised, reborn. I ran around the mall trying on clothes as if I were outfitting myself for a new life. I assumed, or willed myself to, that the profound physical and mental torpor that had overtaken me was a one-off, a fluke. (And in fact, millions of people experience only a single depressive episode in their lifetimes.)

But for me, what the clinical psychologist and author Andrew Solomon has called the noonday demon did strike again. It arrived most dramatically after the birth of my second son – the leaden limbs and outlook, the gagging when I forced down a bite of food, the glug-glug rush of blood through my ears when anxious thoughts crept in. Because this was a dark wolf I now knew, I acted more quickly this time, resuming talk therapy and seeking a new fluoxetine prescription.

With the new prescription came a recommendation from my psychiatrist: that I stay on fluoxetine indefinitely. It would stave off future episodes of depressive illness, he explained, which was critical to my long-term wellbeing. His advice seemed in line with an evolving medical understanding of depression I'd heard about – the kindling hypothesis. Like a vessel that develops more cracks each time it's dropped, the theory goes, sufferers of disorders such as depression, bipolar disorder and post-traumatic stress disorder (PTSD) become more neurologically brittle with each active bout of mental illness. As a result, future episodes occur closer and closer together, with less and less provocation. The key to disrupting this sequence is to prevent episodes before they have a chance to occur.

When I'd first caught wind of kindling theory years before, I'd thought: Well, that's the most depressing thing I've heard in a while. I had banished antidepressants from my life – for good, I thought at the time

– and I was loath to consider that I might need to take them indefinitely, like a diabetic on insulin maintenance. But now, despite my misgivings, I felt driven to ask my doctor about kindling. Was it true that with every bout of depression, my brain might be changing in ways that made me more susceptible to future illness? He indicated that I should take the prospect seriously – and that prevention was paramount. My choices suddenly seemed stark: stay on antidepressants long term, with all the side effects and stigma that entailed, or risk a default course that could be my mental undoing.

Q.9. In the given context of the passage, the word 'leaden' in the first paragraph means:

- A. Hard to lift or move
- B. Sluggish
- C. Spiritless, or gloomy, as in mood or thought
- D. Of poor quality or little value.

Q10. It can be inferred from the passage that:

- A. On occasions, antidepressants can provide more immediate relief than therapy for patients suffering with depression.
- B. Prozac is a type of fluoxetine antidepressant
- C. Both A and B
- D. Neither A nor B

Q11. According to the kindling theory, all of the following are true except:

- A. Each successive mental disorder enhances the chance of the sufferer to experience such a disorder again.
- B. Long term medication is the only way to stave off episodes of depressive illness.
- C. Use of antidepressants is accompanied by long term side effects.
- D. Sufferers of mental disorders are susceptible to undergo these periods of acute mental stress in shorter durations of time with each subsequent bout of mental illness.

Directions for questions 12 to 16: The passage given below is followed by a set of questions. Choose the most appropriate answer to each question.

Passage-4

What does the library mean to you? It's a question I have been mulling over for the past couple of days, since I bought a second-hand book online and found guiltily that it was, in actual fact, a library book. I assumed that someone had stolen it, or taken it out and then died, but then it struck me that perhaps the library had closed. So I've been trying to find out.

Meanwhile, the journalist and former Conservative aide Andre Walker took to Twitter. "Nobody goes to libraries anymore," he wrote. "Close the public ones and put the books in schools". What a privileged position to take, I thought, this assumption that these vital public spaces are not needed. Spoken like someone who has always been able to afford books and magazines (or else, I suspect, doesn't read), who can pay for an internet connection, who doesn't need help filling in government forms. Spoken like someone who doesn't require shelter from the storm, isn't housebound or lonely or trying to escape a chaotic home life, isn't a new parent wondering what to do with a small, helpless being for a few hours, because it's raining and you're knackered. Spoken like someone who, because of money, selfishness, or political ideals, doesn't need or want to feel part of a community that, for others, gives life depth, and variety, and meaning.

Now, I don't usually make a habit of writing columns about something controversial that someone has said on Twitter; life is far too short. But this time, more than 100,000 people have replied to Walker's tweet, rendering it somewhat newsworthy (and also leading him to back down and admit that libraries are not as unpopular as he believed). I'm also addressing it because of the context in which it appears: because of cuts to local authorities, libraries in Britain are closing all the time, at a rate that – despite the passionate commitment of librarians and activists, has begun to feel heartbreakingly inevitable.

I feel emotional almost to the point of tears about libraries. In wanting to examine why, it occurred to me that for many of us library lovers, a library is an extension of home – a big, cosy living room into which everyone is invited. Many of us, if blindfolded and transported back to the library door, would know it from the smell alone, could navigate our way to our favourite stacks with no effort, could draw the posters from memory. Libraries are witnesses to formative experiences regardless of age or maturity, places where you may have sat and been transported telepathically into the mind of another: the universe that they have created, the feelings they have projected.

And so, of course, we feel protective of them. The books we read make us, and often save us. As I was writing this, I was inundated with stories of what libraries mean to people, in various ways: to some they are sanctuaries from abusive home lives, or even homelessness. They are places to revise and learn and use technology, to rent films and records and CDs, when doing so elsewhere is impossible. They are the backdrop for bonding rituals with parents and aunts and grandparents.

Relationships with librarians were also important. They pointed out books that changed readers' lives forever, and offered guidance, sympathy, tissues and a friendly face. (If you've ever cried in a library you'll know what I mean.)

Libraries may be needed more by poor people but many comfortably off people use them too. Regardless of class background, libraries plug us into our communities, reminding us that there is life beyond our living rooms, that there's more to our daily existence than work and coming home, and the same again tomorrow. We are not all atomised in front of our glowing screens. Libraries don't just mean us, they mean other people too. No wonder we are fiercely protective of them. They are priceless.

Q12. The author of the passage will agree with which of the following statement/s:

- A. The future of libraries in Britain is under severe threat.
- B. Libraries and books play multifarious roles in the lives of people who read and use them.
- C. In comparison to others, people from a certain socio-economic class are more in need of libraries,
- D. All of the above

Q13. What does the author mean by the phrase 'We are not all atomised in front of our glowing screens.'?

- A. He is referring to people who are addicted to sports.
- B. He is referring to people who are not stuck to their digital devices or watching TVs.
- C. He is referring to people who prefer human interaction over digital consumption.
- D. None of the above

Q14. Out of the following words, which one captures the sentiment expressed by the author in the second paragraph of the passage?

- A. forlornness

- B. exasperation
- C. petulance
- D. consternation

Q15. It can be deduced from the passage:

- A. The author of the passage was not sure about the source from which he bought the second-hand book.
- B. Andre Walker's comment implied a lack of understanding with respect to the function of libraries.
- C. Both A and B
- D. Neither A nor B

Q16. A suitable title for the passage is:

- A. Legitimate challenges to the world of libraries
- B. Can we save the library from the inexorable challenges they face?
- C. Are libraries really needed in the world of today?
- D. No one needs libraries anymore? What rubbish!

Directions for the Question: Identify the apt summary for the given paragraph. Enter the option number you deem as the correct answer.

Q.17. Nothing reveals Merkel's hypocrisy more than her handling of the Balkan Route closure. With only a few hundred migrants a day now reaching Germany, Merkel is perhaps the greatest profiteer of the border closures. But it is the result of policies imposed by her political adversaries. Not only that, but these policies were originally supposed to receive the European stamp of approval at Monday's summit. For the summit's closing document, Tusk proposed the following statement in reference to the Balkan Route: "This route is now closed." The sentence is a statement of fact, but Merkel nevertheless refused to sign on. Doing so would have been a public admission of failure.

- A. Merkel is unhappy about the action taken by her political opponents, despite the action benefiting her.
- B. Merkel wanted to close borders since the start of the crisis, but was not able to do so.
- C. Merkel has been unhappy with her neighbours and their policies for a considerable period of time.
- D. Merkel is unhappy with her neighbours and has refused to agree to a statement of facts.

Directions for the Question: Identify the apt summary for the given paragraph. Enter the option number you deem as the correct answer.

Q18. The biggest fights in the European Union are always about money, so there was never any reason to suppose that the Brexit negotiations would be any different. Last year, Treasury figures show the UK paid about £13bn to the EU, around £200 per person. Some of which then gets spent in the UK. But the European Commission is trying to calculate what the UK's outstanding financial obligation should be when it leaves. The EU argues that the UK has made a series of big financial commitments as part of the current seven-year budget that need to be paid on exit. It also says the UK needs to settle its share of what's known as the "reste à liquider". This is the money that has been committed but not yet paid - in effect the EU's credit card bill.

Here's the problem for the EU: the less the UK agrees to pay, the more other countries will have to fill the gap. That means that countries that are net contributors to the EU budget, like Germany or the

Netherlands, will have to pay more. At the other end of the scale, the countries that are net beneficiaries, like Poland or Greece, will receive less. So, when the UK argues that the EU is being unreasonable in its demands, it has no allies at all. The hard-line approach adopted by the European Commission has come from pressure from other member states. They don't think, for example, that the UK should be entitled to a share of the EU's assets when financial calculations are made.

- A. Brexit leads to money problems in the European Union.
- B. Brexit creates a liquidity crunch and malaise for the European Union.
- C. Brexit ensures that there is haggling for EU assets.
- D. Both A and B

Directions for the Question: Identify the apt summary for the given paragraph. Enter the option number you deem as the correct answer.

Q19. The cash dispenser was born almost 50 years ago, in 1967. For many, this was the first tangible evidence that retail banking was changing; the introduction of the ATM marked the dawn of contemporary digital banking. Several lay claim to the invention of the cashpoint, including John Shepherd-Barron and James Goodfellow in the U.K.; Don Wetzel and Luther Simjian in the U.S.; and even engineering companies like De La Rue, Speytec-Burroughs, Asea-Metior, and Omron Tateisi. But the ATM is a complex technology. There was no single eureka moment that marked its arrival.

- A. ATMs were first invented in 1967 and have completely revolutionized retail banking for the consumer.
- B. ATMs were first invented 50 years ago and have today completely revolutionized retail banking for the consumer.
- C. While ATM was the first to change retail banking, there is no one inventor who can lay claim to its invention.
- D. While ATM was the first to change digital banking, there is no one inventor who can lay claim to its invention.

Directions for the Question: The question below has a paragraph given with one sentence missing in at the end. From among the answer choices given, select the sentence that can fill the blank to form a coherent paragraph.

Q20. Each of the 43 stables in Japan may only accept a single foreigner, or gaijin. If this regulation were not rigorously enforced, there would be many more foreigners in sumo, and probably at the top. Initially, some stable masters attempted to circumvent the restriction by encouraging foreigners to seek Japanese citizenship; however, in 2010, a decision was made to implement the foreigner regulation to all individuals born outside of Japan. Wrestling enthusiasts contend that only the quality of the sport matters, and that foreigners must immerse themselves in Japanese language and culture. "When I am on the dohyo (wrestling ring), the spirit of Japan is woven into my topknot," proclaimed Hakuho after his victory. (_____)

- A. In fact, numerous observers note that Hakuho's father was Ukrainian and assimilated into Japanese society by taking up its culture.
- B. Many observers believe that participation in Sumo should be restricted to Japanese only and outsiders like Hakuho should not be allowed to participate.
- C. Many observers would likely welcome the addition of a Ukrainian such as Hakuho with open arms.
- D. Numerous observers have objected to this statement and argued for the sport's integrity.

Directions for the Question: The question below has a paragraph given with one sentence missing in at the end. From among the answer choices given, select the sentence that can fill the blank to form a coherent paragraph.

Q21. Some academics have proposed that by around 1500 BCE, the Indo-European invaders known as the Indo-Aryans had arrived and occupied most of India and Persia. They brought new deities and hymns that were sung in their honour. The Vedas are the name given to all of these songs. The genuine history of Hinduism starts in the Vedic era. The previous gods were still adored; they were only given new responsibilities as the Indo-Aryans rose to power and their gods took on more importance in the pantheon. Along with their distinctive class system, the Aryans brought with them a priestly class, a warrior or governing class, and a trade or merchant class.

(_____)

- A. The Indo-Aryans dominated the nation for 200 years before abruptly vanishing.
- B. In order to solidify their control, they immediately began uniting India and Persia.
- C. Due to their shared cultural heritage, the monarchs valued the hymns that the Indo-Aryans brought.
- D. A fourth class was created to include the indigenous peoples under Aryan domination.

Directions for question 22: In the following question, rearrange the five sentences in order to form a meaningful paragraph.

TITA

Q.22

1. It takes into account the effect of breathing in a mixture of all the air pollutants because that's how people are exposed to them in the real world.
2. Through a program called the National Air Toxics Assessment, the Environmental Protection Agency
3. After all, if they're breathing in polluted air, it would contain all of the things the air system contains at once.
4. surveys overall air quality across the country, and calculates the cancer risk posed by the combined amount of chemicals in the air.

Directions for question 23: In the following question, rearrange the five sentences in order to form a meaningful paragraph.

TITA

Q.23

1. However, the real reason is that the company is going from deep to deeper losses and the government has no idea how to turn it around though several attempts have been made in this regard
2. In this juncture, it is crucial to note that other airlines are doing perfectly alright in the country when Air India is not able to do well in business with reasons ranging from government interference to inefficiency
3. Privatization can never be a solution or magic wand to take care of such issues since private players will not be interested in purchasing something that is bleeding so profusely; the government should have tried the model of other profit making companies in the sector in Air India because if others are doing well, why not Air India?
4. The government is looking forward to divesting more than 70 percent stake in the so-called national carrier of the country, Air India, because it is of the opinion there should be no role of the government in the sector

Directions for question 24: In the following question, rearrange the five sentences in order to form a meaningful paragraph.

Chapter: Parajumbles**TITA****Q.24**

1. However, matters came to a full stop after Nehru suggested that the “status quo” at the ceasefire line was the only solution.
2. In September 1960, Jawaharlal Nehru travelled to Pakistan for a visit amid high expectations all around for the resolution of Kashmir.
3. For Ayub Khan, this was a non-starter, as he felt the ceasefire line would never be accepted by Pakistan given that it had no political or religious underpinnings. Forty years later, as Prime Minister, Atal Bihari Vajpayee and then Manmohan Singh started a similar conversation with Pakistan’s Pervez Musharraf.
4. The visit followed the resolution of some major bilateral issues including sharing of Indus waters, and as former High Commissioner to Pakistan T.C.A. Raghavan recounts in his book *The People Next Door*, Nehru and Ayub Khan were going to give the impasse over Jammu and Kashmir a personal push.

CAREERS360

Section - 2 - Data Interpretation and Logical Reasoning

Directions for questions from 25 to 29:

M/S Organic Integrals Pvt Ltd, a Kolkata based company manufacturing organic food products, started its operations in the year 2017 with some employees. Their products proved to be winners in the FMCG sector, especially in Eastern India.

However, due to a weak HR department, there was an issue of man-power attrition in the company. Among the employees who joined in the year 2017, 20% left the company exactly one year after joining and 25% of the remaining left the company exactly two years after joining. The same was true for the employees who joined in each of the years 2018, 2019, 2020, 2021 and 2022. No other employee left the company in the given period.

The radar graph given below shows the number of employees in the company at the end of each calendar year for the period 2017 to 2022 :



Q 25 (TITA)

How many employees left M/S Organic Integrals Pvt Ltd in the year 2020 ?

Q 26 (TITA)

How many people joined M/S Organic Integrals Pvt Ltd in the year 2021?

Q 27 (TITA)

The total number of people who joined M/S Organic Integrals Pvt Ltd during 2017-2022 was _____. Fill in the blank.

Q 28 (TITA)

By how many people was the total number of employees who left M/S Organic Integrals Pvt Ltd during 2017-2022 was less than the total number of people who joined the company during the same period ?

Q 29 (TITA)

Had no person joined the company in 2022, what would have been the number of employees in M/S Organic Integrals Pvt Ltd at the end of the year 2022 ?

Directions for questions from 30 to 34 :

Actors Pankaj, Naseer, Shahid and Amit were the lead actors and actresses Raveena, Sushmita, Kajol and Supriya were the lead actresses of OTT streaming movies of 2022, shown on four platforms namely, Zee5, Netflix, Amazon and Disney.

Table 1 below gives the number of movies in 2022 on each platform in which each actress plays a lead role. Table 2 below gives the number of movies in 2022 on these platforms in which the actors and actresses play lead pairs. Every movie has only one lead pair.

Table 1	Raveena	Sushmita	Kajol	Supriya
Zee5	2	0	1	1
Netflix	1	2	0	1
Amazon	2	0	2	0
Disney	1	2	0	1

Table 2	Raveena	Sushmita	Kajol	Supriya
Pankaj	2	1	1	0
Naseer	1	0	1	2
Shahid	2	1	0	1
Amit	1	2	1	0

It is also known that :

- a) Naseer and Raveena act as a lead pair in a movie on Disney
- b) No two movies on any platform had the same lead actor

Q 30 Who was the lead actress in the movie on Netflix where Naseer was the lead actor ?

- A) Supriya
- B) Kajol
- C) Kajol or Raveena
- D) Cannot be determined

Q 31 Shahid and Sushmita are the lead pair in a movie on which platform ?

- A) Zee5
- B) Netflix
- C) Amazon
- D) Netflix or Amazon

Q 32 Shahid and Raveena are the lead pair in a movie on which platform ?

- A) Disney
- B) Netflix
- C) Amazon or Zee5
- D) Amazon

Q 33 Who/who all play/plays the lead actor/actors role opposite Kajol in a movie/movies on Amazon?

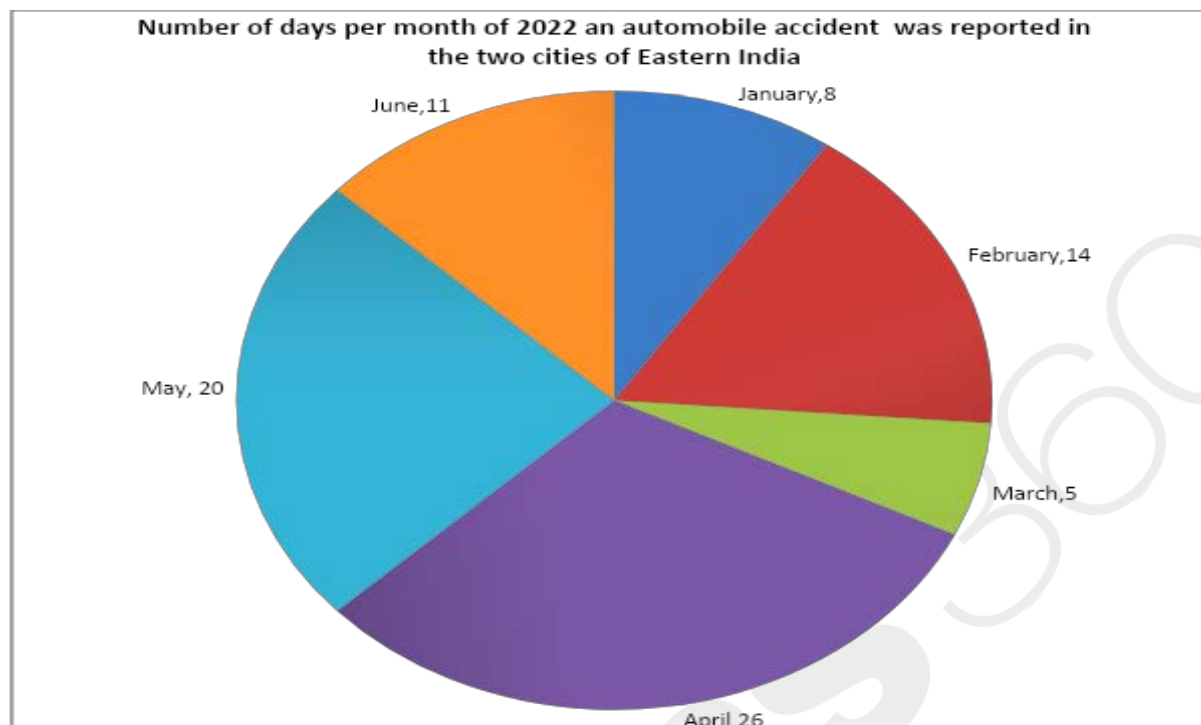
- A) Amit
- B) Naseer
- C) Pankaj & Amit
- D) Pankaj & Naseer or Naseer & Amit

Q 34 From the data given, the lead pairs of how many movies could be exactly determined ?

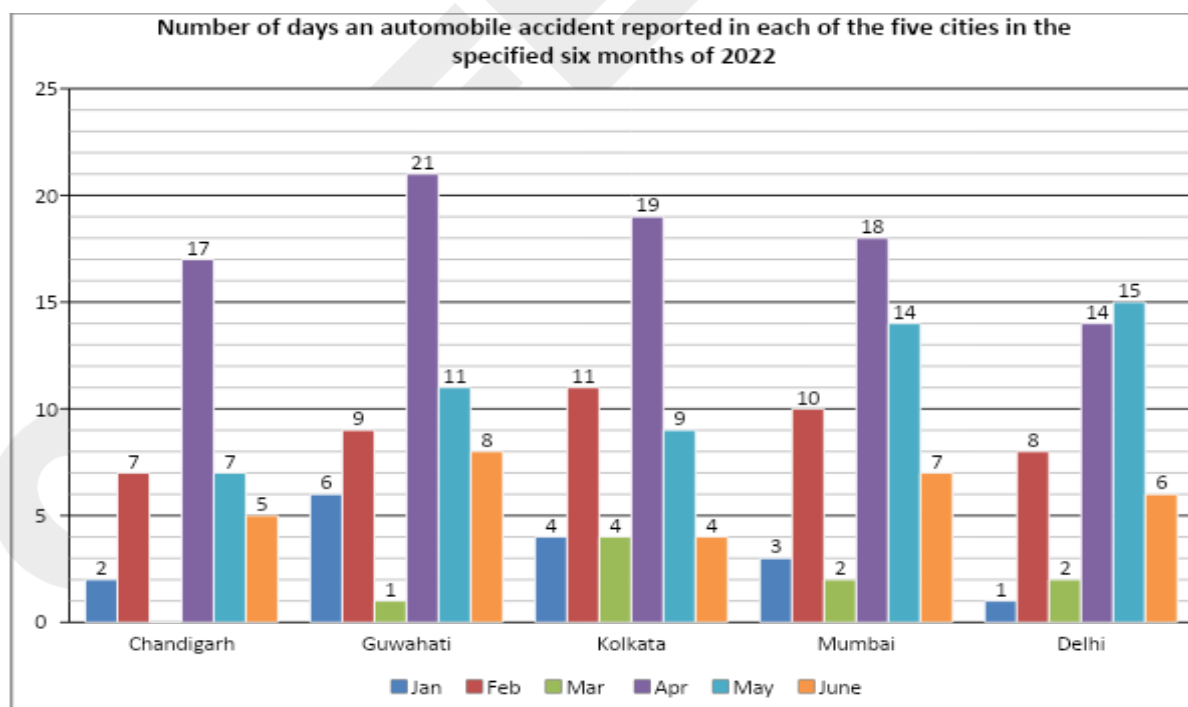
- A) 16
- B) 15
- C) 14
- D) 12

Directions for questions from 35 to 39:

The following pie-chart provides information about the total number of days on which there was a reported automobile accident in two selected cities of Eastern India in each of the six months of January, February, March, April, May and June of the year 2022 :



The following bar-chart provides information about the number of days on which there was a reported automobile accident in five selected cities (Chandigarh, Guwahati, Kolkata, Mumbai and Delhi) of India in each of the six months of January, February, March, April, May and June of the year 2022 :



The following additional Information are also provided :

- a) Chandigarh and Delhi are in Northern India, Guwahati and Kolkata are in Eastern India, and Mumbai is in Western India.
- b) The maximum possible number of days on which there could be a reported automobile accident in 2022 in exactly one city in Eastern India in January, February, March, April, May and June are denoted by A, B, C, D, E and F respectively.
- c) The maximum possible number of days on which there could be a reported automobile accident in 2022 simultaneously in the three cities of Western India and in Northern India in January, February, March, April, May and June are denoted by P, Q, R, S, T and U respectively.

Q 35 What is the value of D ?

- A) 12
- B) 11
- C) 10
- D) 9

Q 36 Out of A, B, C, D, E and F, which one has the maximum value ?

- A) F
- B) E
- C) D
- D) C

Q 37 Out of A, B, C, D, E and F, which one has the minimum value ?

- A) E
- B) D
- C) C
- D) B

Q 38 What is the value of S ?

- A) 11
- B) 12
- C) 13
- D) 14

Q 39 Among the values of P, Q, R, S, T and U, the value of how many are 7 ?

- A) 0
- B) 1
- C) 2
- D) 3

Directions for questions from 40 to 44:

In 1985, seven infamous gangsters – Mr Ameen, Mr Bilal, Mr Cheena, Mr Davar, Mr Elias, Mr Fayaz and Mr Gawli – all of them chiefs of their respective underworld gangs, were candidates in the election for the position of the Head of all the underworld gangs in the business of extortion and gambling in Mumbai.

The election was conducted in three rounds. In the first round, each of the chiefs of all the underworld gangs in the business of extortion and gambling in Mumbai cast three votes for three different candidates. The two candidates with the least votes were eliminated. In the second round, each of the chiefs eligible to cast a vote cast two votes for two different candidates. The two candidates with the least votes were again eliminated. In the third round, each of the chiefs eligible to cast a vote cast one vote for any one candidate.

A candidate in the election for the position of the Head of all the underworld gangs in the business of extortion and gambling in Mumbai, who was taking part in a given round, was not eligible to vote in that round. But once eliminated he became eligible to vote in the next rounds. All the other chiefs who were not candidates in the election were eligible to vote in all the rounds. In each of the three rounds, there were no absentees, and all the chiefs who were eligible for a particular round cast their votes.

In the first round a total of 129 votes were cast in all, and the top three candidates were Mr Bilal with 25 votes, Mr Gawli with 20 votes and Mr Ameen with 18 votes. In the second round, Mr Cheena received 8 votes more than he did in the first round, Mr Bilal was 3 votes behind Mr Cheena in the second place, and Mr Elias was in the third place with 15 votes. In the third round, Mr Cheena received the same number of votes he did in the first round and ended up winning the election. Mr Bilal finished last in the third round.

Q 40 (TITA)

How many underworld gangs in the business of extortion and gambling in Mumbai, with their own chiefs, existed in 1985 ?

Q 41 How many of the chiefs of all the underworld gangs in the business of extortion and gambling in Mumbai voted in the third round of the election ?

- A) 43
- B) 45
- C) 47
- D) 49

Q 42 Who of the chiefs got eliminated in the second round of the election ?

- A) Mr Davar and Mr Gawli
- B) Mr Ameen and Mr Gawli
- C) Mr Ameen and Mr Elias
- D) Mr Ameen and Mr Fayaz

Q 43 How many votes did Mr Cheena get in the second round ?

- A) 25
- B) 24
- C) 23
- D) 22

Q 44 How many votes did Mr Bilal get in the third round ?

- A) 14
- B) 16
- C) 17
- D) 19

Section - 3 - Quantitative Aptitude

Q45. A geometric series is defined by $a_n = (8/7)(a_{n+1} + a_{n+2} + a_{n+3})$ for every $n \geq 1$. find $a_{11} : a_{14}$ if $1 + r + r^2 = 7/4$ where $r = a_2/a_1$.

- (a) 1: 8 (2) 27: 1 (c) 1: 2 (d) both a and c

Q46.(TITA)

In shoe factory n pairs of shoes are manufactured. Out of which $m\%$ are defective, while 20% of the rest are sold in the domestic market. If the remaining 840 pairs are left for export which is 10% of the shoes sold in the domestic market, find m .

Q47.(TITA)

The manufacturer of a table fan deals with a wholesale dealer at a profit of 20% . The wholesale dealer sells the table fan to a retailer at a profit of 25% . Finally, the retailer sells it to a customer at a profit of 40% . If difference between the profits made by retailer and manufacturer be Rs 360. Find the profit made by Wholesale dealer in rupees.

Q48. P can build a wall in 8 days if working alone while Q can destroy the complete wall in 10 days. If P called in another person R with the same efficiency as of P. In how many days the similar wall can be built if P, Q and R started working together?

- (a) 40 days (b) $20/3$ days (c) 4 days (d) 8 days

Q49. In a village, 70% patients are suffering from cancer and out of which 40% is due to smoking. If 60% of the population of the village smoke and 20% who smokes are cancer patients. What fraction of population is ill?

- (a) 21.42% (b) 42.84% (c) 40% (d) 60%

Q50. If evaluation of company A and company B are in the ratio of 3: 4 while that of B and C are in the ratio 2:1, then which one of the following is a possible value of evaluation of company A if difference of evaluation of company B and company C is multiple of 14?

- (a) 323 crores (b) 268 crores (c) 490 crores (d) 421 crores

Q51. Mixture of A & B and Mixture of B & C are mixed in the ratio of 3: 4 such that in the final mixture quantity of A and C are in the ratio of 4: 5. Find the ratio of A: B in first mixture if in initial mixture of B and C ratio is 1: 2.

- a. 5: 4 b. 4: 5 c. 3: 8 d. 8: 3

Q52. Let ABCDE be a regular hexagon with $AC = 6.92$ cm. The ratio of area of a square formed on side DE and area of the square formed on side CE is

- a. 9: 16 b. 3: 16 c. 3: 1 d. 1: 3

Q53.(TITA)

A pyramid with the base of 1 trapezium whose area is 240 cm^2 . If the height of the pillar is 80 cm, then the total cost of concrete used in building the pillar if per unit cost of 90 paise per cubic cm is [in Rs]

Q54. (TITA)

If the product of three consecutive odd positive integers is 3315 then, difference of the sum of the squares of extreme numbers with the central integer is

Q55. (TITA)

For any real number x , $2\log_x 5 = \log_5 (5x)$, then value of x which satisfy the condition that $\sqrt{\log_x 5}$ must be a real value.

Q56. (TITA)

Let $f(x) = [g(x)]^2$ and $g(x) = 2x$, for all real x . Then the value of $f([f(g(x)) + g(f(x))])^2$ at $x = 1$ is

Q57. Value of a for which the value of the sum of the squares of the roots of the equation $x^2 + (a^2 + 6)x - (a^2 + 5) = 0$ is minimum

- (a) 5 (b) -5 (c) a can take any value (d) No real value of a is possible

Q58. If $\log(2^a \times 3^b \times 5^c)$ is the arithmetic mean of $\log(2^2 \times 3^3 \times 5^8)$, $\log(2^9 \times 3 \times 5^7)$, and $\log(2^2 \times 3^{12} \times 5^4)$, then

- (a) a, b and c form an AP
 (b) a, b and c are three consecutive terms of GP
 (c) a, b and c are in both AP and GP
 (d) a, b and c are in HP

Q59. (TITA)

How many five-digit numbers can be formed from 0, 3, 6, 9 which are divisible by 6, such that exactly 1 digit is repeated?

Q60. (TITA)

\$X is invested compounded annually at some rate of interest becomes \$600 in 2 years and becomes \$720 in 3 years. What will be the value of simple interest on \$2X at the same rate in 6 yrs.

Q61. The time taken by two buses to meet travelling in same direction which are initially at 420 km is 2 hours 20 minutes. In what time slower bus will reach to the point from where faster bus started its journey.

- (a) 169/75 Hrs (b) 2 hours 20 minutes (c) 2 Hrs (d) 175/69 Hrs

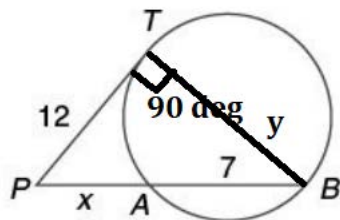
Q62. Let $f(x) = x^2 - 9$ and $g(x) = 11 - x^2$. Then $|f(x) + g(x)| = |f(x)| + |g(x)|$ if and only if

- (a) $x > \sqrt{11}$ (b) $x < 3$
 (c) $x \in [-\sqrt{11}, -3] \cup [3, \sqrt{11}]$ (d) $x \in [-\sqrt{11}, -3] \cup [3, \sqrt{11}]$

Q63. If $x^2 - 7x + 12$ is a factor of $x^3 - ax + 21b^2 = 0$ then the values of a and b are

- (a) -2, 37 (b) 2, 37 (c) 37, -2 (d) 5, -4

Q64. Find the value of y in the given figure.



- (a) 16 (b) $2\sqrt{7}$ (c) $4\sqrt{14}$ (d) $4\sqrt{7}$

Q65. (TITA)

Abha's present age in years is 25% of Beena's age. In another years, Abha's age will be $\frac{1}{3}$ rd of Beena's age. By what percentage will Beena's age increase during this period?

Q66. If four fair dice are thrown together, then the probability that the sum on them together is an odd multiple of 5?

- (a) $\frac{11}{18}$ (b) $\frac{31}{1296}$ (c) $\frac{11}{108}$ (d) $\frac{1}{3}$

CAREERS360

Answer Key - Mock Test 7

Section - Verbal Ability & Reading Comprehension

1- B, 2-D, 3-C, 4-B, 5-A, 6-C, 7-A, 8-C, 9-C, 10-C, 11-B, 12-D, 13-B, 14-B, 15-B, 16-D, 17-A, 18-A, 19-C, 20-A, 21-D, 22-2413, 23-4123, 24-2413

Section - Data Interpretation & Logical Reasoning

25 -121, 26-20, 27-1431, 28-856, 29-859, 30-A, 31-B, 32-C, 33-D, 34-D, 35-A, 36-B, 37-C, 38-D, 39-C, 40-43, 41-C, 42-B, 43-A, 44-B

Section - Quantitative Aptitude

45-A, 46-78, 47-270, 48-B, 49-B, 50-C, 51-D, 52-D, 53-5760, 54-233, 55-5, 56-1327104, 57-D, 58-A, 59-96, 60-1000, 61-D, 62-D, 63-C, 64D, 65-50, 66-C

Solutions - Mock Test 7

Section - Verbal Ability & Reading Comprehension

1. B

If we work from the statements and look at them and rule out the ones we are not 100% sure of, we will come to the conclusion that statements II & III are benefits clearly mentioned in the passage (first and last paragraph). Statements I and IV are very general in nature and cannot be inferred from the context of the passage. Thus, the answer is option B.

2. D

These lines in the passage give an indication towards the answer: 'Some biologists dislike that grand plan; they worry that barcoding, which is best at identifying species that have already been described, will steal scarce research dollars from the more valuable work of describing unnamed species.'

This part of the passage shows an alternate conclusion to the facts mentioned in the passage, it suggests an alternate outcome. Hence, the correct answer is option D.

3. C

These sentences show that only statement II is incorrect: *But there is enough variation in its sequence—each of the 600-odd spots in the barcode region can be filled by any of four different DNA bases—that two species rarely have the exact same one.*

4. B

Why has the statement been made? What is its purpose? The mild sarcasm/jocular intentions in the tone can be clearly made out. The purpose of such statements is generally to lend emphasis to what is being said by the author, and in literature, this exact purpose is referred to as 'rhetorical' in nature.

5. A

Statement I can be derived from the lines: Protzko speculates that the gap in the 1980s is due to the introduction at that time of a rival test of self-regulation which is quicker to administer – the so-called gift-delay task.

Here, the rival test is the gift-delay task.

This was used in the 1980s.

Since this was used, the data for the Marshmallow test is not available for this period.

The lack of data suggests some other test was being used.

Statement II can be derived from the lines: Protzko suggests they are prone to the same bias as the rest of us, what he calls the “kids these days” phenomenon: “people’s memories for their own and others’ abilities in childhood are unduly influenced by their current abilities.

Statement III is incorrect: Does the apparent improvement in children’s powers of self-control bode well for the future, for instance in terms of reduced criminality and addiction? Protzko thinks not, speculating that it is probably one’s ability relative to others, rather than one’s absolute ability, that is relevant to future behaviour – the lowest performers will remain at risk, he suggests.

6. C

In this case, you need to identify a statement that goes with the central idea of the passage. You simply need to refer to the lines: John Protzko at the University of California, Santa Barbara, concludes that in fact children of today are capable of more self-restraint than previous generations, with their ability to delay gratification having increased by about a minute per decade over the last 50 years.

7. A

The definition of the word alarmist is: someone who exaggerates a danger and so causes needless worry or panic.

Remember, an alarmist is not creating or fabricating a danger/problem. These are two sentiments that cannot be derived in the given case.

If you believed the copious alarmist commentary in the newspapers, you’d fear for the future of our species. Today’s children, we’re told, are more hyperactive and technology addicted than ever before. They’ve lost any ability to sit still, instead craving constant stimulation from digital devices and exhausted parents.

8. C

Option A can be derived from the lines: Meanwhile, variation in Marshmallow Test performance has stayed the same over the decades, which means that average improvement has been seen across the spread of ability, not just among those children who are more self-restrained.

Option B can be derived from the lines: The causes and consequences of the apparent increase in children’s powers of self-restraint over time remain to be uncovered by future research.

9. C

The key issue here is that all of the options are actually meanings of the words leaden. We need to identify the one implied by the author. Refer to the lines: My arms and legs, numb and pendulous as dumbbells, resisted my half-hearted attempts to animate them, and my perception was equally leaden. The first part refers to physical sluggishness and in the second part, the author is referring to mental sluggishness or weariness. Keeping this in mind, we find option C the answer closest to the implied meaning.

Sluggish is a close option but we select option C as it is the better choice in the given case. It clearly mentions mood or thought in the given case.

10. C

Option A can be derived from the lines: After a few rounds of cognitive-behavioural therapy (CBT) – which helped, but not quite enough – I gave in and tried Prozac, which resolved the depression so completely that I felt baptised, reborn.

Option B can be derived from the lines: After a few rounds of cognitive-behavioural therapy (CBT) – which helped, but not quite enough – I gave in and tried Prozac, which resolved the depression so completely that I felt baptised, reborn....With the new prescription came a recommendation from my psychiatrist: that I stay on fluoxetine indefinitely.

We can see that both Prozac and fluoxetine refer to the same antidepressants taken by the author. This makes option C the correct answer in the given case.

11. B

Option B is incorrect in the given context. Medication is not the only way.

Yes, the author does imply that medication is important but the author does not imply that medication is the only way. This makes this choice incorrect.

Option A can be derived from the lines: Like a vessel that develops more cracks each time it's dropped, the theory goes, sufferers of disorders such as depression, bipolar disorder and post-traumatic stress disorder (PTSD) become more neurologically brittle with each active bout of mental illness.

Option C can be derived from the lines: My choices suddenly seemed stark: stay on antidepressants long term, with all the side effects and stigma that entailed, or risk a default course that could be my mental undoing.

Option D can be derived from the lines: As a result, future episodes occur closer and closer together, with less and less provocation.

Option B:

Let's look at option B here: Long-term medication is the only way to stave off episodes of depressive illness.

The problem is the word ONLY. We cannot determine this.

Is it one of the ways? Yes

Are they important in Kindling theory? yes

Are they the only way? No. We cannot determine this.

Now for Option C, refer to this: I'd heard about – the kindling hypothesis. Like a vessel that develops more cracks each time it's dropped, the theory goes, sufferers of disorders such as depression, bipolar disorder and post-traumatic stress disorder (PTSD) become more neurologically brittle with each active bout of mental illness. As a result, future episodes occur closer and closer together, with less and less provocation. The key to disrupting this sequence is to prevent episodes before they have a chance to occur.

Antidepressants are important for kindling theory.

And they do have side effects.

This does not violate the passage like option B.

Option C is kind of neutral: true but not really relevant.

Option B violates the passage.

Which do we select? option B since it is a clear violation.

12. D

Option A can be derived from the lines: I'm also addressing it because of the context in which it appears: because of cuts to local authorities, libraries in Britain are closing all the time, at a rate that – despite the passionate commitment of librarians and activists, has begun to feel heartbreakingly inevitable.

Option B can be derived from the lines: And so, of course, we feel protective of them. The books we read make us, and often save us. As I was writing this, I was inundated with stories of what libraries mean to people, in various ways: to some they are sanctuaries from abusive home lives, or even homelessness.

Option C can be derived from the lines: Libraries may be needed more by poor people but many comfortably off people use them too.

13. B

Atomised means:

a. to reduce to atoms.

b. consisting of separate parts that do not have much contact with each other

Here 'glowing screens' can refer to digital devices (phones or computers) or TVs. Keeping this in mind, we find option B is the best answer in the given case.

14. B

The second paragraph is about the reaction of the author to the Twitter statement by Conservative aide Andre Walker.

The author's reaction is summed up by the lines: What a privileged position to take, I thought, this assumption that these vital public spaces are not needed. Spoken like someone who has always been able to afford books and magazines (or else, I suspect, doesn't read), who can pay for an internet connection, who doesn't need help filling in government forms. Spoken like someone who doesn't require shelter from the storm, isn't housebound or lonely or trying to escape a chaotic home life, isn't a new parent wondering what to do with a small, helpless being for a few hours, because it's raining and you're knackered. Spoken like someone who, because of money, selfishness, or political ideals, doesn't need or want to feel part of a community that, for others, gives life depth, and variety, and meaning. These lines display his anger/irritation/being peeved with this particular person.

Let us evaluate the meanings of the given answer options to figure out the answer:

Forlornness: Sadness resulting from being forsaken or abandoned

Exasperation: Actions that cause great irritation (or even anger)

Petulance: The quality of being childishly sulky or bad-tempered.

Consternation: Fear resulting from the awareness of danger

We can see that option B is the best answer in the given case.

15. B

Option A: Refer to the lines 'It's a question I have been mulling over for the past couple of days, since I bought a second-hand book online and found guiltily that it was, in actual fact, a library book. I assumed that someone had stolen it, or taken it out and then died, but then it struck me that perhaps the library had closed. So I've been trying to find out.'

It is clear from these lines that the author of the passage is not sure about the origin of the book but he knows where he bought it from: the online store. Therefore, this statement is incorrect.

Option B is correct. Refer to the lines: What a privileged position to take, I thought, this assumption that these vital public spaces are not needed. ...Spoken like someone who, because of money, selfishness, or political ideals, doesn't need or want to feel part of a community that, for others, gives life depth, and variety, and meaning.

This is the implication that can be derived from Andre Walker's statement.

16. D

In this question, two options are close: options B and D.

Options A and C are against the sentiments expressed by the author of the passage.

Out of options B and D, option D is the more suitable choice here. The author is clearly mentioning the positives of libraries and the reasons for their existence. Keeping this in mind, option D is the best answer.

Option B, though related to the passage, does not reflect how the author has provided positives for libraries and why they should exist. Remember, the passage does not feature solutions to save libraries, rather it highlights the reasons for their existence.

17. A

The passage primarily provides context for what is mentioned in the first sentence, i.e. Merkel is a hypocrite in dealing with the Balkan route closure. This is captured only in option A, which mentions the hypocritical stance taken by Merkel. Therefore, option A is the correct choice

18. A

In this case, the answer is the simplest option: Brexit has created money-related issues and this is highlighted by option A.

Liquidity is not a topic mentioned in the paragraph.

Option C is incorrect as there is no haggling for EU assets; the dispute is about the responsibility of the UK.

19. C

The key concepts mentioned in the passage are the change in retail banking and the fact that no one inventor can lay claim to this technology. Option C captures these points accurately and is the correct choice. Alternatively, option A and B are incorrect as they don't mention lack of a single inventor. Option D is incorrect as ATMs did not change digital banking, instead, they changed retail banking. Therefore, option C is the correct choice

20. A

The final sentence of the passage describes how a foreigner feels after winning a boxing match.

Therefore, the following sentence would either provide support for the statement or strike a balance between this and the preceding viewpoint. Option A is the only option that strikes a balance and is therefore the best option.

21 D

The class system is discussed in the final sentence, and choice D continues this idea. As a result, option D is the best one.

22. 2413

2 comes first as it introduces the subject of the passage. 2 is an incomplete sentence containing the subject which should be followed by a verb which is given in 4 "surveys" therefore 2 is followed by 4. 1 comes next as it explains what the program is all about. 3 comes last as it contains the concluding statement connected using "after all".

23. 4123

Statement 4 is the generic opening sentence of the passage since it is mainly about the central idea of Air India getting privatized. Statement 1 comes after that since it talks about the reason for the same thereby taking the flow of narration forward. Statement 2 is the next sentence in this regard because it is about the observation of the author in the context whereas statement 3 comes after that with the

understanding from the observation. The second half of statement 3 finishes the passage off by stating the possibility of Air India making profits again with the models tried and tested by other airlines.

24. 2413

This is a simple question where you need to follow the time sequence of events.

Statement 2 is the first event and this is followed by statement 4; statements 1 and 3 then provide details for what happened. Statement 3 then brings us 40 years forward.

Section - Data Interpretation & Logical Reasoning

25. 121

From the data given in the table about the number of employees in the company at the end of each calendar year for the period 2017 to 2022, and from the fact that 20% of the employees left M/S Organic Integrals Pvt Ltd exactly one year after joining and 25% of the remaining left the company exactly two years after joining, we can deduce the data expressed in the chart below :

	2017	2018	2019	2020	2021	2022
Number of employees at M/S Organic Integrals Pvt Ltd at the end of the year	500	675	850	1029	923	865
Number of employees who left during the year after working for one year	0	20% of 500 = 100	20% of 275 = 55	20% of 330 = 66	20% of 300 = 60	20% of 240 = 48
Number of employees who left during the year after working for two years	0	0	25% of (80% of 500) = 25% of 400 = 100	25% of (80% of 275) = 25% of 220 = 55	25% of (80% of 330) = 25% of 264 = 66	25% of (80% of 300) = 25% of 240 = 60
Number of old employees who remained in the company	0	500 - 100 = 400	675 - (55+100) = 675 - 155 = 520	850 - (66+55) = 850 - 121 = 729	1029 - (60+66) = 1029 - 126 = 903	923 - (48+60) = 923 - 108 = 815
Number of new employees who joined during the year	500	675 - 400 = 275	850 - 520 = 330	1029 - 729 = 300	923 - 903 = 20	865 - 815 = 50

Hence the number of employees who left M/S Organic Integrals Pvt Ltd in the year 2020 = 66+55 = 121

26. 20

We know that :

	2017	2018	2019	2020	2021	2022
Number of employees at M/S Organic Integrals Pvt Ltd at the end of the year	500	675	850	1029	923	865

Number of employees who left during the year after working for one year	0	20% of 500 = 100	20% of 275 = 55	20% of 330 = 66	20% of 300 = 60	20% of 20 = 4
Number of employees who left during the year after working for two years	0	0	25% of (80% of 500) = 25% of 400 = 100	25% of (80% of 275) = 25% of 220 = 55	25% of (80% of 330) = 25% of 264 = 66	25% of (80% of 300) = 25% of 240 = 60
Number of old employees who remained in the company	0	500 - 100 = 400	675 - (55+100) = 675 - 155 = 520	850 - (66+55) = 850 - 121 = 729	1029 - (60+66) = 1029 - 126 = 903	923 - (4+60) = 923 - 64 = 859
Number of new employees who joined during the year	500	675 - 400 = 275	850 - 520 = 330	1029 - 729 = 300	923 - 903 = 20	865 - 859 = 6

From the chart above we can say that the number of people who joined M/S Organic Integrals Pvt Ltd in the year 2021 = 20

27. 1431

We know that :

	2017	2018	2019	2020	2021	2022
Number of employees at M/S Organic Integrals Pvt Ltd at the end of the year	500	675	850	1029	923	865
Number of employees who left during the year after working for one year	0	20% of 500 = 100	20% of 275 = 55	20% of 330 = 66	20% of 300 = 60	20% of 20 = 4
Number of employees who left during the year after working for two years	0	0	25% of (80% of 500) = 25% of 400 = 100	25% of (80% of 275) = 25% of 220 = 55	25% of (80% of 330) = 25% of 264 = 66	25% of (80% of 300) = 25% of 240 = 60
Number of old employees who remained in the company	0	500 - 100 = 400	675 - (55+100) = 675 - 155 = 520	850 - (66+55) = 850 - 121 = 729	1029 - (60+66) = 1029 - 126 = 903	923 - (4+60) = 923 - 64 = 859
Number of new employees who joined during the year	500	675 - 400 = 275	850 - 520 = 330	1029 - 729 = 300	923 - 903 = 20	865 - 859 = 6

Hence the total number of people who joined M/S Organic Integrals Pvt Ltd during 2017-2022
 = 500 + 275 + 330 + 300 + 20 + 6
 = 1431

28. 856

We know that :

	2017	2018	2019	2020	2021	2022
Number of employees at M/S Organic Integrals Pvt Ltd at the end of the year	500	675	850	1029	923	865
Number of employees who left during the year after working for one year	0	20% of 500 = 100	20% of 275 = 55	20% of 330 = 66	20% of 300 = 60	20% of 20 = 4
Number of employees who left during the year after working for two years	0	0	25% of (80% of 500) = 25% of 400 = 100	25% of (80% of 275) = 25% of 220 = 55	25% of (80% of 330) = 25% of 264 = 66	25% of (80% of 300) = 25% of 240 = 60
Number of old employees who remained in the company	0	500 - 100 = 400	675 - (55+100) = 675 - 155 = 520	850 - (66+55) = 850 - 121 = 729	1029 - (60+66) = 1029 - 126 = 903	923 - (4+60) = 923 - 64 = 859
Number of new employees who joined during the year	500	675 - 400 = 275	850 - 520 = 330	1029 - 729 = 300	923 - 903 = 20	865 - 859 = 6

The total number of employees who left M/S Organic Integrals Pvt Ltd during 2017-2022

$$= (0+0) + (100+0) + (55+100) + (66+55) + (60+66) + (4+60)$$

$$= 0 + 100 + 155 + 121 + 126 + 64$$

$$= 566$$

The total number of people who joined M/S Organic Integrals Pvt Ltd during 2017-2022 = 1431 (from previous question)

Hence, the total number of employees who left M/S Organic Integrals Pvt Ltd during 2017-2022 was less than the total number of people who joined the company during the same period by $1431 - 566 = 856$ people.

29. 859

We know that :

	2017	2018	2019	2020	2021	2022
Number of employees at M/S Organic Integrals Pvt Ltd at the end of the year	500	675	850	1029	923	865

Number of employees who left during the year after working for one year	0	20% of 500 = 100	20% of 275 = 55	20% of 330 = 66	20% of 300 = 60	20% of 20 = 4
Number of employees who left during the year after working for two years	0	0	25% of (80% of 500) = 25% of 400 = 100	25% of (80% of 275) = 25% of 220 = 55	25% of (80% of 330) = 25% of 264 = 66	25% of (80% of 300) = 25% of 240 = 60
Number of old employees who remained in the company	0	500 - 100 = 400	675 - (55+100) = 675 - 155 = 520	850 - (66+55) = 850 - 121 = 729	1029 - (60+66) = 1029 - 126 = 903	923 - (4+60) = 923 - 64 = 859
Number of new employees who joined during the year	500	675 - 400 = 275	850 - 520 = 330	1029 - 729 = 300	923 - 903 = 20	865 - 859 = 6

Number of persons who joined the company in 2022 = 6

The net number of employees at M/S Organic Integrals Pvt Ltd at the end of 2022 = 865 (from previous problem)

Hence, had no person joined the company in 2021, the number of employees in M/S Organic Integrals Pvt Ltd at the end of the year 2022 would be $865 - 6 = 859$

30. A

From the data, apart from the fact that on any platform an actor could perform as a lead only once, we also get to know :

<i>Table 1</i>	Raveena	Sushmita	Kajol	Supriya
Zee5		X		
Netflix			X	
Amazon		X		X
Disney	Naseer		X	

Now, Supriya did not pair up with Amit or Pankaj in any movie on any platform, and Naseer could not be her lead actor on Disney anymore, so Supriya had paired up with Shahid on Disney

Supriya had paired up as the lead with only one movie with Shahid, and two movies with Naseer. So Supriya's one movie each on Zee5 and Netflix was with Naseer as the lead actor

Hence Sushmita had paired up with Pankaj in one movie and with Amit in another movie on Disney

So Sushmita had paired up with Shahid once and Amit the second time on Netflix, as Sushmita never paired up with Naseer

<i>Table 1</i>	Raveena	Sushmita	Kajol	Supriya
Zee5		X		Naseer
Netflix		Shahid & Amit	X	Naseer
Amazon		X		X
Disney	Naseer	Pankaj & Amit	X	Shahid

Kajol had paired up in one movie with Naseer. But it could not be a movie on Zee5, as Naseer had already played the lead in one movie there. So Kajol had paired with Naseer as the lead in a movie on Amazon

Since, on Netflix, Naseer, Shahid and Amit had all acted as a lead actor, so Raveena had paired up with Pankaj in her only movie on Netflix

Raveena had paired up with Shahid in two movies. They could not be on the same platform. So Raveena had paired up with Shahid once in a movie on Zee5 and once in a movie on Amazon

<i>Table 1</i>	Raveena	Sushmita	Kajol	Supriya
Zee5	Shahid	X		Naseer
Netflix	Pankaj	Shahid & Amit	X	Naseer
Amazon	Shahid	X	Naseer	X
Disney	Naseer	Pankaj & Amit	X	Shahid

Now, Kajol had acted as the lead actress in one more movie on Amazon and one movie on Zee5, and it could be with either Pankaj or Amit in any order

Also, Raveena had acted as the lead actress in one more movie on Zee5 and one more movie on Amazon, and it could be with either Pankaj and Amit in the order depending upon the order chosen for Kajol pairing up with Pankaj and Amit.

Hence, the final scenario reduces to :

<i>Table 1</i>	Raveena	Sushmita	Kajol	Supriya

Zee5	Shahid & Pankaj or Shahid & Amit	X	Amit or Pankaj	Naseer
Netflix	Pankaj	Shahid & Amit	X	Naseer
Amazon	Shahid and Amit or Shahid & Pankaj	X	Naseer & Pankaj or Naseer & Amit	X
Disney	Naseer	Pankaj & Amit	X	Shahid

Hence, Supriya was the lead actress in the movie on Netflix where Naseer was the lead actor

31. B

We know that :

<i>Table 1</i>	Raveena	Sushmita	Kajol	Supriya
Zee5	Shahid & Pankaj or Shahid & Amit	X	Amit or Pankaj	Naseer
Netflix	Pankaj	Shahid & Amit	X	Naseer
Amazon	Shahid and Amit or Shahid & Pankaj	X	Naseer & Pankaj or Naseer & Amit	X
Disney	Naseer	Pankaj & Amit	X	Shahid

Hence, Shahid and Sushmita are the lead pair in a movie on Netflix

32. C

We know that :

<i>Table 1</i>	Raveena	Sushmita	Kajol	Supriya
Zee5	Shahid & Pankaj or Shahid & Amit	X	Amit or Pankaj	Naseer
Netflix	Pankaj	Shahid & Amit	X	Naseer

Amazon	Shahid and Amit or Shahid & Pankaj	X	Naseer & Pankaj or Naseer & Amit	X
Disney	Naseer	Pankaj & Amit	X	Shahid

Hence, Shahid and Raveena are the lead pair in a movie on either Amazon or Zee5

33. D

We know that :

<i>Table 1</i>	Raveena	Sushmita	Kajol	Supriya
Zee5	Shahid & Pankaj or Shahid & Amit	X	Amit or Pankaj	Naseer
Netflix	Pankaj	Shahid & Amit	X	Naseer
Amazon	Shahid and Amit or Shahid & Pankaj	X	Naseer & Pankaj or Naseer & Amit	X
Disney	Naseer	Pankaj & Amit	X	Shahid

Hence, Pankaj & Naseer or Naseer & Amit plays the lead actors role opposite Kajol in movies on Amazon

34. D

We know that :

<i>Table 1</i>	Raveena	Sushmita	Kajol	Supriya
Zee5	Shahid & Pankaj or Shahid & Amit	X	Amit or Pankaj	Naseer
Netflix	Pankaj	Shahid & Amit	X	Naseer
Amazon	Shahid and Amit or Shahid & Pankaj	X	Naseer & Pankaj or Naseer & Amit	X
Disney	Naseer	Pankaj & Amit	X	Shahid

In total 16 movies had been shown on the four platforms.

Out of them the lead actor of one movie each with Raveena on Zee5 and Amazon could not be established exactly (either Pankaj or Amit)

Also the lead actor of one movie each with Kajol on Zee5 and Amazon could not be established exactly (either Pankaj or Amit)

Hence apart from the above 4 movies, the lead pairs of remaining 12 movies could be exactly determined

35. A

To maximize the number of days on which there was an automobile accident reported in only any one city in Eastern India, we need to minimize the number of days on which there was an automobile accident reported simultaneously in both the cities in Eastern India.

Number of days an automobile accident was reported in Guwahati in the month of January 2022 = 6

Number of days an automobile accident was reported in Kolkata in the month of January 2022 = 4

Number of days an automobile accident was reported in January 2022 in the two cities of Eastern India = 8

Thus, the minimum number of days there could be an automobile accident reported simultaneously in both in both the cities of Guwahati and Kolkata of Eastern India in January 2022 = $(6+4) - 8 = 2$

Likewise, the minimum number of days there could be an automobile accident reported simultaneously in both in both the cities of Guwahati and Kolkata of Eastern India in February 2022 = $(9+11) - 14 = 6$

The minimum number of days there could be an automobile accident reported simultaneously in both in both the cities of Guwahati and Kolkata of Eastern India in March 2022 = $(1+4) - 5 = 0$

The minimum number of days there could be an automobile accident reported simultaneously in both in both the cities of Guwahati and Kolkata of Eastern India in April 2022 = $(21+19) - 26 = 14$

The minimum number of days there could be an automobile accident reported simultaneously in both in both the cities of Guwahati and Kolkata of Eastern India in May 2022 = $(11+9) - 20 = 0$

The minimum number of days there could be an automobile accident reported simultaneously in both in both the cities of Guwahati and Kolkata of Eastern India in June 2022 = $(8+4) - 11 = 1$

Tabulating them, we can say :

Number of days an automobile accident was reported	Jan22	Feb22	Mar22	Apr22	May22	Jun22
Minimum in both Guwahati and Kolkata simultaneously	2	6	0	14	0	1
Maximum in only Guwahati	$(6-2) = 4$	$(9-6) = 3$	$(1-0) = 1$	$(21-14) = 7$	$(11-0) = 11$	$(8-1) = 7$

Maximum in only Kolkata	$(4-2)$ = 2	$(11-6)$ = 5	$(4-0)$ = 4	$(19-14)$ = 5	$(9-0)$ = 9	$(4-1)$ = 3

A, B, C, D, E and F are the maximum possible number of days on which there was an automobile accident reported in exactly one city of Eastern India in January, February, March, April, May and June 2022 respectively

Therefore,

The value of A = $(4+2)$ = 6,

The value of B = $(3+5)$ = 8,

The value of C = $(1+4)$ = 5,

The value of D = $(7+5)$ = 12,

The value of E = $(11+9)$ = 20 and

The value of F = $(7+3)$ = 10

Hence, the value of D = 12

36. B

We know that :

The value of A = $(4+2)$ = 6,

The value of B = $(3+5)$ = 8,

The value of C = $(1+4)$ = 5,

The value of D = $(7+5)$ = 12,

The value of E = $(11+9)$ = 20 and

The value of F = $(7+3)$ = 10

Hence, out of A, B, C, D, E and F, it is E which has the maximum value

37. C

We know that :

The value of A = $(4+2)$ = 6,

The value of B = $(3+5)$ = 8,

The value of C = $(1+4)$ = 5,

The value of D = $(7+5)$ = 12,

The value of E = $(11+9)$ = 20 and

The value of F = $(7+3)$ = 10

Hence, out of A, B, C, D, E and F, it is C which has the maximum value

38. D

Number of days an automobile accident was reported in Mumbai in the month of January 2022 = 3

Number of days an automobile accident was reported in Chandigarh in the month of January 2022 = 2

Number of days an automobile accident was reported in Delhi in the month of January 2022 = 1

Thus, the maximum number of days there could be an automobile accident reported simultaneously in the three cities of Western and Northern India in January 2022

= The minimum value amongst 3, 2 and 1

= 1

Likewise, the maximum number of days there could be an automobile accident reported simultaneously in the three cities of Western and Northern India in February 2022

= The minimum value amongst 10, 7 and 8

= 7

The maximum number of days there could be an automobile accident reported simultaneously in the three cities of Western and Northern India in March 2022

= The minimum value amongst 2, 0 and 2

= 0

The maximum number of days there could be an automobile accident reported simultaneously in the three cities of Western and Northern India in April 2022

= The minimum value amongst 18, 17 and 14

= 14

The maximum number of days there could be an automobile accident reported simultaneously in the three cities of Western and Northern India in May 2022

= The minimum value amongst 14, 7 and 15

= 7

The maximum number of days there could be an automobile accident reported simultaneously in the three cities of Western and Northern India in June 2022

= The minimum value amongst 7, 5 and 6

= 5

Tabulating them, we can say :

Number of days an automobile accident was reported	Jan22	Feb22	Mar22	Apr22	May22	Jun22
Maximum in Mumbai, Chandigarh and Delhi simultaneously	1	7	0	14	7	5

P, Q, R, S, T and U are the maximum possible number of days on which there could be a reported automobile accident simultaneously in the three cities of Western India and in Northern India in January, February, March, April, May and June 2022 respectively

Therefore,

The value of P = 1,

The value of Q = 7,

The value of R = 0,

The value of S = 14,

The value of T = 7 and

The value of U = 5

Hence, the value of S = 14

39. C

We know that :

The value of P = 1,

The value of Q = 7,

The value of R = 0,

The value of S = 14,

The value of T = 7 and

The value of U = 5

Hence, among the values of P, Q, R, S, T and U, the value of Q and T, that is two are 7

40. 43

All the chiefs of the underworld gangs in the business of extortion and gambling in Mumbai had voted in the first round. In the first round, each of the chiefs cast three votes for three different candidates. Also, in the first round a total of 129 votes were cast in all.

$$129/3 = 43$$

So all the 43 chiefs of the underworld gangs involved in the business of extortion and gambling in Mumbai had voted.

Hence, the number of underworld gangs in 1985 involved in the business of extortion and gambling in Mumbai, with their own chiefs, was 43

41. C

Number of votes cast in the first round = $129/3 = 43$

Two candidates with the least votes were eliminated in the first round.

Thus, number of voters in the second round = $43+2 = 45$

Two candidates with the least votes were eliminated in the second round.

Number of voters in the third round = $45+2 = 47$

In the third round, votes cast per voter = 1

So number of votes cast in the third round = $47*1 = 47$

42. B

In the first round the top three candidates were Mr Bilal, Mr Gawli and Mr Ameen. In the second round, Mr Cheena and Mr Elias were also present. So, all these five chiefs were not eliminated in the first round. The rest two (Mr Davar and Mr Fayaz) were the ones who were eliminated in the first round.

In the second round, Mr Cheena received 8 votes more than he did in the first round, Mr Bilal was 3 votes behind Mr Cheena in the second place, and Mr Elias was in the third place with 15 votes. Thus Mr Cheena was the one to get the maximum votes in the second round, as two candidates had to get eliminated out of the five in round two. So, these three must have proceeded to the third round.

Hence, Mr Ameen and Mr Gawli must have been eliminated in the second round of the election.

43. A

In the first round, out of the 129 votes, Mr Bilal, Mr Gawli and Mr Ameen got $25+20+18 = 63$ votes.

a) Thus the remaining four candidates (Mr Cheena, Mr Davar, Mr Elias and Mr Fayaz), out of the total of seven, must have got $129 - 63 = 66$ votes in total.

- b) None of Mr Cheena, Mr Davar, Mr Elias and Mr Fayaz got equal to or more than 18 votes in round one, as Mr Ameen with 18 votes was in the third position.
- c) We also know (from answer no 3) that Mr Davar and Mr Fayaz were the ones who were eliminated in the first round. Hence individually they must have received fewer votes than individually Mr Cheena and Mr Elias.

Considering the above three conditions, the only possibility is that Mr Cheena and Mr Elias got 17 votes each and Mr Davar and Mr Fayaz got 16 votes each.

In the second round Mr Cheena got 8 more votes than he received in the first round.

Hence, the number of votes Mr Cheena got in the second round = $17 + 8 = 25$

44. B

In the second round, Mr Bilal was 3 votes behind Mr Cheena in the second place and Mr Elias was in the third place with 15 votes.

So, Mr Cheena, Mr Bilal and Mr Elias were the three candidates who proceeded to the third round.

In the third round, Mr Cheena received the same number of votes he did in the first round.

Thus, the number of votes Mr Cheena got in the third round to win the election = 17 (from answer no 4)

Number of votes cast in the third round = 47 (from answer no 2)

Hence number of votes Mr Bilal and Mr Elias got in all in the third round = $47 - 17 = 30$

Mr Bilal finished last in the third round.

So Mr Elias had to get more votes than Mr Bilal, but fewer votes than Mr Cheena.

The only possibility is Mr Elias getting 16 votes and Mr Bilal 14 votes.

Hence, Mr Bilal got 16 votes in the third round

Section - Quantitative Aptitude

45. A

Let 1st term of the series $a_1 = a$

So, $a_2 = ar$, $a_3 = ar^2$

On solving $1 + r + r^2 = 7/4$

We get, $r = -3$ and $r = 1/2$

Also,

$$a_1 = (8/7)(a_2 + a_3 + a_4)$$

$$\Rightarrow a_1 = (8/7)(a_1 + a_1r + a_1r^2)$$

If we put $r = -3$, the above condition will not be satisfied but at $r = 1/2$, the condition is satisfied.

$$\text{So, } a_{11} : a_{14} = ar^{10} : ar^{13} = 1/r^3 = 1/8$$

46. 78

$$840 = 10\% \text{ of } 20\% \text{ of } n$$

$$\text{So, } n = 42000$$

$$\text{Defective} = 42000 - 20\% \text{ of } 42000 - 840 = 32760$$

$$m\% = (32760/42000) \times 100 = 78\%$$

47. 270

According to given information, we can summarize the cost price of table fan for each as follows:

Manufacturer	Wholesaler	Retailer	Customer
100x	120x	150x	210x

Profit made by retailer = $210x - 150x = 60x$

Profit made by manufacturer = $120x - 100x = 20x$

So, $60x - 20x = 360$

$x = 9$

So, profit made by wholesale dealer = $150x - 120x = 30x = \text{Rs } 270$

48. B

P and R together can build the wall in 4 days (both have same efficiency therefore will take half time)

Q can destroy it in 10 days

If we assume total work as 40 units, then P and R together will do 10 units of work in a day and Q will do -4 units work in a day. Therefore, altogether all the three will do 6 units work in day and hence take $20/3$ days to build the wall.

49. B

Let population of village be x and there are total y patients.

ATQ

Cancer Patients = $70x/100$

Cancer Patients due to smoking = 40% of $70x/100$

Total smokers = $60y/100$

Cancer Patients due to smoking = 20% of $60y/100$

So, 40% of $70x/100 = 20\%$ of $60y/100$

$\Rightarrow y/x = 3/7$ which is 42.84%

50. C

A: B: C = 3: 4: 2 (since A: B = 3: 4 and B: C = 2: 1)

Then evaluation of company A, B and C are 3y, 4y and 2y respectively where y is a positive integer.

According to question:

$4y - 2y = 2y$ is multiple of 14

Evaluation of company A = y is a multiple of 7.

51. D

Mixture of	Ratio	Supposed Quantity according to ratio	Quantity of A	Quantity of B	Quantity of C
A and B (1 st)		30			0
B and C (2 nd)	1: 2	40	0	$40/3$	$80/3$
1 st and 2 nd	3: 4	70			

Quantity of C in final mixture = $80/3$ (since 1st does not have C)

Quantity of A in final mixture = $(4/5) (80/3)$ (since A: C in final mixture is 4: 5)
 $= 64/3$

Quantity of A in 1st mixture = $64/3$ (since 2nd mixture does not have A)

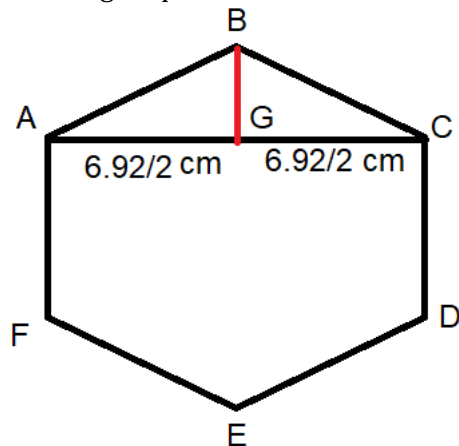
Quantity of B in final mixture = $70 - 80/3 - 64/3 = 64/3$

Quantity of B in 1st mixture = $64/3 - 40/3 = 24/3 = 8$

A: B (in 1st mixture) = $(64/3)/8 = 8:3$

52. D

According to question



$\angle ABC = 120^\circ$ (internal angle of a regular hexagon is 120 degree)

So, $\angle ABG = 60^\circ$

$\sin \angle ABG = AG / AB = 3.46 / AB$

$\Rightarrow AB = 3.46 / \sin 60^\circ = 4 \text{ cm}$

By symmetry $CE = AC = 6.92 \text{ cm}$

And $DE = 4 \text{ cm}$

$$\frac{\text{Area of square formed on } DE}{\text{Area of Square formed on } CE} = \frac{4^2}{6.92^2} = 1:3$$

53. 5760

Volume of pillar = $1/3$ (Area of base x height)

$$= 1/3 (240 \times 80)$$

$$= 6400 \text{ cubic cm}$$

Cost of concrete = $6400 \times 90 \text{ paise} = \text{Rs } 5760$

54. 233

Factorize $3315 = 13 \times 15 \times 17$

So, $17^2 + 13^2 - 15^2 = 289 + 169 - 225 = 233$

55. 5

$$2 \log_x 5 = \log_5 (5x)$$

$$\Rightarrow 2 / \log_5 x = \log_5 (5x)$$

$$\Rightarrow 2 / \log_5 x = \log_5 5 + \log_5 x$$

$$\Rightarrow 2 / \log_5 x = 1 + \log_5 x$$

$$\Rightarrow 2 = (1 + \log_5 x) \log_5 x$$

If $y = \log_5 x$, then

$$\Rightarrow 2 = (1 + y)y$$

$$\Rightarrow y^2 + y - 2 = 0$$

On solving we get, $y = 1$ or $y = -3$

If $y = 1$; $\log_5 x = 1 \Rightarrow x = 5$ which satisfies the given condition.

If $y = -3$; $\log_5 x = -3 \Rightarrow x = 1/125$ do not satisfy the given condition.

56. 1327104

$$f(x) = [g(x)]^2$$

$$\Rightarrow f(x) = [2x]^2 = 4x^2$$

$$f(g(x)) = 4(2x)^2 = 16x^2$$

$$g(f(x)) = 2(4x^2) = 8x^2$$

$$f([f(g(x)) + g(f(x))])^2 = f([16x^2 + 8x^2])^2 = f([24x^2])^2 \\ = f(576x^4) = 4((576x^4)^2) = 1327104 x^8$$

$$\text{At } x = 1; f([f(g(x)) + g(f(x))])^2 = 1327104$$

57. D

Let α and β are roots of the equation $x^2 + (a^2 + 6)x - (a^2 + 5) = 0$

$$\text{So, } \alpha + \beta = -(a^2 + 6)$$

$$\alpha\beta = (a^2 + 5)$$

So,

$$\alpha^2 + \beta^2 = (\alpha + \beta)^2 - 2\alpha\beta = [-(a^2 + 6)]^2 - 2(a^2 + 5) \\ = a^4 + 36 + 12a^2 - 2a^2 - 10 \\ = a^4 + 10a^2 + 25 + 1 \\ = (a^2 + 5)^2 + 1$$

$a^2 = -5$ for minimum value of square of the sum of roots which will not give any real value of a .

58. A

Since, $\log(2^a \times 3^b \times 5^c)$ is the arithmetic mean of $\log(2^2 \times 3^3 \times 5^8)$, $\log(2^9 \times 3 \times 5^7)$, and $\log(2^2 \times 3^{12} \times 5^4)$ then,

$$\log(2^a \times 3^b \times 5^c) = [\log(2^2 \times 3^3 \times 5^8) + \log(2^9 \times 3 \times 5^7) + \log(2^2 \times 3^{12} \times 5^4)]/3 \\ = [\log(2^{13} \times 3^{16} \times 5^{19})]/3 \\ = \log(2^{13/3} \times 3^{16/3} \times 5^{19/3})$$

$$\text{So, } a = 13/3, b = 16/3, c = 19/3$$

Clearly, $b - a = c - b$

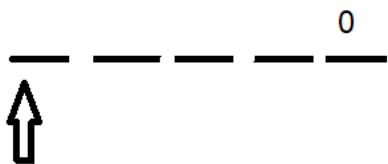
So, a, b and c form an AP.

59. 96

If number is divisible by 6 then it must be divisible by 2 and 3 both.

Case 1: 0 is at unit place

(i) 0 is repeated, then remaining four digits will be 0, 3, 6, 9 out of which 0 cannot be at first place.



3, 6 or 9

$$\text{Total numbers} = 3 \times 3! = 18$$

(ii) 3 is repeated, then remaining four digits will be 3, 3, 6, 9

$$\text{Total numbers} = 4!/2! = 12$$

(iii) 6 is repeated, then remaining four digits will be 3, 6, 6, 9

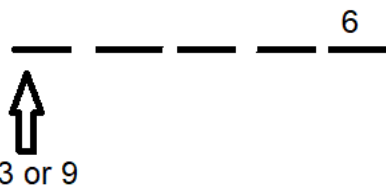
Total numbers = $4!/2! = 12$

(iv) 9 is repeated, then remaining four digits will be 3, 6, 9, 9

Total numbers = $4!/2! = 12$

Case 2: 6 is at unit place

(i) 0 is repeated, then remaining four digits will be 0, 0, 3, 9 out of which 0 cannot be at first place.



Total numbers = $2 \times 3!/2! = 6$

(ii) 3 is repeated and then remaining four digits will be 3, 3, 0, 9

3 comes at first place; total numbers = $3! = 6$

9 comes at first place; total numbers = $3!/2! = 3$

(iii) 6 is repeated, then remaining four digits will be 3, 0, 6, 9

Total numbers = $3 \times 3! = 18$

(iv) 9 is repeated, then remaining four digits will be 3, 0, 9, 9

Similar to case of 3 repeated; total numbers = $6 + 3 = 9$

Hence total numbers formed = $18 + 12 + 12 + 12 + 6 + 9 + 18 + 9 = 96$

60. 1000

Interest for third year = \$120 = R % of 600

$\Rightarrow R = 20\%$ (where R is rate of interest per annum compounded annually)

Also,

If interest for 1st year on \$ X is \$ y then, interest for third year will be

$$y + y/5 + y/5 + y/25 = 120$$

On solving, we get $y = \$500/6$

So, interest on \$2X in 6 years = $2 \times 6 \times 500/6 = \$1000$

61. D

Relative speed of two buses $(S_1 + S_2) = 420/(7/3) = 120 \text{ Km/hr}$

Since difference between both speeds is 5 Km/hr

The speed of slower bus will be 57.5 Km/hr.

Then the speed of faster bus = $120 - 57.5 = 62.5 \text{ Km/hr}$

Distance between initial point of faster bus and meeting point of both = $62.5 \times 7/3 = 145.83 \text{ Km}$

Time taken by slower bus to reach at initial point of faster bus = $(62.5 \times 7/3)/57.5 = 175/69 \text{ Hrs}$

62. D

$$\text{LHS} = |f(x) + g(x)| = |x^2 - 9 + 11 - x^2| = 2$$

$$\text{RHS} = |f(x)| + |g(x)| = |x^2 - 9| + |11 - x^2|$$

If $x^2 > 11$,

$$|x^2 - 9| + |11 - x^2| = x^2 - 9 + x^2 - 11 = 2x^2 - 20 \text{ which is always greater than 2 for } x^2 > 11.$$

If $x^2 < 9$,

$$|x^2 - 9| + |11 - x^2| = 9 - x^2 + 11 - x^2 = 20 - 2x^2 \text{ which is always less than 2 for } x^2 < 9.$$

If $9 \leq x^2 \leq 11$,

$|x^2 - 9| + |11 - x^2| = x^2 - 9 + 11 - x^2 = 2$ which satisfies the given condition

So, $x \in [-\sqrt{11}, -3] \cup [3, \sqrt{11}]$

63. C

$$x^2 - 7x + 12 = 0$$

So, $x = 3, 4$ which are solutions of $x^3 - ax + 21b^2 = 0$

If $x = 3$; $3^3 - 3a + 21b^2 = 0$

And at $x = 4$; $4^3 - 4a + 21b^2 = 0$

On solving above equations; $a = 37$ and $b = 2, -2$

64. D

$$PA \times PB = PT^2$$

$$x(7 + x) = 12^2$$

$$\Rightarrow 7x + x^2 = 144$$

On solving, $x = 9$

$$PT = 12$$

$$PB = 16$$

Using Pythagoras theorem

$$TB^2 = PB^2 - PT^2$$

$$TB^2 = 16^2 - 12^2 = 256 - 144 = 112$$

$$TB = 4\sqrt{7}$$

65. 50

Beena's age = $100x$; Abha's age = $25x$.

After y years, according to question:

$$25x + y = \frac{1}{3} [100x + y]$$

$$75x + 3y = 100x + y$$

$$\text{So, } y = 12.5x$$

Therefore, percentage change in Abha's age during this period = 50%.

66. C

Minimum sum on four dice = 4

Maximum sum on four dice = 24

So, there are two possible cases:

Case1: Sum = 5

Possible digits are 1, 1, 1, 2

$$\text{Favorable outcomes} = \frac{4!}{3!} = 4$$

Case2: Sum = 15

Possible digits	Outcomes
6, 6, 2, 1	$\frac{4!}{2!} = 12$
6, 5, 3, 1	$4! = 24$
6, 4, 4, 1	$\frac{4!}{2!} = 12$
6, 4, 3, 2	$4! = 24$
6, 3, 3, 3	$\frac{4!}{3!} = 4$

5, 5, 4, 1	$4!/2! = 12$
5, 5, 3, 2	$4!/2! = 12$
5, 4, 4, 2	$4!/2! = 12$
5, 4, 3, 3	$4!/2! = 12$
4, 4, 4, 3	$4!/3! = 4$

So, Number of favorable outcomes from both the cases = 132

Total out comes = 6^4

Therefore $P(\text{sum is odd multiple of 5}) = 132/1296$

CAREERS360

MOCK TEST – 8

Section - 1 - Verbal Ability & Reading Comprehension

Directions for questions 1 to 5: The passage given below is followed by a set of questions. Choose the most appropriate answer to each question.

Passage 1

While the threat of Russian advances played a significant role in defining the necessity of a boundary between the British empire and Afghanistan, it was not the only reason. The British had failed time and again in their attempts to conquer Afghanistan, and they increasingly struggled to control the hill-based tribesmen of the frontier.

These men they saw as ‘absolute barbarians... avaricious, thievish and predatory to the last degree’, ‘mere vulgar, criminal and disreputable persons’. British policy was to try to ‘civilise’ and ‘pacify’ them even as they emphasised how the tribesmen’s traditions and poverty were obstacles in this regard. Taming the tribal areas, or at least part of them, was integral to illustrating and affirming the moral superiority of the empire as well as highlighting its benevolence.

With these ideas as the context for his actions and ambitions, Durand travelled to the tribal frontier in late 1893. There, day after day, he doggedly sat with the Emir of Afghanistan, attempting to devise a border between the British empire and Afghanistan. One sticking point was Waziristan, the present-day stronghold of the Tehreek-e-Taliban, which both the Emir and the British wished to claim. When Durand asked the Emir why he wouldn’t give up Waziristan, which in his own words ‘had so little population and wealth’, the Emir responded with a single word: ‘honour’.

Honour gave way, however, to the cash that Durand was willing to offer. To reach agreement over the delineation of a northwestern border between Afghanistan and the British empire, the Emir’s subsidy was more than doubled from six lakh to 18 lakh rupees, and the promise of regular shipments of arms and munitions from the British government.

The result, as Andrew Roe writes in *Waging War in Waziristan* (2010), was ‘an arbitrary topographical line that stretched from North Gilgit to Koh-e-Malik Siah’ and that ‘divided the tribal areas uniformly between Afghanistan and British India’. According to Roe, the strategic, economic and political imperatives of the demarcation all pointed in different directions. However, the drawing of the line pointed to a greater victory, a moral one. In claiming half the tribal territory, the British could now claim to have subdued and subjected – via cash, if not courage – the most visibly intractable portions of the tribal frontier. In having bought off the Emir of Afghanistan, they also had their ‘buffer state’ against Russian expansionism.

Q.1. Which of the following reasons made it a necessity to have a boundary between Pakistan and Afghanistan?

- A. Strategic, economic and political imperatives created an urgent need for demarcation

- B. There was the threat of Russian expansionism to the British
- C. The British were hardcore colonisers and wanted to control and conquer Afghanistan
- D. Both B and C

Q2. Which of the following cluster of words correctly describes how the British saw the Afghans?

- A. Exploitative, obstinate, unscrupulous, blasphemous
- B. Uncivilised, rapacious, greedy, notorious
- C. Avaricious, cantankerous, barbaric, obdurate
- D. Sycophant, greedy, covetous, louche

Q3. What is this line trying to communicate: “the strategic, economic and political imperatives of the demarcation all pointed in different directions”?

- A. The Durand line fulfilled no purpose at all and is just an illegitimate colonial imposition
- B. Due to the multitude of purposes the Durand line has created, both strategic and economic, it remains a live, unresolved problem
- C. It failed to meet the strategic aim of the British as its division of Pashtun tribal lands is a point of contention to this day.
- D. The purpose of the Durand line was unclear about the strategic, economic and political goals of the British.

Q4. The use of the phrase “taming the tribal areas” shows the British as:

- A. Efficient Administrators
- B. Colonisers and empire-builders
- C. Bureaucrats
- D. Governors

Q5. The interaction between Durand and the Emir can be described as a/an:

- A. Negotiation
- B. Extortion
- C. Duress
- D. Imposition

Directions for questions 6 to 8: The passage given below is followed by a set of questions. Choose the most appropriate answer to each question.

Passage-2

The central dilemma of a modern leader is to balance apparently conflicting virtues and beliefs without choosing sides between them. Decisiveness, for example, is widely and rightly perceived as crucial to effective leadership. It's the opposite of uncertainty and insecurity, which are paralyzing. But decisiveness overused eventually congeals into certainty. The balancing opposite is openness.

This week, the news program “60 Minutes” ran a segment on a Louisiana prosecutor named Marty Stroud. In his very first death row case, Mr. Stroud overlooked conflicting evidence and won the murder conviction of a black man named Glenn Ford with an all-white jury. For the next 30 years, Mr. Ford was kept in solitary confinement at the notorious Angola prison in southern Louisiana. In 2014, the real murderer confessed, and Mr. Ford's conviction was overturned. Reflecting back on his zeal to convict, Mr. Stroud was deeply repentant. “I was arrogant, narcissistic, and caught up in the culture of winning,”

he told “60 Minutes.” A prosecutor requires decisiveness to do his job well. What Mr. Stroud apparently lacked was an equal degree of open-mindedness, until it was much too late. The capacity to own his failure may now be a saving grace in Mr. Stroud’s life, but it cost Mr. Ford his. He died of cancer four months after his release from prison.

Consider, for a moment, these seemingly paradoxical qualities:

- Results-focused/Reflectiveness
- Honesty/Compassion
- Tough-mindedness/Gentleness
- Confidence/Humility
- Rationality/Intuition
- Intelligence/Curiosity
- Passion/Composure
- Practicality/Vision

Is there any doubt that for each set of pairs above, most of us tend to favor one more than the other? Or that as a culture — especially in business and especially for those in leadership roles — we value the constellation of virtues on the left far more than we do those on the right?

We crave certainty because it makes us feel more safe. But in an increasingly complex and pluralistic world, there aren’t any simple solutions. Great leaders are defined today not by having the right answers but by the willingness to embrace and grapple with conflicting and sometimes paradoxical “truths.”

Nearly all of us perceive honesty as a virtue. It gives us a solid ground to stand on, and therefore makes us more trusting and secure. Or does it? Honesty overused — treated as a singular virtue by itself — can actually lead to cruelty. A leader may deliver harsh feedback, in a spirit of honesty, to get an employee to change a behavior. But often that leads to just the opposite. The recipient feels attacked and responds with defensiveness and resentment, too threatened to take in the feedback, even if it is accurate. Communicating feedback effectively requires holding each of these seemingly opposite poles — honesty and compassion — and continuously moving between them as circumstances demand.

By contrast, I consulted not long ago for a financial services company whose leaders prided themselves on an unusually collegial culture — rare for that industry. Employees treated one another with respect, care and great civility. The problem was that all decisions were made by consensus and no one felt comfortable delivering critical feedback to anyone. Decision-making was torturous, and younger employees felt insecure in the absence of honest feedback.

A great leader continually challenges her people to push beyond their current comfort zones. But pushing people too relentlessly eventually prompts fear and fatigue, both of which undermine great performance. In this case, the balancing opposite is nurturing and caring for those one leads.

Q6. According to the author of the passage, all of the following are true except:

- A. we live in an increasingly diverse world
- B. some business problems cannot be approached with a singular viewpoint
- C. honesty is the best virtue in most cases
- D. a collegial culture may not necessarily lead to harmonious functioning in a company

Q7. All of the following are true as per the information given in the passage except:

- A. Mr. Stroud's exhibition of decisiveness cost him to make mistakes in Mr. Ford's case.
- B. Mr. Stroud had the courage to own up to his own mistakes.
- C. Mr. Stroud was a victim of his own thoughts and methods while dealing with the case of Mr. Ford.
- D. Mr. Ford could not really enjoy freedom from long incarceration.

Q8. A suitable title for the passage is:

- A. Why Great Leaders Feel Less and Do More
- B. Why Great Leaders See Less and Exclude More
- C. Why Great Leaders See More and Exclude Less
- D. Why Great Leaders Complain Less and Direct More

Directions for questions 9 to 12: The passage given below is followed by a set of questions. Choose the most appropriate answer to each question.

Passage-3

Depression is the flaw in love. To be creatures who love, we must be creatures who can despair at what we lose, and depression is the mechanism of that despair. When it comes, it degrades one's self and ultimately eclipses the capacity to give or receive affection. It is the loneliness within us made manifest, and it destroys not only connection to others but also the ability to be peacefully alone with oneself. Love, though it is not prophylactic against depression, is what cushions the mind and protects it from itself. Medications and psychotherapy can renew that protection, making it easier to love and be loved, and that is why they work. In good spirits, some love themselves and some love others and some love work and some love God: any of these passions can furnish that vital sense of purpose that is the opposite of depression. Love forsakes us from time to time, and we forsake love. In depression, the meaninglessness of every enterprise and every emotion, the meaninglessness of life itself, becomes self-evident. The only feeling left in this loveless state is insignificance.

Life is fraught with sorrows: no matter what we do, we will in the end die; we are, each of us, held in the solitude of an autonomous body; time passes, and what has been will never be again. Pain is the first experience of world-helplessness, and it never leaves us. We are angry about being ripped from the comfortable womb, and as soon as that anger fades, distress comes to take its place. Even those people whose faith promises them that this will all be different in the next world cannot help experiencing anguish in this one; Christ himself was the man of sorrows. We live, however, in a time of increasing palliatives; it is easier than ever to decide what to feel and what not to feel. There is less and less unpleasantness that is unavoidable in life, for those with the means to avoid. But despite the enthusiastic claims of pharmaceutical science, depression cannot be wiped out so long as we are creatures conscious of our own selves. It can at best be contained — and containing is all that current treatments for depression aim to do.

Highly politicized rhetoric has blurred the distinction between depression and its consequences — the distinction between how you feel and how you act in response. This is in part a social and medical phenomenon, but it is also the result of linguistic vagary attached to emotional vagary. Perhaps depression can best be described as emotional pain that forces itself on us against our will, and then breaks free of its externals. Depression is not just a lot of pain; but too much pain can compost itself into depression. Grief is depression in proportion to circumstance; depression is grief out of proportion to

circumstance. It is tumbleweed distress that thrives on thin air, growing despite its detachment from the nourishing earth. It can be described only in metaphor and allegory. Saint Anthony in the desert, asked how he could differentiate between angels who came to him humble and devils who came in rich disguise, said you could tell by how you felt after they had departed. When an angel left you, you felt strengthened by his presence; when a devil left, you felt horror. Grief is a humble angel who leaves you with strong, clear thoughts and a sense of your own depth. Depression is a demon who leaves you appalled.

Q9. Why does the author say that depression can be best described in terms of metaphors and allegory?

- A. There is no easy description for depression.
- B. The linguistic descriptions for depression are not sufficient to describe depression in straight terms.
- C. Metaphors and allegories can convey the extremely deep sentiments attached with the problem of depression.
- D. All of the above

Q10. According to the information provided in the passage, all of the following are correct except:

- A. Grief represents pain which is in conjunction with the severity of the situation; depression, on the other hand, represents pain far exceeding the gravity of the situation.
- B. Too much pain can lead to depression
- C. Love is the one thing that can uproot depression from its source itself.
- D. There is no complete cure for depression available.

Q11. It is clearly implied or stated in the passage that we can do all of the following to deal with depression except:

- A. use our faith in and love for God to deal with depression to a degree.
- B. use our love for our work to help us deal with depression
- C. use our self-belief to overcome the negative sentiments of pain, anguish, the meaninglessness of every enterprise and life that lead to depression
- D. use medications as palliatives that help reduce depression to a degree.

Q.12. What does the author mean by the phrase 'each of us, held in the solitude of an autonomous body'?

- A. the human being is built in a way that we suffer from despair and grief.
- B. human life is one filled with sorrow and our independent self cannot escape it.
- C. the human body is essentially independent and we live essentially alone through this body
- D. the human body, driven to be alone, is something that holds each of us in solitary ways and independent of each other.

Directions for questions 13 to 16: The passage given below is followed by a set of questions. Choose the most appropriate answer to each question.

Passage 4

One day in early 1970, a cross-country skier got lost along the 46-mile Kekekabic Trail, which winds through the Boundary Waters Canoe Area Wilderness in northern Minnesota. Unable to make his way

out, he died of exposure. In response, the Forest Service installed markers along the trail. But when, years later, it became time to replace them, the agency refused, claiming that the 1964 Wilderness Act banned signage in the nation's wilderness areas.

Despite the millions of people who have visited the country's national parks, forests and wildernesses this summer, the Forest Service has become increasingly strict in its enforcement of the Wilderness Act. The result may be more pristine lands, but the agency's zealous enforcement has also heightened safety risks and limited access to America's wilderness areas.

Over the last 45 years Congress has designated as wilderness 40 percent of the land in our national parks and one-third of the land in our national forests — more than 170,000 square miles, an area nearly as large as California, Massachusetts and New Jersey combined — as wilderness. In March 2009, President Obama signed a law protecting 3,125 more square miles, the largest expansion in more than a generation.

Wilderness, according to the act, is space “where the earth and its community of life are untrammelled by man, where man himself is a visitor who does not remain.” Within those areas, the act forbids cars, roads, structures and anything else that could impair the “outstanding opportunities for solitude.” At the same time, though, Congress wanted people to use the land for recreation, so it allowed access to wilderness areas for hunting, hiking, canoeing and climbing.

Over the decades an obvious contradiction has emerged between preservation and access. As the Forest Service, the National Park Service and the Bureau of Land Management — each of which claims jurisdiction over different wilderness areas — adopted stricter interpretations of the act, they forbade signs, baby strollers, certain climbing tools and carts that hunters use to carry game. As a result, the agencies have made these supposedly open recreational areas inaccessible and even dangerous, putting themselves in opposition to healthy and environmentally sound human-powered activities, the very thing Congress intended the Wilderness Act to promote.

Part of the problem is that many of today's common outdoor activities were unheard of in 1964, including trail cycling and wind-powered skiing. In forbidding them, the agencies invoke the Wilderness Act's ban on “mechanical transport.” But the act's legislative history makes clear that Congress never intended to stop people from using their own power to travel or shepherd their children, or from using light mechanical assistance that leaves no lasting trace.

The agencies have even taken on Capitol Hill: in 1980 Congress authorized bicycling in Montana's Rattlesnake Wilderness, but the Forest Service refused to allow it. The official resistance to wilderness signage, in particular, has become a safety issue. Every summer numerous backpackers, hikers and hunters get lost in the wilderness, with occasionally fatal results. In 2008, two experienced hikers along the Kekekabic Trail — the same Minnesota trail where the skier perished in 1970 — were lost for days and nearly ran out of food. The Forest Service listened to their complaints about the lack of signage but refused to act.

In response to the agencies' inflexibility, groups of outdoor enthusiasts have lined up against any expansion of wilderness areas — an unfortunate result, because these people should be the natural constituents of a wilderness protection program. The Wilderness Act is a monumental achievement in national resource conservation. But unless federal agencies begin to interpret it more reasonably, it is an achievement that even fewer numbers of people will want, or even be able, to enjoy.

Q13. The attitude of the author towards the wilderness act can best be described as:

- A. that of mild approval, yet filled with skepticism.
- B. that of objectivity mixed with pragmatism.
- C. that of mild appreciation mixed with some strong reservations.
- D. one that is condescending and appreciative at the same time.

Q14. The primary purpose of the passage is:

- A. To make the reader aware of the fact that wilderness is under threat and the situation needs an urgent redressal.
- B. To make the reader aware of the fact that the Wilderness Act is actually demonic in nature and achieves the opposite of what it was intended for.
- C. To show how the situation created by the Wilderness Act is causing unnecessary problems to outdoor enthusiasts and the actions these people are having to take against it.
- D. To highlight the issues which accompany the implementation of the Wilderness Act and showcase how simple corrective measures could go a long way in improving the scenario.

Q15. It can be inferred from the passage that the author does not believe:

- A. the Wilderness Act has a few issues that need to be addressed.
- B. the Wilderness Act is a significant achievement in national resource conservation.
- C. the agencies referred to in the passage have adopted stricter interpretations of the Wilderness Act.
- D. the forest service's lackadaisical enforcement has heightened safety risks and limited access to America's wilderness areas.

Q16. Which of the following statements are not true according to the passage?

- I. The Forest Service, the National Park Service and the Bureau of Land Management, all claim jurisdiction over different wilderness areas.
- II. Every summer numerous backpackers, hikers and hunters get lost in the wilderness due to the lack of sign boards, with occasionally fatal results.
- III. Over the last 45 years Congress has designated as wilderness 20 percent of the land in our national parks and one-third of the land in our national forests

- A. I and III
- B. III
- C. I, II and III
- D. II and III

Directions for the Question: Identify the apt summary for the given paragraph. Enter the option number you deem as the correct answer.

Q17. Even as technology reshapes industry after industry, the huge leaps in computing power are transforming modern finance in ways that few have ever imagined and giving tech-savvy, DIY types like Hunter the tools to compete on a shoestring. Armed with little more than open-source software and an Internet connection, this growing cadre of like-minded startups has razed virtually every barrier to entry in the 40-year-old world of quantitative investing -- where mathematicians code software to profit from price patterns.

- A. Quantitative investing is an easy to enter and succeed field due to computing power.
- B. Quantitative investing is now much easier, thanks to DIY tools.

- C. Computing power is allowing people to compete in the world of quantitative investing.
- D. Computing power has grown tremendously and this has helped succeed in quantitative investing.

Directions for the Question: Identify the apt summary for the given paragraph. Enter the option number you deem as the correct answer.

Q18. To the microbiologists who were present, the most exciting thing was not the discovery of fish itself, but rather what it says about this remote, unexplored environment. Just three days before the discovery, Brent Christner, a microbiologist from Louisiana State University (L.S.U.) with years of experience studying ice-covered Antarctic lakes, had agreed with Vick-Majors that life in the water would be limited to microbes with sluggish metabolic rates. "We have to ask what they're eating," he says, when I asked later on about the fishes. "Food is in short supply and any energy gained is hard-won. This is a tough place to live." One source of food could be small plankton, grown in the sunlit waters of the Ross Sea then swept by currents under the ice shelf. But oceanographic models suggest that this food would have to drift six or seven years under the dark of the ice shelf before reaching the Whillans grounding zone, encountering plenty of other animals along the way. "The water will be pretty chewed on by the time it gets here," Vick-Majors says.

- A. The microbiologists were cautious about the discovery of fish in a remote environment. This is particularly because others have asked questions about what the fish are eating in such a remote location.
- B. The microbiologists were excited about the discovery of fish in a remote environment. However, others have asked questions about what the fish are eating in such a remote location.
- C. Some microbiologists were excited about the discovery of fish in a remote environment. But they have also asked questions about what the fish are eating in such a remote location.
- D. The microbiologists were excited about seeing fish in such a remote environment. Others have asked pertinent questions about what the fish are eating in such a remote location.

Directions for the Question: Identify the apt summary for the given paragraph. Enter the option number you deem as the correct answer.

Q19. In a time of rapid change, huge movements of people and a general sense of instability, people are naturally going to seek security and stability. Cults and totalist regimes thrive in these conditions. Given the right circumstances, almost anyone is vulnerable to the psychological and situational pressures I have discussed. The respected scholars in my field have repeated over and over again that the way to protect ourselves is through *knowledge*. In 1952, Asch wrote: 'The greater man's ignorance of the principles of his social surroundings, the more subject is he to their control; and the greater his knowledge of their operations and of their necessary consequences, the freer he can become with regard to them.' This knowledge must be specific: how this process of control works, and how leaders deploy the brainwashing methods of isolation, engulfment and fear.

- A. Freedom from cults and leaders is possible in stable times, when one has knowledge how the process of control works and how leaders brainwash others.
- B. Rapid change can be avoided if people understand the true nature of cults and their leaders and how these are meant to act as instruments of fear generation and brainwashing.
- C. Specific knowledge with regards to how leaders and cults control people in the times of rapid change is what can help people be freer and avoid being controlled by these leaders and cults.
- D. Both B and C

Directions for the Question: The question below has a paragraph given with one sentence missing in at the end. From among the answer choices given, select the sentence that can fill the blank to form a coherent paragraph.

Q20. The United States and its European allies bear the majority of blame for the crisis. The source of the problem is NATO expansion, the linchpin of a broader strategy to take Ukraine out of Russia's orbit and integrate it into the West. Similarly, the EU's eastward expansion and the West's support of the pro-democracy movement in Ukraine -- commencing with the Orange Revolution in 2004 -- were also crucial factors. Since the mid-1990s, Russian leaders have been ardently opposed to NATO expansion, and in recent years they have made it abundantly clear that they will not stand by as their strategically significant neighbour becomes a Western bastion. Putin's final straw was the illegal overthrow of Ukraine's democratically elected and pro-Russian president, which he correctly labelled a "coup." (_____)

- A. He waited a few months before making his next move, which was to deliver a speech imploring the Ukrainians to remain with the Russians.
- B. In response, he annexed Crimea and worked to destabilise Ukraine until it renounced its policies.
- C. Due to its misguided policies, the United States intended to attack Ukraine, and Russia could not tolerate this.
- D. Ukraine attempted to deceive fate by leaning incrementally towards the United States of America.

Directions for the Question: The question below has a paragraph given with one sentence missing in at the end. From among the answer choices given, select the sentence that can fill the blank to form a coherent paragraph.

Q21. People with epilepsy experience transient disruptions in the brain's normal electrical function. This condition can affect the entire brain, known as generalised epilepsy, or only a portion of it, known as partial epilepsy. When these intense electrical activity surges occur, they affect consciousness, movement patterns, and sensations during seizures. Clinically, epilepsy is referred to as a seizure disorder and is defined as the occurrence of two or more unprovoked seizures, which arise spontaneously and for no apparent reason. Although many individuals experience seizures, not all of them are epileptic. (_____)

- A. Electrical currents can circulate continuously through the brain.
- B. Seizures can also be triggered by any number of other stimuli.
- C. The cardiovascular system plays a similarly important part in epileptic seizures as the brain.
- D. A person's physical condition may additionally affect the frequency of seizures and their seriousness.

Directions for question 22: In the following question, rearrange the five sentences in order to form a meaningful paragraph.

TITA

Q22.

1. You could be forgiven for not realising it, but we are in the middle of National Picnic Week.
2. For them, the picnic was based around communal sharing.
3. It's one of those daft marketing campaigns that are run to raise awareness of something that we are already perfectly well aware and perhaps even fond of, while simultaneously reflecting the pilfered glory

onto a campaign sponsor; a lacklustre margarine brand, for example, a range of lunch boxes, a wine losing market share or a failing pie manufacturer.

4. All of which would have surprised the original picnickers of the 18th and 19th centuries.

Directions for question 23: In the following question, rearrange the five sentences in order to form a meaningful paragraph.

TITA

Q23

1. The main models of insurance business are collection of premium and settlement of claims and these two verticals should be taken care of without any lapse
2. The insurance industry is undergoing a sea change with the advent of technology and most importantly, the private players who are making it possible to learn from the developed countries
3. One aspect bears strongly on another aspect of the model and that is why it is very important that the industry captains understand the need of both these segments together and simultaneously
4. The government players are mainly concerned about premium collection with no accountability for claim settlement because they are still in that area where there was no competition from the private sector

Directions for question 24: In the following question, rearrange the five sentences in order to form a meaningful paragraph.

TITA

Q24.

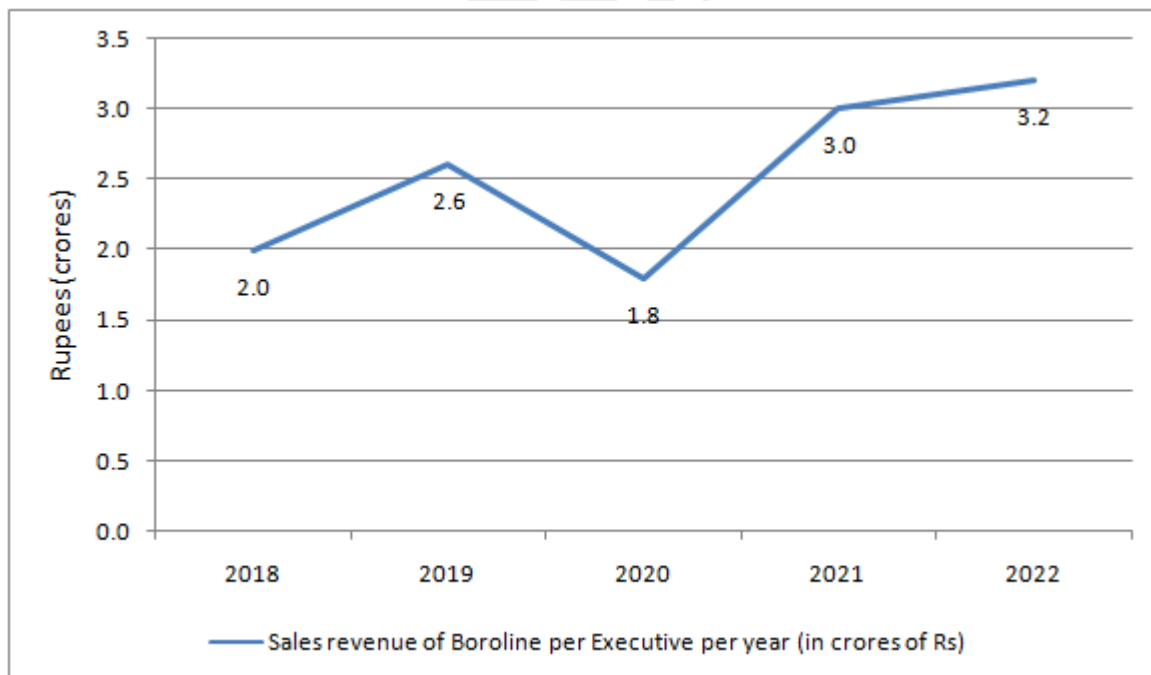
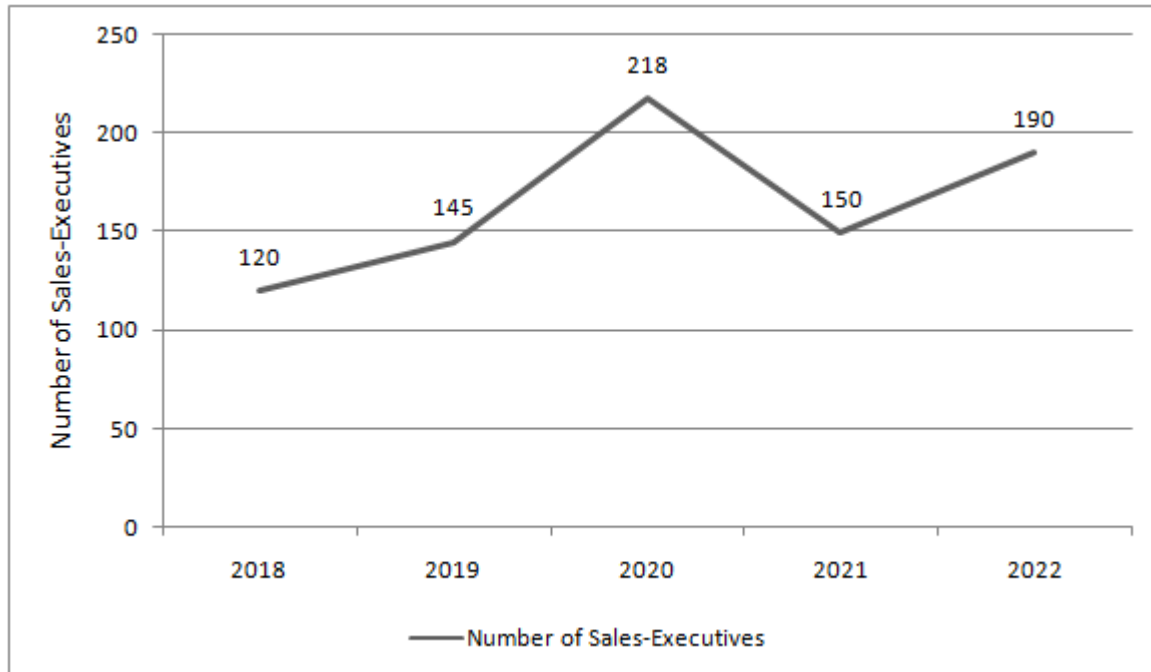
1. LifeZette is also the target of a labor complaint aimed at its payroll practices from a former employee who says paychecks came sporadically and with little official documentation.
2. Traffic to the site—billed as the right’s answer to the massive Huffington Post when it was founded in 2015—is minuscule, with an average of little more than 10,000 unique visitors per day in July, according to data from ComScore.
3. Most seriously, according to seven sources currently and formerly employed by LifeZette, the organization has become a deeply uncomfortable place for women to work, with a top company official repeatedly making sexually suggestive comments about female employees—sometimes within earshot of those female staffers.
4. LifeZette, the politics and culture website founded by prominent ally of President Donald Trump and longtime talk-radio host Laura Ingraham, is in trouble.

Section - 2 - Data Interpretation and Logical Reasoning

Directions for questions from 25 to 29 :

The following line-graphs depict the number of Sales-Executives of the antiseptic division of M/s G D Pharmaceuticals of Kolkata (first graph), and the sales revenue (in crores of Rs) per Executive per year of their iconic product Boroline (second graph), from 2018 to 2022.

The total sales revenue in a year is equal to the product of the sales revenue per Executive per year to the number of Executives in the year.



Q 25 (TITA)

In which year was the sales revenue of M/s G D Pharmaceuticals from Boroline the highest ?

Q 26 (TITA)

If the profit percentage from Boroline made in the year 2019 was 45%, what was the amount of profit per Sales-Executive (in crores of Rs) made from Boroline in 2019 ?

Q 27 In how many years was the number of Sales-Executives more than the average number of Sales-Executives for the given period ?

- A) 4
- B) 3
- C) 2
- D) 1

Q 28 M/s G D Pharmaceuticals targets to achieve a 64% higher total sales revenue from Boroline in the year 2023 compared to the previous year, but by increasing the Sales-Executive force by only 10% compared to the previous year. What would be the targeted sales revenue (in crores of Rs) per Executive per year of Boroline in 2023 ?

- A) 3.65
- B) 3.78
- C) 4.08
- D) 4.77

Q 29 What was the average percentage increase of the total sales revenue of Boroline for the given period from 2018 to 2022 ?

- A) 28.33%
- B) 30.67%
- C) 38.33%
- D) 40.12%

Directions for questions from 30 to 34:

A to H are four married couples in no specific order who are sitting around a round table equidistant from each other, all facing the centre of the table, such that neither any couple nor any men are sitting next to each other. A is a man who is sitting opposite to G. E has both F and G as neighbours. H is to the immediate right of B. C and H belongs to the same gender and is not sitting opposite to each other. C and B is a couple and have two persons sitting in between them.

Q 30 Who is sitting between E and C ?

- A) F
- B) G
- C) H
- D) A

Q 31 Which of the following cannot be the couple according to the conditions of the arrangement ?

- A) G and H
- B) A and F

- C) B and C
- D) A and E

Q 32 Who is married to D ?

- A) H
- B) G
- C) F
- D) D

Q 33 Who is married to the man sitting between D and E ?

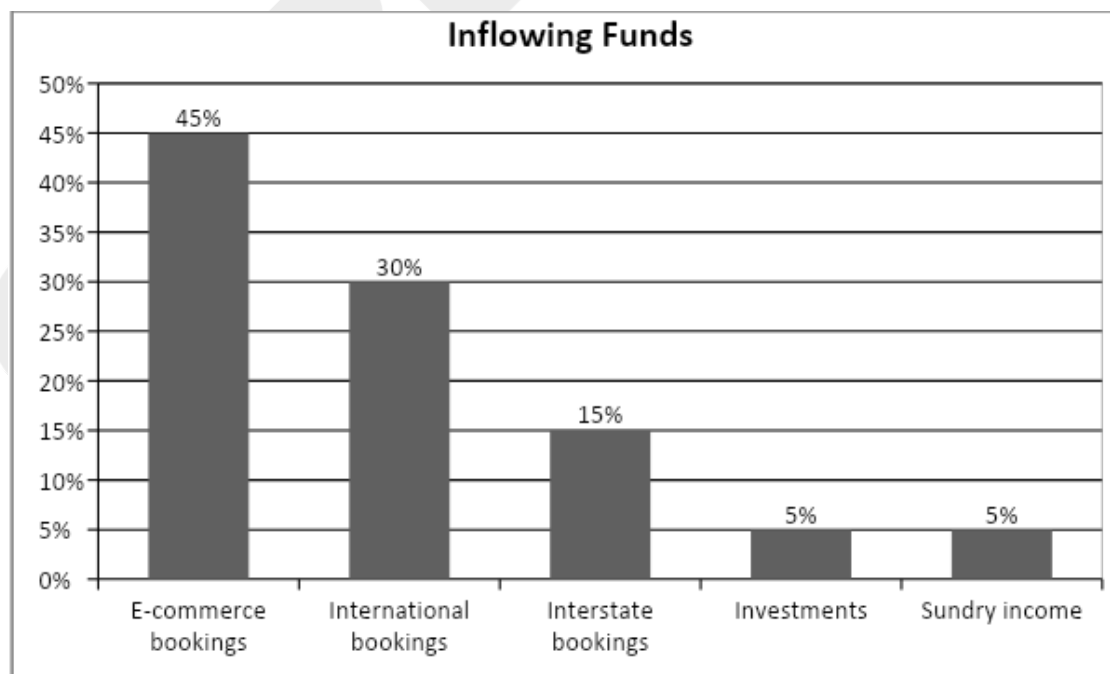
- A) A
- B) B
- C) F
- D) H

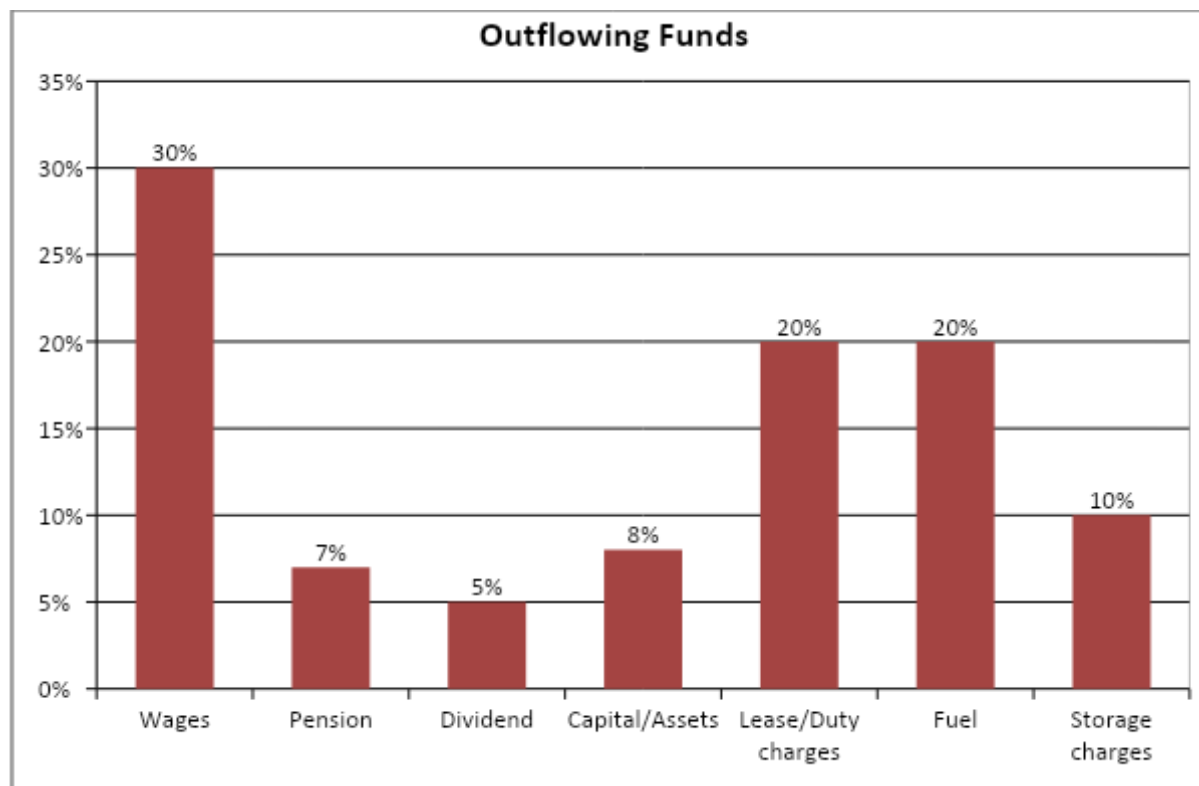
Q 34 The two women who are neighbours are _____?

- A) E and F
- B) B and F
- C) A and D
- D) None of the above

Directions for questions from 35 to 39:

Bengaluru, India, based Ekart logistics Pvt Ltd is without any trace of doubt the largest Indian origin e-commerce and business services transporter in the country, with its own fleet of aircrafts, heavy duty trucks and transporting vehicles. The following two bar graphs depict the inflow and outflow of funds on various heads as a percentage of the total of Ekart logistics Pvt Ltd in 2022 :





The profit made would be the inflow value minus the outflow value.

Q 35 If in 2022 the overall inflow of funds was 600 crore rupees, and the overall outflow 540 crore rupees, then what was the ratio between the amount earned by International Bookings and the amount spent on Fuel by Ekart logistics Pvt Ltd in 2022 ?

- A) 5 : 3
- B) 7 : 4
- C) 7 : 3
- D) 8 : 5

Q 36 (TITA)

If in the year 2022, the sum of the inflow due to Interstate Bookings and Sundry Income were 150 crore rupees, then what would the overall profit or loss of Ekart logistics Pvt Ltd (in crore rupees) be, given that the sum of the outflow due to Pensions and Dividends were 54 crore rupees ?

Q 37 (TITA)

If in 2022, Ekart logistics Pvt Ltd incurred a loss of 60 crore rupees and if the total inflow of funds was 5% less than the outflow of funds, then what was the inflow of funds (in crore rupees) due to International Bookings ?

Q 38 If the value of Interstate Bookings equaled the Lease/Duty Charges of Ekart logistics Pvt Ltd in 2022, then what was the ratio of the International Bookings and Wages ?

- A) 2 : 5

- B) 3 : 4
- C) 1 : 1
- D) 4 : 3

Q 39 (TITA)

If in 2021, the value of the quantity of the different heads of outflow of funds of Ekart logistics Pvt Ltd were the same as in 2022 except Wages, which was 12 percent less than the value of the same in 2022, what was the percentage (rounded to two decimal places) of Fuel compared to the total outflow of funds in 2021 ?

Directions for questions from 40 to 44 :

The Indian National Rally Championships (INRC) is a motor rallying series since 1988 which is being governed by the Federation of Motor Sport Clubs of India (FMSCI) since 2009.

In the last five seasons from 2021 to 2017, the INRC National Champion Driver's title was won by Mr Amittrajit Ghosh, Mr Gaurav Gill, Mr Karna Kadur, Mr Aditya Thakur and Mr Chetan Shivram, not in the same order. Each of them won the title while representing a different team among Team Chettinad Sports, Team Yokahama, Team Akshara Racing, Team Ramakrishna Race Performance Management (in short Team RRPM) and Team JK Tyres

The gentleman winning the National Champion Driver's title representing Team RRPM won it neither in 2021 nor 2017. Mr Karna Kadur won the title representing Team Yokahama, where he was assisted by the legendary navigator Mr Nikhil V. Pai, who came out of retirement for only that one season since 2012. The National Champion Driver's title in 2019 was won by Mr Chetan Shivram, and in 2020 by the gentleman representing Team JK Tyres. Mr Aditya Thakur won the title when he was representing Team Chettinad Sports, but that was not in 2017. Mr Amittrajit Ghosh won the INRC National Champion Driver title neither with Team Akshara Racing, nor in 2020.

Q 40 The gentleman from which team won the INRC National Champion Driver's title in 2018 ?

- A) Team RRPM
- B) Team Akshara Racing
- C) Team Chettinad Sports
- D) Team Yokahama

Q 41 Which of the following gentlemen won the INRC National Champion Driver's title representing Team RRPM ?

- A) Mr Gaurav Gill
- B) Mr Amittrajit Ghosh
- C) Mr Karna Kadur
- D) Mr Chetan Shivram

Q 42 (TITA)

In the season of which year the legendary navigator Mr Nikhil V. Pai had come out of retirement since 2012 to assist the winner of the INRC National Champion Driver's title ?

Q 43 Which one of the following statements is correct ?

- A) Mr Karma Kadur did not win the INRC National Champion Driver's title while representing Team Yokahama
- B) Mr Amittrajit Ghosh won the INRC National Champion Driver's title while representing Team Yokahama
- C) The winner of the INRC National Champion Driver's title in 2021 was either representing Team JK Tyres or Team Akshara Racing
- D) Mr Gaurav Gill won the title of the INRC National Champion Driver in 2020

Q 44 The gentleman from which team won the title of the INRC National Champion Driver in 2021?

- A) Team Akshara Racing
- B) Team RRPM
- C) Team Chettinad Sporting
- D) Team Yokahama

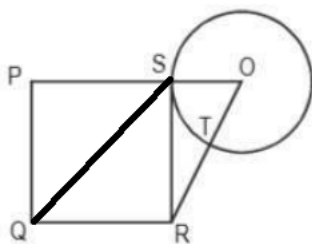
Section - 3 - Quantitative Aptitude

Q45 (TITA)

$2x^2 - y = 16$, and $|y| \leq 10$. How many integral ordered pairs (x, y) are solutions of the above system are there?

Q46. On a circle centered at O as shown in figure, at a point S a tangent SR is drawn such that $TR = OS$. Then the ratio of area of triangle PQS with area of triangle OSR is

- (a) $1: \sqrt{3}$ (b) $\sqrt{3}: 1$ (c) $1: 1$ (d) $2: 1$



Q47. (TITA)

A water tank has two filling taps A and B over it whereas tap C fitted in the tank is an emptying tap. A fills four buckets in 20 mins, B fills 8 buckets in 1 hour and C empties 2 buckets in 30 minutes. If all the taps are opened together an empty tank is filled in 2 hours. If a bucket can hold 5 litres of water, what is the capacity of the tank in litres?

Q48. (TITA)

Fourth term of an arithmetic progression is equal to fourth term of a GP such that first term of AP is twice of that of GP. Arithmetic mean of first 7 terms of AP is 8 and geometric mean of 2nd and 3rd term of GP is 6. What is the first term of given AP?

Q49. Two Schools A and B are situated at 200 km between them. A Gym is to be built for 100 students of school B and 40 students of School A. Expenditure on transport is Rs. 2.80 per km per student. If the total expenditure on transport by all 140 students is to be as small as possible, which of the following situation best suit for this case

- (a) 26 km from School A (b) 26 km from School B
(c) At school A (d) At School B

Q50. (TITA)

Out of 16 probables, either Shubhman or Rahul will be played. These 16 probables have 3 wicketkeepers, 6 batsmen, 2 allrounders and remaining are bowlers. A team of 11 players must be selected such that there must be at-least 1 wicket keeper and 5 out of bowlers and allrounders together. Shubhman and Rahul are purely batsman. Find the number of all possible ways to select a team.

Q51. The question is followed by two statements, I and II. Mark the answer as.

- if the question can be answered with the help of statement I alone.
- if the question can be answered with the help of statement II, alone.
- if both statement I and statement II are needed to answer the question.
- if the question cannot be answered even with the help of both the statements.

Q52. (TITA)

Train A leaves station X for station Y at 5 pm with the speed of S whereas Train B, traveling at $\frac{3}{2}$ of the speed of A, leaves X for Y at 8 pm. Train B overtakes the train A exactly at midway. How many hours does train A take for its journey from X to Y?

Q53. For positive real values of x and y, it is given that $16^{x+y} = 6^{\log_{36} 4}$, then x + y is equal to

- (a) a prime number (b) a composite number
(c) an even prime number (d) a positive fraction

Q54. In an office, the number of staff aged 47 years and above is 25 and there are n staff whose ages are below 47 years. The average age of all the people in the office can be 35 years at most. Average age of the staff below 47 years is greater than or equal to 23, the maximum number of the staff whose ages are below 47 years is

- (a) 28 (b) 26 (c) 27 (d) 25

Q55. (TITA)

In a circle, two parallel chords of lengths 6 cm and 10 cm are there. Minimum value of diameter when the distance between the two chords is an integer value, in cm, is

Q56. Odd natural numbers starting from 7 are divided into groups as (7), (9, 11, 13, 15), (17, 19, 21, 23, 25, 27, 29, 31, 33), ... and so on. Then, the difference of the sum of the numbers in the 9th group and sum of the numbers in group 1 to group 8 is equal to

- (a) 40095 (b) 42831 (c) 5472 (d) 2736

Q57. Two varieties of Rice, A and B, are mixed and then sold at the rate of Rs. 60 per kg. The loss is 14.28% if A and B are mixed in the ratio 1: 2, and no profit and no loss if this ratio is 2: 1. The cost prices, per kg, of A and B are in the ratio

- (a) 1: 5 (b) 8: 5 (c) 1: 1 (d) 5: 8

Q58. Three gift hampers contain four items in each as follows:

	Gift Hamper A	Gift Hamper B	Gift Hamper C
Fairness Cream	5	8	8
Body Lotion	5	4	4
Eye liner	8	8	5
Lipstick	3	2	4

Price of gift hampers A, B and C are equal. Also cost of 1 lipstick is 50% more than 1 eyeliner. If another gift hamper consists of 15 lipsticks only costs 20% more than any of the gift hamper above. Find the cost of 1 lipstick.

- (a) 240 (b) 90 (c) 110 (d) 160

Q59. In a Society, 40 percent of the male members and 60 percent of the female members are at least 28 years old. If 48 percent of all the members are at least 28 years old, what fraction of all members in the society are males?

- (a) $\frac{1}{5}$ (b) $\frac{1}{9}$ (c) $\frac{1}{10}$ (d) $\frac{4}{5}$

Q60. (TITA)

A retailer bought a telescope at a wholesale price of \$35 and decided to sell it for \$p but sold it for 8.33% less than the decided price. But due to some confusion, he did a wrong transaction \$2 against him. If the retailer made a profit equivalent to 20% of the wholesale price, what is the decided retail price [in \$] of the telescope?

Q61. (TITA)

Anil invests some money at a fixed rate of interest, compounded annually. If the ratio of interest in second year with the interest in 3rd year is 5: 6. What is the value of simple interest for 3 years on Rs 12900?

Q62. There is a square field of side 200 m long each which are covered by a compound wall along its perimeter. At one of its corners, a space forming a quadrant is left out covered by a boundary up to a height of 10 m along its perimeter such that its perimeter is 50m. If this hollow part is filled by sand. Find the height up to which equal amount of sand covers the rest part of the field?

- (a) 0.3864 m (b) 0.003864 m (c) 0.03864 m (d) 0.3 m

Q63. If $5f(x) + 3f(-x) = 5x^2 - 10$, what is the value of $f(1) - 2f(-1)$?

- (a) $-\frac{5}{8}$ (b) $-\frac{5}{4}$ (c) $\frac{5}{8}$ (d) $\frac{5}{5}$

Q64. In the university examination last year, Ramesh scored 55% in English and 72% in History. What is the minimum percent he should score in Sociology, which is out of 50 marks (if English and History were for 100 marks each), if he aims at getting 70% overall?

- (a) 94% (b) 92% (c) 98% (d) 96%

Q65. The average age of 10 persons in a group is increased by 2 years when two men aged 45 years and 65 years are substituted by two women whose ages are in the ratio 3: 2. The difference between square of their ages _____

- (a) is a perfect square (b) having 30 factors
(c) Sum of all even integers below 100 (d) is an odd number

Q66. The co-ordinates of vertices A, B and C of a parallelogram ABCD are (6, 1), (8, 2) and (9, 4) respectively. If E is a point on DC such that $2DE = 3EC$, then what is the area (in sq. units) of triangle ADE?

- a) 1.00 b) 0.90 c) 0.45 d) 0.50

CAREERS360

Answer Key - Mock Test 8

Section - Verbal Ability & Reading Comprehension

1-D, 2-B, 3-D, 4-B, 5-A, 6-C, 7-A, 8-C, 9-D, 10-C, 11-C, 12-C, 13-B, 14-D, 15-D, 16-B, 17-C, 18-B, 19-C, 20-B, 21-B, 22-1342, 23-2134, 24- 4213

Section - Data Interpretation & Logical Reasoning

25 -2022, 26-0.81, 27-C, 28-D, 29-C, 30-A, 31-B, 32-C, 33-D, 34-D, 35-A, 36-300, 37-342, 38-D, 39-20.75, 40-A, 41-B, 42-2017, 43-D, 44-C

Section - Quantitative Aptitude

45-4, 46-b, 47-160, 48-9, 49-C, 50-882, 51-A, 52-18, 53-D, 54-D, 55-10, 56-D, 57-D, 58-A, 59-C, 60-48, 61-7740, 62-C, 63-C, 64-D, 65-B, 66-B

Solutions - Mock Test 8

Section - Verbal Ability & Reading Comprehension

1. D

Option A can be ruled out from the lines: According to Roe, the strategic, economic and political imperatives of the demarcation all pointed in different directions.

This means these imperatives were not in sync.

Options B and C:

Refer to the lines: While the threat of Russian advances played a significant role in defining the necessity of a boundary between the British empire and Afghanistan, it was not the only reason. The British had failed time and again in their attempts to conquer Afghanistan, and they increasingly struggled to control the hill-based tribesmen of the frontier...Taming the tribal areas, or at least part of them, was integral to illustrating and affirming the moral superiority of empire as well as highlighting its benevolence....they also had their 'buffer state' against Russian expansionism.

These lines indicate options B and C as the correct answers in this case.

2. B

The passage mentions: These men they saw as 'absolute barbarians... avaricious, thievish and predatory to the last degree', 'mere vulgar, criminal and disreputable persons'.

The words mentioned in option B communicate the same. A is incorrect as they were not obstinate (Stubborn).

Option A is incorrect as blasphemous (grossly irreverent toward what is held to be sacred) is not mentioned in the passage.

Option C is incorrect as it mentions cantankerous (argumentative) and obdurate (stubborn), which are not mentioned in the passage.

Option D is incorrect as they were not sycophants (flatterer).

Louche means: disreputable and dissolute, somewhat agreeably

3. D

The passage mentions that: According to Roe, the strategic, economic and political imperatives of the demarcation all pointed in different directions. However, the drawing of the line pointed to a greater victory, a moral one.

This essentially means the purpose of the Durand line was only a moral one as it was related to honour and unclear about the strategic, economic and political goals.

4. B

The passage mentions that: Taming the tribal areas, or at least part of them, was integral to illustrating and affirming the moral superiority of the empire as well as highlighting its benevolence.

It also mentions: The British had failed time and again in their attempts to conquer Afghanistan, and they increasingly struggled to control the hill-based tribesmen of the frontier.

This shows that they were primarily Colonisers and empire-builders. These references are essentially pejorative in this implication and point out that the British had colonial/imperial aspirations that they wished to fulfill.

5. A

The discussion ended in a win-win situation as the Emir got money and the British got the territory. The Emir was not forced to make this settlement and it is clear that he used to arrive ultimately at the desired end. Therefore, options B, C, and D are incorrect.

Extortion means: Unjust exaction (as by the misuse of authority)

Imposition means: An uncalled-for burden

6. C

Options A and B can be derived from the lines: We crave certainty because it makes us feel more safe. But in an increasingly complex and pluralistic world, there aren't any simple solutions. Great leaders are defined today not by having the right answers but by the willingness to embrace and grapple with conflicting and sometimes paradoxical "truths."

Option C is incorrect: Nearly all of us perceive honesty as a virtue. It gives us a solid ground to stand on, and therefore makes us more trusting and secure. Or does it? Honesty overused — treated as a singular virtue by itself — can actually lead to cruelty.

Option D is correct: By contrast, I consulted not long ago for a financial services company whose leaders prided themselves on an unusually collegial culture — rare for that industry.

7. A

Option A is incorrect: A prosecutor requires decisiveness to do his job well. What Mr. Stroud apparently lacked was an equal degree of open-mindedness, until it was much too late.

Mr. Stroud lacked open-mindedness and this was the problem.

Options B and C can be derived from the lines: Reflecting back on his zeal to convict, Mr. Stroud was deeply repentant. "I was arrogant, narcissistic, and caught up in the culture of winning," he told "60 Minutes." ...The capacity to own his failure may now be a saving grace in Mr. Stroud's life, but it cost Mr. Ford his.

Option D can be derived from the lines: The capacity to own his failure may now be a saving grace in Mr. Stroud's life, but it cost Mr. Ford his. He died of cancer four months after his release from prison.

8.C

You need to exclude options with a negative implication straightaway.

Option A is excluded as the author wants leaders to be more compassionate.

Option B is the opposite of option C. We can see that option C is more inclusive than option B and implies that leaders are more open to discussion.

Option D is the tricky one. You need to be careful with this option. Remember, the author does not say that leaders should direct more; he does say that leaders should be more inclusive in their thought process.

9. D

In the given case, all of the above are valid reasons for using metaphors and allegories to describe depression.

Options A and C are derived from the lines: It is tumbleweed distress that thrives on thin air, growing despite its detachment from the nourishing earth. It can be described only in metaphor and allegory.

Option B is derived from the lines: Highly politicized rhetoric has blurred the distinction between depression and its consequences — the distinction between how you feel and how you act in response. This is in part a social and medical phenomenon, but it is also the result of linguistic vagary attached to emotional vagary.

Remember, you need to keep the overall context of the paragraph in mind to answer the given question here.

10. C

Three out of the four options in the given case are correct.

We need to spot the odd one out.

Option A can be derived from the line: Grief is depression in proportion to circumstance; depression is grief out of proportion to circumstance.

Option B can be derived from the line: Depression is not just a lot of pain; but too much pain can compost itself into depression.

Option D can be derived from the lines: But despite the enthusiastic claims of pharmaceutical science, depression cannot be wiped out so long as we are creatures conscious of our own selves. It can at best be contained — and containing is all that current treatments for depression aim to do.

Option C is the incorrect one in this case. Refer to the lines: Love, though it is not prophylactic against depression, is what cushions the mind and protects it from itself.

This implies that even though love can help in containing depression, it cannot really eliminate it.

11. C

Options A and B can be derived from the lines: In good spirits, some love themselves and some love others and some love work and some love God: any of these passions can furnish that vital sense of purpose that is the opposite of depression.... Even those people whose faith promises them that this will all be different in the next world cannot help experiencing anguish in this one

Option D can be derived from the lines: Medications and psychotherapy can renew that protection, making it easier to love and be loved, and that is why they work. ...We live, however, in a time of increasing palliatives

Option C is the odd one out here as there is no mention of 'self-belief' in the passage.

12. C

Solitude means: A state of social isolation/ the state or situation of being alone

Autonomous means: Existing as an independent entity

The given extract is actually referring to human existence as something which is solitary/alone because of our independent bodies. This sentiment is best reflected by option C.

Options A and B are incorrect as this specific extract is not about despair/grief/sorrow or escaping these sentiments.

Option D is incorrect as there is no reference in this extract that we are driven to be alone; this sentiment is clearly incorrect in the given case.

13. B

The author of this passage exhibits his views very clearly on the subject by exhibiting his problems with the implementation of the wilderness act by authorities; while this is clearly negative in nature, his views on the wilderness act as such are pretty practical and not too negative. His practicality of the situation is correctly communicated by option B.

14. D

Throughout the passage the author is focussing on the problems in the implementation of the wilderness act and how the situation has to be improved.

15. D

In the passage, it states the forest service's lackadaisical enforcement had increased risks which is something that is not mentioned in the passage. The passage actually mentions the opposite and states how stringent the authorities have been

16. B

Sentence III is incorrect as it changes 40 Percent to 20 Percent.

17. C

The passage does not mention success in quantitative investing, only entry. This leads to option A and D being incorrect. Option B is incorrect as it does not include computing power, which is central to the passage. Option C is the correct choice.

18. B

The passage talks about the excitement of microbiologists and the questions about food raised by other microbiologists. This is best captured by option 2.

Option A is incorrect as the discovering microbiologists were not cautious.

Option C is incorrect as the microbiologists who asked the question were not the same as the microbiologists who discovered the fish.

Option D is incorrect as the microbiologists are not quoted as having seen the fish, only as having discovered them.

19. C

Option A is ruled out as stable times are not mentioned in the paragraph

Option B is ruled out in the given case as the author does not highlight how rapid change can be avoided in the given context. The focus is on cults and leaders brainwashing.

Option C is the perfect choice in this case as it highlights the central idea of the author and brings to mind the most important points in the passage. For these questions, you should break down the paragraph into parts and keep the key ideas in mind. You should then match these with the given answer options.

20. B

Putin would not allow Ukraine to become a bastion of the West, and the rebellion was the last straw. On the basis of the previous two sentences and the overall tone of the passage, the next sentence will discuss Russia's response, which will be robust. Option B is the best option.

21. B

The passage discusses epilepsy and its classifications. One of the seizure categories discussed in the previous clause is epileptic. Therefore, the following clause will discuss additional forms of seizures. Given that epilepsy is defined in the previous clause, this would logically concern other causes. Option B is the best option.

22.1342

Explanation:

This question can be easily solved with the help of two clues: identifying the opening sentence 1 and the order of statements: 42.

23. 2134

Statement 2 is the first sentence of the passage since it is about the insurance industry as a whole in the country and the issues in the industry. Statement 1 comes after that with detailed description of the same and statement 3 comes after that with the relation between the two aspects of insurance business. Statement 4 comes after that because it bares the actual picture of the insurance industry in India.

24. 4213

Sentence 4 introduces the magazine. Sentence 2 continues with the introduction and sentences 1 and 3 continue describing the problems. Making 4213 the right order.

Section - Data Interpretation & Logical Reasoning

25. 2022

From observation of the graphs it can be seen that in 2022 the number of Sales-Executives was the second highest (less by a small amount from the highest in 2020), and the sales revenue per Executive was the highest (more by a large amount from the one in 2020).

The total sales revenue in a year is equal to the product of the sales revenue per Executive per year to the number of Executives in the year

Hence, the sales revenue of M/s G D Pharmaceuticals from Boroline was the highest in 2022

26. 0.81

Sales revenue per Executive from Boroline in 2019 = Rs 2.6 crores

If the profit percentage = 45%, then sales revenue = 145%

Thus, 145% = Rs 2.6 crores

So 45% = $(2.6/145) \times 45$ = Rs 0.81 crores

Hence, the amount of profit per Sales-Executive made from Boroline in 2019 = Rs 0.81 crores

27. C

Average number of Sales-Executives from 2018 to 2022 = $(120+145+218+150+190)/5 = 823/5 = 164.6$

Hence, in the 2 years of 2020 and 2022, the average numbers of Sales-Executives were more than the average number of Sales-Executives for the given period

28. D

Total sales revenue from Boroline in the year 2022 = (3.2×190) = Rs 608 crores

Thus targeted total sales revenue from Boroline in the year 2023 = $(608 \times 164)/100$ = Rs 997.12 crores

Total Sales-Executives in the year 2022 = 190

Targeted Sales-Executives in the year 2023 = $(190 \times 110)/100$ = 209

Hence, the targeted sales revenue per Executive per year of Boroline in 2023 = $(997.12/209)$ = Rs 4.77 crores

29. C

Total sales revenue of Boroline in 2018 = (2.0×120) = Rs 240 crores

Total sales revenue of Boroline in 2022 = (3.2×190) = Rs 608 crores

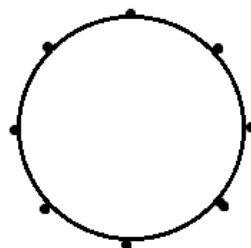
The overall increase of the total sales revenue of Boroline from 2018 to 2022 = $(608 - 240)$ = Rs 368 crores

So, the percentage increase of the total sales revenue of Boroline from 2018 to 2022 = $(368/240) \times 100$ = 153.33%

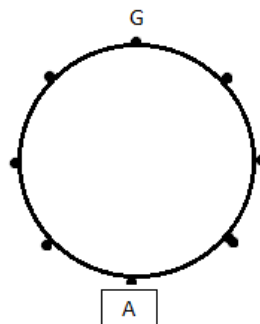
Hence, the average percentage increase of the total sales revenue of Boroline from 2018 to 2022 = $(153.33/4)$ = 38.33%

30. A

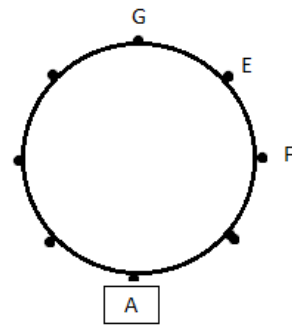
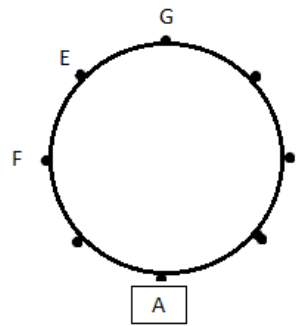
A to H are four married couples in no specific order who are sitting around a round table equidistant from each other. Thus the table has 8 equidistant sitting positions :



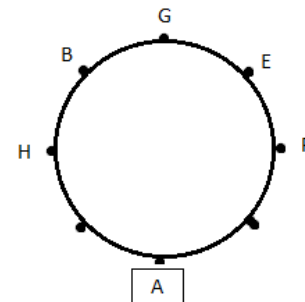
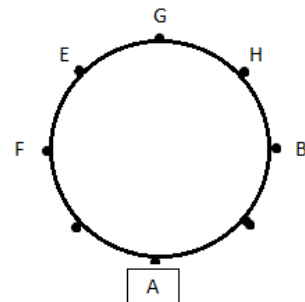
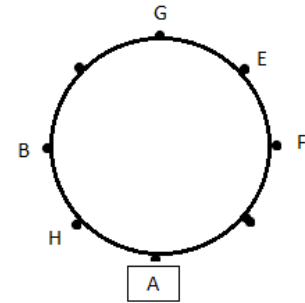
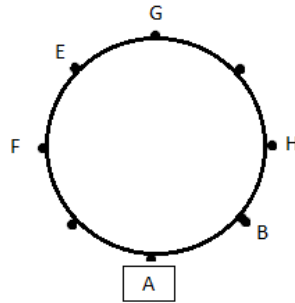
A is a man who is sitting opposite to G. Thus :



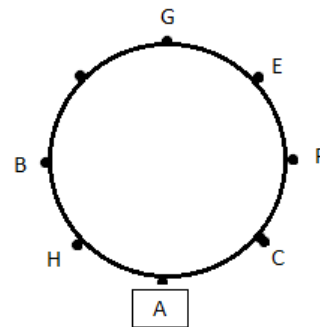
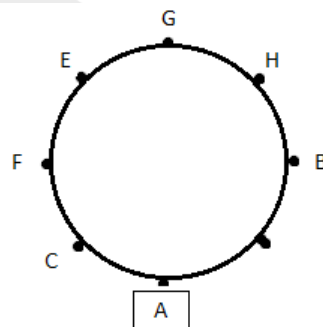
E has both F and G as neighbours. Two cases arise from this point :



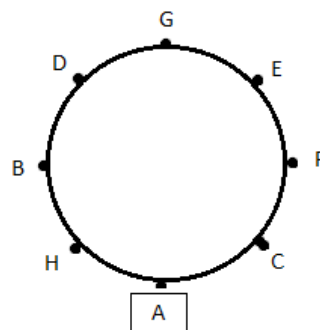
H is to the immediate right of B. Four cases rise from this point :



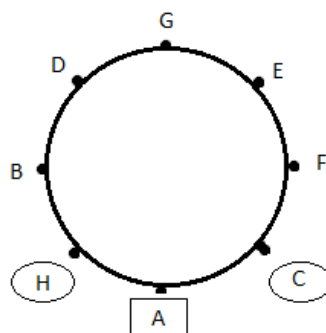
C and B have two persons sitting in between them. Two cases are only possible out of the above four cases due to this point :



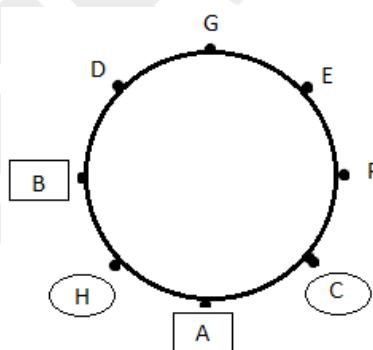
But C and H are not sitting opposite to each other. Hence the first case from above does not hold. Hence the final positions of seating are :



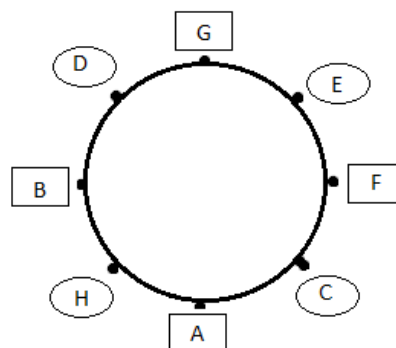
It is given that neither any couple nor any men are sitting next to each other. So since A is a man, C and H must be women. Thus :



C and B is a couple. Since C is a woman, thus B must be a man. Thus :



There are two men among the others, and no men are sitting next to each other. So G and F are bound to be men and D and E women. Hence :



C and B are a couple.

G cannot be the husband of D, E and C. So H and G must be another couple.

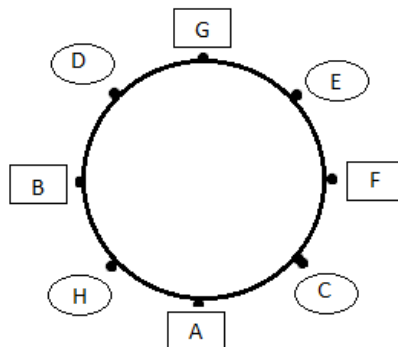
F cannot be the husband of E, C and H. So D and F must be the third couple.

So the fourth couple is E and A.

Hence F is sitting between E and C

31. B

We already know that the final arrangement is as follows :

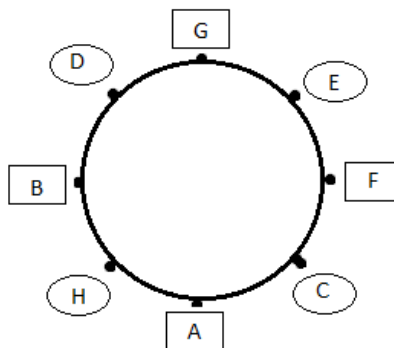


with C–B, H–G, D–F, and E–A being the couples.

Out of the options only A and F cannot be a couple.

32. C

We already know that the final arrangement is as follows :

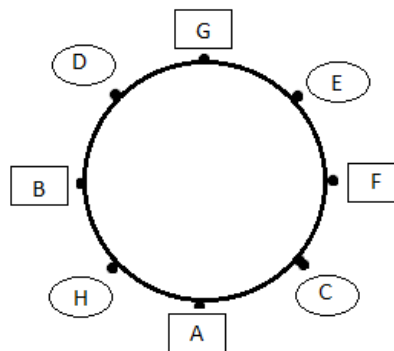


with C–B, H–G, D–F, and E–A being the couples.

Hence, F is married to D

33. D

We already know that the final arrangement is as follows :



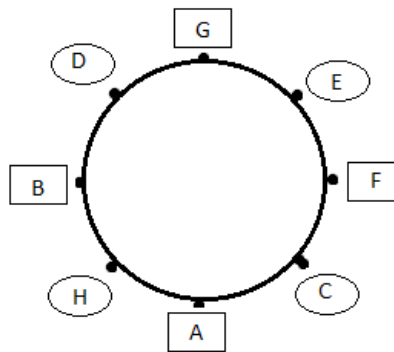
with C–B, H–G, D–F, and E–A being the couples.

The man sitting between D and E is G.

H is married to G

34. D

We already know that the final arrangement is as follows :



with C–B, H–G, D–F, and E–A being the couples.

We can observe that no two women are neighbours

Hence the answer is 'None of the above'.

35. A

Ratio of the overall inflow and the overall outflow of funds by Ekart logistics Pvt Ltd in 2022 = $600 : 540 = 10 : 9$

Ratio of the percentage earned by International Bookings and the percentage spent on Fuel by Ekart logistics Pvt Ltd in 2022 = $30 : 20 = 3 : 2$

Hence the ratio of the amount earned by International Bookings and the amount spent on Fuel by Ekart logistics Pvt Ltd in 2022

$$= (10 \times 3) : (9 \times 2)$$

$$= 30 : 18$$

$$= 5 : 3$$

36. 300

The sum of the inflow due to Interstate Bookings and Sundry Income in percentage = $15 + 5 = 20\%$

So, $20\% = 150$ crore rupees

Thus, overall inflow of Ekart logistics Pvt Ltd in 2022 = $(150 \times 100) / 20 = 750$ crore rupees

The sum of the outflow due to Pensions and Dividends in percentage = $7+5 = 12\%$

So, $12\% = 54$ crore rupees

Thus, overall outflow of Ekart logistics Pvt Ltd in 2022 = $(54 \times 100)/12 = 450$ crore rupees

Hence the overall profit of Ekart logistics Pvt Ltd in 2022 = $750 - 450 = 300$ crore rupees

37. 342

Let the total outflow of funds of Ekart logistics Pvt Ltd in 2022 be $100x$

So the total inflow of funds = $95x$

Resulting loss = $5x$

So, $5x = 60$ crore rupees

or, $x = 12$ crore rupees

Inflow due to International Bookings = 30% of $95x = (30 \times 95x)/100 = 28.5x$

Hence the inflow of funds due to International Bookings by Ekart logistics Pvt Ltd in 2022 = $28.5 \times 12 = 342$ crore rupees

38. D

Let the total inflow of funds of Ekart logistics Pvt Ltd in 2022 be $100x$

So value of Interstate Bookings = 15% of $100x = 15x$

Also value of International Bookings = 30% of $100x = 30x$

Let the total outflow of funds of Ekart logistics Pvt Ltd in 2022 be $100y$

So value of Lease/Duty Charges = 20% of $100y = 20y$

Also value of Wages = 30% of $100y = 30y$

As per data given,

$15x = 20y$ or, $x = 4y/3$

Hence, ratio of the International Bookings and Wages of Ekart logistics Pvt Ltd in 2022 = $30x : 30y = x : y = 4y/3 : y = 4 : 3$

39. 20.75

Let the total outflow of funds of Ekart logistics Pvt Ltd in 2022 be $100x$

So, value of Wages in 2022 = 30% of $100x = 30x$

Also value of Fuel in 2022 = 20% of $100x = 20x$

Hence the deficit of outflow under the head of Wages of Ekart logistics Pvt Ltd in 2021 = $(12 \times 30x)/100 = 3.6x$

The outflow under the head of Fuel of Ekart logistics Pvt Ltd in 2021 remains the same at $20x$

Thus total outflow of funds of Ekart logistics Pvt Ltd in 2021 = $100x - 3.6x = 96.4x$

Hence, the percentage of Fuel compared to the total outflow of funds in 2021 = $(20x \times 100)/96.4x = 20.75\%$

40. A

It is given that the National Champion Driver's title in 2019 was won by Mr Chetan Shivram, and in 2020 by the gentleman representing Team JK Tyres.

Tabulating the information, we can say :

	2017	2018	2019	2020	2021
Winner of INRC National Champion Driver's title			Mr Chetan Shivram		
Team representing				Team JK Tyres	

Now,

Mr Karna Kadur represented Team Yokahama

Mr Aditya Thakur represented Team Chettinad Sports

Mr Amittrajit Ghosh did not represent Team Akshara Racing. Nor did he win the title in 2020. So neither was Mr Amittrajit Ghosh representing Team JK Tyres

Hence we can conclude that Mr Amittrajit Ghosh was representing the only other remaining team – Team RRPM, and Team Akshara Racing was represented by Mr Chetan Shivram

Also Team JK Tyres was represented by the only other remaining gentleman – Mr Gaurav Gill

Again,

Mr Aditya Thakur representing Team Chettinad Sports did not win title in 2017

Mr Amittrajit Ghosh representing Team RRPM did not win title in 2017 or 2021

Mr Chetan Shivram representing Team Akshara Racing won title in 2019

Mr Gaurav Gill representing Team JK Tyres won title in 2020

Hence the 2017 winner of the National Champion Driver's title was Mr Karna Kadur representing Team Yokahama

Also the 2018 winner of the National Champion Driver's title was Mr Amittrajit Ghosh representing Team RRPM

Thus the 2021 winner of the National Champion Driver's title was Mr Aditya Thakur representing Team Chettinad Sports

Hence :

	2017	2018	2019	2020	2021
Winner of INRC National Champion Driver's title	Mr Karna Kadur	Mr Amittrajit Ghosh	Mr Chetan Shivram	Mr Gaurav Gill	Mr Aditya Thakur
Team representing	Team Yokahama	Team RRPM	Team Akshara Racing	Team JK Tyres	Team Chettinad Sporting

Hence, the gentleman from Team RRPM won the INRC National Champion Driver's title in 2018

41. B

We now know that :

	2017	2018	2019	2020	2021
Winner of INRC National Champion Driver's title	Mr Karna Kadur	Mr Amittrajit Ghosh	Mr Chetan Shivram	Mr Gaurav Gill	Mr Aditya Thakur
Team representing	Team Yokahama	Team RRPM	Team Akshara Racing	Team JK Tyres	Team Chettinad Sporting

Hence, Mr Amittrajit Ghosh won the INRC National Champion Driver's title representing Team RRPM

42. 2017

We now know that :

	2017	2018	2019	2020	2021
Winner of INRC National Champion Driver's title	Mr Karna Kadur	Mr Amittrajit Ghosh	Mr Chetan Shivram	Mr Gaurav Gill	Mr Aditya Thakur
Team representing	Team Yokahama	Team RRPM	Team Akshara Racing	Team JK Tyres	Team Chettinad Sporting

It is also informed that Mr Karna Kadur won the title representing Team Yokahama, where he was assisted by the legendary navigator Mr Nikhil V. Pai, who came out of retirement for only that one season since 2012

Mr Karna Kadur won the title representing Team Yokahama in 2017.

Hence, he must have been assisted by the legendary navigator Mr Nikhil V. Pai in the year 2017

43. D

We now know that :

	2017	2018	2019	2020	2021
Winner of INRC National Champion Driver's title	Mr Karna Kadur	Mr Amittrajit Ghosh	Mr Chetan Shivram	Mr Gaurav Gill	Mr Aditya Thakur
Team representing	Team Yokahama	Team RRPM	Team Akshara Racing	Team JK Tyres	Team Chettinad Sporting

Hence we can see that :

Option A is false, as Mr Karna Kadur did win the INRC National Champion Driver's title while representing Team Yokahama

Option B is false, as Mr Amittrajit Ghosh did not win the INRC National Champion Driver's title while representing Team Yokahama

Option C is false, as the winner of the INRC National Champion Driver's title in 2021 was representing Team Chettinad Sporting

Option D is true, as Mr Gaurav Gill did win the title of the INRC National Champion Driver in 2020

44. C

We now know that :

	2017	2018	2019	2020	2021
Winner of INRC National Champion Driver's title	Mr Karna Kadur	Mr Amittrajit Ghosh	Mr Chetan Shivram	Mr Gaurav Gill	Mr Aditya Thakur
Team representing	Team Yokahama	Team RRPM	Team Akshara Racing	Team JK Tyres	Team Chettinad Sporting

Hence, the gentleman from Team Chettinad Sporting won the title of the INRC National Champion Driver in 2021

Section - Quantitative Aptitude

45. 4

$$|y| \leq 10$$

From this, we get $-10 \leq y \leq 10$

$$\text{Also, } x^2 = (16+y)/2$$

$$\text{Max } [(16+y)/2] = (16+10)/2 = 13$$

$$\text{Min } [(16+y)/2] = (16-10)/2 = 3$$

Perfect square values between 3 and 13 will give us integral solutions for x and y.

There are only two perfect square values between 3 and 13 i.e. 4 and 9.

So, x can have 4 values.

46. B

OS = OT (both are radii of same circle)

OS = TR (Given)

So, OS = TR = OT = x (say)

Therefore, OR = OT + TR = 2x

$$OR^2 = OS^2 + SR^2$$

$$(2x)^2 = x^2 + SR^2$$

$$SR = x\sqrt{3}$$

PQ = PS = SR = $x\sqrt{3}$ (sides of a square)

$$\frac{\text{Area of triangle PQS}}{\text{Area of triangle OSR}} = \frac{\frac{1}{2}(x\sqrt{3})(x\sqrt{3})}{\frac{1}{2}(x\sqrt{3})x} = \sqrt{3}:1$$

47. 160

Tap A fills 4 buckets in 20 mins or 12 buckets in 1 hr.

Tap B fills 8 buckets in 1 hr.

Tap C empties 4 buckets in 1 hr.

Effectively all the three fills 16 buckets in 1 hr and 32 buckets in 2hrs.

Capacity of tank = $32 \times 5 = 160$ litres.

48. 9

Since, arithmetic mean of first 7 terms of AP is 8 which means 4th term of AP is 8 and fourth term of GP is also 8.

Let first term of GP be a and then first term of AP will be $2a$.

If common ratio of GP is r then 2nd and 3rd term of GP will be ar and ar^2 respectively.

$$\text{So, } 6 = \sqrt{(ar)(ar^2)} = \sqrt{a^2 r^3}$$

$$\Rightarrow 36 = a^2 r^3$$

$$\text{Fourth term of GP} = ar^3 = 8$$

From above two equations we get $a = 9/2$

Therefore, first term of AP = 9.

49. C

Let Gym is to be built at x km from school A towards school B, then

$$\text{Expenditure} = x(100)(2.8) + (200-x)40(2.8)$$

$$\text{Or, Expenditure} = 28[10x + (200-x)4]$$

$$\text{Or, Expenditure} = 28[6x + 800]$$

For this x should be minimum

So, x should be zero. Therefore, Gym should build at school A.

50. 882

Batsman	Bowlers	Wicket keeper	Allrounders
Rahul, Shubhman + 4	5	3	2

(i) Exactly 1 Wicket keeper is chosen

Rahul or Shubman + 1 Wicket Keeper + 5 from allrounders and bowlers + Remaining are batsmen

$$\text{No of ways} = {}^2C_1 \times {}^3C_1 \times {}^7C_5 \times {}^4C_4 = 126$$

(ii) Exactly 2 Wicket keepers are chosen

Rahul or Shubman + 2 Wicket Keeper + 5 from allrounders and bowlers + Remaining are batsmen

$$\text{No of ways} = {}^2C_1 \times {}^3C_2 \times {}^7C_5 \times {}^4C_3 = 504$$

(iii) Exactly 3 Wicket keepers are chosen

Rahul or Shubman + 3 Wicket Keeper + 5 from allrounders and bowlers + Remaining are batsmen

$$\text{No of ways} = {}^2C_1 \times {}^3C_3 \times {}^7C_5 \times {}^4C_2 = 252$$

$$\text{Total number of ways} = 126 + 504 + 252 = 882$$

51. A

From statement 1:

x , y and z must be odd.

So, $z(z^2 - x^2)$ must be even.

Yes, statement I is sufficient to answer this question.

From statement II:

If x and y are even and z is odd, then $z(z^2 - x^2)$ is odd

If x and z are even and y is odd, then $z(z^2 - x^2)$ is even.

So, both answers are possible. Therefore, statement II is alone is not sufficient to answer this question.

52. 18

Let Speed of train A be $2x$ kmph and that of B is $3x$ kmph.

To reach at mid-way, train B took 3 hrs less than that of A.

Let time taken by train A to reach at mid-way be t hrs and therefore that by B will be $(t-3)$ hrs.

Therefore, $2xt = 3x(t-3)$

On solving, $t = 9$ hrs

So, time taken by Train A for its journey from X to Y will be 18 hrs.

53. D

As we know, If $a^x = y$, then $x = \log_a y$

So, $(x + y) = \log_{16} 6^{\log_{36} 4}$

$\Rightarrow (x + y) = (\log_{36} 4) \log_{16} 6$

$\Rightarrow (x + y) = (1/4)(\log_6 4)(\log_4 6) = 1/4$

54. D

To satisfy the above condition,

Maximum average age of the staff above or equal to 47 years must be 47.

And to get the maximum value of n , average age of staff less than 47 years should be 23 years.

Therefore,

$47 \times 25 + n \times 23 = 35(25 + n)$

$\Rightarrow 1175 + 23n = 875 + 35n$

$\Rightarrow 300 = 12n$

$\Rightarrow n = 25$

55. 10

Distance of the first chord (6 cm) from the center = $\sqrt{r^2 - 9}$

Distance of the second chord (10 cm) from the center = $\sqrt{r^2 - 25}$

According to question, sum of above two distances must be an integer value and this is possible only when $r^2 = 25$.

So, minimum value of diameter = 10 cm.

56. D

Group 1 has 1 element, group 2 has 2^2 elements, group 3 has 3^2 elements and so on.

Therefore, first 8 groups have = $8(8+1)(16+1)/6 = 204$ elements

So, sum of these 204 elements (S_1) = sum of 204 odd numbers starting from 7 – sum of odd natural numbers up to 5

So, $(S_1) = (204/2) (2 \times 7 + 203 \times 2) - (1 + 3 + 5) = 42831$

Group 9 contains 81 numbers starting from $(204 \times 2 + 7 = 415)$

Sum of numbers in group 9 (S_2) = $(81/2) (2 \times 415 + 80 \times 2) = 40095$

$S_1 - S_2 = 42831 - 40095 = 2736$

57. D

Let x and y are the cost prices of two varieties of rice, then

Case 1: loss is 7.14% if A and B are mixed in the ratio 1: 2

Cost Price per Kg = $(x + 2y)/3$

$$\frac{SP \text{ per Kg}}{CP \text{ per Kg}} = \frac{6}{7}$$

$$\Rightarrow \frac{60}{(x + 2y)/3} = \frac{6}{7}$$

$$\Rightarrow x + 2y = 210$$

Case 2: No Profit and No Loss if mixed in the ratio 2: 1

Cost price per Kg = $(2x + y)/3$

$$\frac{SP \text{ per Kg}}{CP \text{ per Kg}} = \frac{1}{1}$$

$$\Rightarrow \frac{60}{(2x + y)/3} = 1$$

$$\Rightarrow 2x + y = 180$$

On solving both equations, we get, $x = 50$ per Kg and $y = 80$ per Kg
 $x: y = 5: 8$

58. A

According to question:

$$5F + 5B + 8E + 3L = 8F + 4B + 8E + 2L = 8F + 4B + 5E + 4L$$

$$\text{Also, } L = B + 50\% \text{ of } B = 3B/2$$

One more condition is given;

$$15L = 120\% (5F + 5B + 8E + 3L)$$

On solving, above equations, we get $L = 240$

59. C

Let males = $100x$

Females = $100y$

Total members = $100x + 100y$

60% of male members are less than the age of 28 years; 40% of female members are less than 28 years; 42% of the total members are less than 28 years of age.

Therefore,

$$60x + 40y = 42x + 42y$$

$$\Rightarrow 18x = 2y$$

$$\Rightarrow x: y = 1: 9$$

$$\text{So, male: Total} = 1: (1+9) = 1: 10$$

60. 48

Since profit is 20%; Actual selling Price = \$42

Expected Selling Price = $p - 8.33\%$ of $p = 11p/12$

But due to some confusion, he did a wrong transaction \$2 against him.

So, $11p/12 - 2 = 42$

$p = \$48$

61. 7740

Let P is principal and R is rate of interest per annum.

Interest for 1 st year	$P(R/100)$
Interest for 2 nd year	$P(R/100) + P(R/100)^2$
Interest for 3 rd year	$P(R/100) + 2P(R/100)^2 + P(R/100)^3$

CI for 2nd year/ CI for 3rd year = $5/6$

So, $[P(R/100) + P(R/100)^2] / [P(R/100) + 2P(R/100)^2 + P(R/100)^3] = 5/6$

$\Rightarrow P(R/100)[1 + R/100] / P(R/100)[1 + 2R/100 + (R/100)^2] = 5/6$

If $R/100 = x$

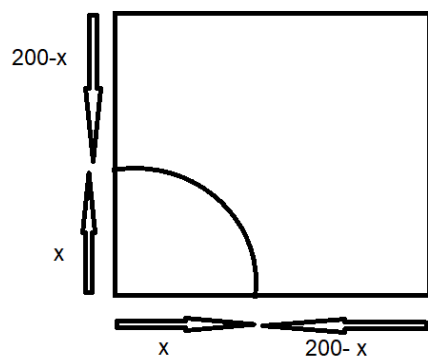
Then, $(1+x)/(1+2x+x^2) = 5/6$

On solving, $x = 1/5$ i.e. $R = 20\%$

So, we will get 60% simple interest in three years.

So, interest in 3 years = 60% of 12900 = 7740

62. C



Radius of quadrant = x

Perimeter of quadrant = $x + x + (22/7)(x/2) = 25x/7 = 50$

So, $x = 14$ m

So, Area of quadrant base = $(22/7)x^2 / 4 = 154$ sq m

Volume of quadrant base structure = Area of base x height = 154×10 cubic metre

Area of base of remaining part = Area of square – area of quadrant

$= 200^2 - 154 = 39846$ sq m

Volume of 3-D structure on this base = Area of base x height = 1540

$\Rightarrow$ height = $1540/39846 = 0.0386$ m

63. C

Put $x = 1$

$5f(1) + 3f(-1) = 5 - 10 = -5$

Put $x = -1$

$5f(-1) + 3f(1) = 5 - 10 = -5$

On solving above equations,

We get $f(1) = f(-1) = -5/8$

So, $f(1) - 2f(-1) = -5/8 - 2(-5/8) = 5/8$

64. D

Marks in English = 55

Marks in History = 72

Target Marks (E + H + S) = 70% of 250 = 175

Marks to be scored in Sociology = $175 - (55 + 72) = 48$ out of 50 which is 96%

65. B

Increase in total = $2 \times 10 = 20$ years

Total age of two men is greater than total age of two women by 20 years.

Total age of two women = $45 + 65 - 20 = 90$

Age of two women are 54 years and 36 years respectively (since ratio of their ages is 3: 2)

Difference of squares of their ages = $54^2 - 36^2 = 1620$

Clearly option a, c and d are incorrect.

66. B

Let D has coordinates (x, y)

AD = BC [opposite sides of a parallelogram]

$AD^2 = BC^2$

$(6 - x)^2 + (1 - y)^2 = (9 - 8)^2 + (4 - 2)^2 = 5$

Also,

CD = AB [opposite sides of a parallelogram]

$CD^2 = BA^2$

$(9 - x)^2 + (4 - y)^2 = (6 - 8)^2 + (1 - 2)^2 = 5$

On solving both equations

$(x, y) = (7, 3)$

D (7, 3) and C (9, 4)

DE: EC = 3: 2

x- coordinate of E = $[3 \times 9 + 2 \times 7]/5 = 41/5$

y- coordinate of E = $[3 \times 4 + 2 \times 3]/5 = 18/5$

Area of $\triangle ADE$ with vertices (6, 1), (7, 3) and $(41/5, 18/5)$

MOCK TEST – 9

Section - 1 - Verbal Ability & Reading Comprehension

Directions for questions 1 to 5: The passage given below is followed by a set of questions. Choose the most appropriate answer to each question.

Passage-1

At the end of his life, the English naturalist Charles Darwin became intrigued by the musicality of worms. In the last book he ever wrote, in 1881, he describes a series of experiments on his vermicular subjects. Worms, Darwin discovered, are sensitive to vibrations when transmitted through a solid surface, but tone-deaf and unresponsive to the shriek of a whistle or the bellow of a bassoon. Earlier, in the 1760s, the French natural philosopher Comte de Buffon heated up balls of iron and other minerals until they were white-hot. Then, by sense of touch alone, he recorded how long it took them to cool to room temperature. A hundred years before that, Isaac Newton wrote about the time he slid a bodkin – a kind of thick tailor’s needle – between his skull and his eye, and rubbed the needle so as to distort the shape of his own eyeball.

These experiments are all pretty wacky, but they still bear the mark of the scientific. Each one involves the careful recording and assessment of data. Darwin was excluding the hypothesis that hearing explained earthworm behaviour; Buffon extrapolated the age of the Earth from a wide range of geological materials (his estimate: 75,000 years); and Newton’s unpleasant self-surgery helped to develop his theory of optics, by clarifying the relationship between the eye’s geometry and the resulting visual effects. Their methods might have been unorthodox, but they were following their intellectual instincts about what the enquiry demanded. They had licence to be scientific mavericks.

The word ‘maverick’ has a surprising history. In the 1860s, a Texan lawyer and rancher stopped branding his cattle. Of course, the unbranded livestock quickly became identified as his. The man’s name? Samuel Maverick. By the 1880s, through one of those strange transformations so distinctive of language, the term had come to mean anyone who refuses to abide by the rules. I like the connection with cattle: where most cows and steers follow the herd, some – the unbranded – find their own path.

Nowadays scientists tend to shun the ‘maverick’ label. If you’ve hung out in a lab lately, you’ll notice that scientific researchers are often terrible gossips. Being labelled a ‘maverick’, a ‘crank’ or a ‘little bit crazy’ can be career-killing. The result is what the philosopher Huw Price at the University of Cambridge calls ‘reputation traps’: if an area of study gets a bad smell, a waft of the illegitimate, serious scientists won’t go anywhere near it.

Mavericks such as Newton, Buffon and Darwin operated in a very different time to our own. Theirs was the age of the ‘gentleman scholar’, in which research was pursued by a moneyed class with time to kill. Today, though, modern science encourages conformity. For a start, you need to get a degree to become a scientist of some stripe. You also need to publish, get peer-reviewed, obtain money from a funder, and find a job. These things all mould the young scientist: you aren’t just taught proper pipette technique, but also take on a kind of disciplinary worldview. The process of acculturation is part of what the

philosopher and historian Thomas Kuhn called a 'paradigm', a set of values, practices and basic concepts that scientists hold in common.

On top of this standardisation, careers in science are now extremely hard to come by. There's a scarcity of jobs compared with the number of applicants, and very few high-ranking and 'big impact' journals. This means that the research decisions that scientists make, particularly early on, are high-risk wagers about what will be fruitful and lead to a decent career. The road to academic stardom (and, for that matter, academic mediocrity) is littered with brilliant, passionate people who simply made bad bets. In such an environment, researchers are bound to be conservative – with the stakes set so high, taking a punt on something outlandish, and that you know is likely to hurt your career, is not a winning move.

Q1. According to the author of the passage:

- A. At the time when Newton, Buffon and Darwin operated, research was pursued by those who had time and money both.
- B. In the modern day world, one bad research decision can be the difference between a stellar and a mediocre career in sciences.
- C. Both A and B
- D. Neither A nor B

Q2. Through the passage, the author of the passage is most likely raising the question:

- A. Are scientists the problem?
- B. Can science rediscover its lost mojo?
- C. Can scientists do better?
- D. Does science need mavericks?

Q3. Which of the following adjectives can be used for scientists of the current times?

- A. Daunted and cretin
- B. Earnest and avant-garde
- C. Cautious and conformist
- D. Diffident and addled

Q4. The first two paragraphs of the passage play the role of:

- A. hypothetical scenarios followed by their true motive
- B. examples followed by their explanation
- C. examples followed by what they actually stood for
- D. observatory phenomenon followed by their core scientific basis

Q5. What does the author mean by the phrase 'taking a punt on something outlandish'?

- A. he is referring to scientists making a bet on a certain rare discovery.
- B. he is referring to scientists being creative on something which requires out of the box thinking.
- C. he is referring to scientists flipping a coin for something that has remote chances of success.
- D. he is referring to scientists taking a risk on something which seems far-fetched.

Directions for questions 6 to 9: The passage given below is followed by a set of questions. Choose the most appropriate answer to each question.

Passage-2

If ours is an age in which no end of institutions and conventions are being disrupted, it shouldn't come as a surprise that one of the most basic features of everyday life seems under serious threat. If you are fortunate enough to live in a house with a drive, look outside and you will probably see it: that four-wheeled metal box, which may well be equipped with every technological innovation imaginable, but now shows distinct signs of obsolescence.

To put it another way: after a century in which the car has sat at the heart of industrial civilisation, the age of the automobile – of mass vehicle ownership, and the idea (in the western world at least) that life is not complete without your own set of wheels – looks to be drawing to a close. Top Gear is a dead duck. No one writes pop songs about Ferraris any more. The stereotypical boy racer appears a hopeless throwback. And in our cities, the use of cars is being overtaken by altogether greener, more liberating possibilities.

The sale of diesel and petrol cars is to be outlawed in the UK from 2040. But only 10 days ago Oxford announced that it is set to be the first British city to ban all petrol and diesel cars and vans – from a handful of central streets by 2020, extending to the entire urban centre 10 years later. Paris will ban all non-electric cars by 2030, and is now in the habit of announcing car-free days on which drivers have to stay out of its historic heart. In the French city of Lyon, car numbers have fallen by 20% since 2005, and the authorities have their sights set on another drop of the same magnitude. London, meanwhile, has shredded the idea that rising prosperity always triggers rising car use, and has seen a 25% fall in the share of journeys made by car since 1990.

Last week, highlighting the increasingly likely arrival of driverless vehicles, General Motors announced that it will soon begin testing autonomous cars in the challenging conditions of New York City, apparently the latest step in the company's rapid and handsomely funded move towards building a new fleet of self-driving taxis. Earlier this year, forecasters at Bank of America tentatively claimed that the US may have reached "peak car", acknowledging that "transportation is costly and inefficient, making the sector ripe for disruption".

Q6. According to the author of the passage:

- A. No institutions and conventions are being disrupted in our age.
- B. Endless number of institutions and conventions are being disrupted in our age.
- C. Not many institutions and conventions are being disrupted in our age.
- D. All institutions and conventions are being disrupted in our age.

Q7. In the given context, the word 'throwback' means:

- A. Characteristic of a reactionary
- B. Characteristic of a formalist
- C. Characteristic of the bourgeois
- D. Characteristic of an atavist

Q8. The conclusion in the second paragraph of the passage with respect to mass vehicle ownership is based on the assumption:

- A. the personal ownership of vehicles is no longer required.

- B. there are going to be no such changes which will necessitate personal ownership of vehicles like it was in the past.
- C. vehicles no longer need to be tailored to individual tastes since the demand for these does not exist.
- D. going into the future, vehicles demand will continue to decrease at existing levels

Q9. All of the following can be inferred with certainty except:

- A. London is experiencing a period of economic prosperity.
- B. Owning a car will very soon be a thing of the past.
- C. Disruptive innovations, like ride-sharing services, car-pool apps and the use of electric vehicles, are things that are going to be part of the automobile sector.
- D. Numerous innovations are leading to a situation where personal ownership of vehicles will no longer be the norm.

Directions for questions 10 to 12: The passage given below is followed by a set of questions. Choose the most appropriate answer to each question.

Passage-3

People who live in densely populated areas are all too familiar with sensory bombardment — the continuous light and noise pollution that has come to practically define the urban environment. Over time, most city dwellers grow so accustomed to this intense stimulation that they cease to notice it. Their perceptual thresholds, we might say, shift upward.

Others, though, see the need for a bulwark against this sensory pollution. In Idaho, where a good amount of pristine earth and sky still exists, officials are proposing the first “dark sky reserve” in the United States (a few smaller areas are already certified as dark sky parks and sanctuaries). If approved, it will strictly limit the use of artificial light to preserve the unique conditions that make the interstellar dust clouds of the Milky Way visible in Central Idaho on a clear night.

Of course, vision and hearing aren’t the only senses vulnerable to pollution; so are smell and taste. Just as the glow of city lights causes twinkling stars to recede from sight, so sugar- and salt-laced foods prevent the palate from experiencing subtler flavors, and strong scents can also overwhelm and confuse our olfactory register.

Even touch, which philosophers since Aristotle have typically treated differently from “distance senses,” can be compromised. Consider that we drastically narrow the field of what can or should be touched, as we spend much of our time caressing the smooth and glassy bodies and touchscreens of our cellphones. It remains to be seen (or touched upon) what this phenomenon might do to our sense of touch.

I don’t mean to depict our sensorium — the entire range and capacity of our sensory experience — as a pure state that has been defiled by light, noise, flavor and scent pollution; that would just be another version of the original-sin-and-fall narrative. I would argue rather that we have managed to turn the senses against themselves by pitting overwhelming light against lights, overpowering sound against sounds, intense flavor against flavors, penetrating aroma against aromas. In each case, the result is a marked simplification in the field of possible experiences — one or two stimuli will outshine, outsmell or outshout the rest. We thus become subject to not sensory overload but sensory underload — when incomparably strong sensations muscle out those that lay a weaker claim on our capacity to attend to the world.

Q10. A suitable title for the passage is:

- A. Our Overwhelmed Senses
- B. Our Polluted Senses
- C. Our Confused Senses
- D. Our Imbecile Senses

Q11. Which of the following senses are victims of the kind of pollution mentioned by the author?

- I. Sight
- II. Audition
- III. Gustation
- IV. Olfaction
- V. Somatosensation

- A. I, II, III, and IV
- B. II, III, IV, and V
- C. I, III, IV and V
- D. All of the above

Q12. In the last paragraph of the passage, the author:

- A. introduces us to a radical solution for the given problem at hand.
- B. highlights an alternate understanding of the same set of facts.
- C. showcases the need for novel thinking in a particular instance.
- D. reduces a complex phenomenon to simpler terms.

Directions for questions 13 to 16: The passage given below is followed by a set of questions. Choose the most appropriate answer to each question.

Passage-4

In the autumn of 1826, the English philosopher John Stuart Mill suffered a nervous breakdown — a “crisis” in his “mental history,” as he called it. Since the age of 15, Mill had been caught firmly under the intellectual spell of his father’s close friend, Jeremy Bentham. Bentham was a proponent of the principle of utility — the idea that all human action should aim to promote the greatest happiness of the greatest number. And Mill devoted much of his youthful energies to the advancement of this principle: by founding the Utilitarian Society (a fringe group of fewer than 10 members), publishing articles in popular reviews and editing Bentham’s laborious manuscripts. Utilitarianism, Mill thought, called for various social reforms: improvements in gender relations, working wages, the greater protection of free speech and a substantial broadening of the British electorate (including women’s suffrage).

There was much work to be done, but Mill was accustomed to hard work. As a child, his father placed him in a highly regimented home schooling regime. Between the ages of 8 and 12, he read all of Herodotus, Homer, Xenophon, six Platonic dialogues (in Greek), Virgil and Ovid (in Latin), and kept on reading with increasing intensity, as well as learning physics, chemistry, astronomy, and mathematics, while tutoring his younger sisters. Holidays were not permitted, “lest the habit of work should be broken, and a taste for idleness acquired.”

Not surprisingly, one of the more commonly accepted explanations of Mill’s breakdown at the age of 20, is that it was caused by cumulative mental exhaustion. But Mill himself understood it differently. In his autobiography, he wrote: *I was in a dull state of nerves, such as everybody is occasionally liable to:*

unsusceptible to enjoyment or pleasurable excitement; one of those moods when what is pleasure at other times, becomes insipid or indifferent... In this frame of mind it occurred to me to put the question directly to myself, 'Suppose that all your objects in life were realized; that all the changes in institutions and opinions which you are looking forward to, could be completely effected at this very instant: would this be a great joy and happiness to you?' And an irrepressible self-consciousness distinctly answered, 'No!' At this my heart sank within me: the whole foundation on which my life was constructed fell down. All my happiness was to have been found in the continual pursuit of this end. The end had ceased to charm, and how could there ever again be any interest in the means? I seemed to have nothing left to live for.

In the wake of this episode, Mill slipped into a six-month-long depression. There is something comical about Mill's self-implosion; it's as if he had spent years looking forward to a sailing trip only to suddenly realize, upon embarkation, that he hated boats. It is also strangely relatable. We have all lost faith in a deeply held project at one time or another. And, politically, we are in an age of upheaval; faith in old ideals seems to be dying out, creating a vacuum. Perhaps we can learn something about ourselves, and our political moment, by peering into Mill's own crisis of faith.

Q13. What does the author mean by 'women's suffrage'?

- A. women's right to freedom
- B. women's right to vote
- C. women's right to equality
- D. all of the above

Q14. All of the following can be deduced from the passage except:

- A. Mill's father was a strict task-master.
- B. Mill allegedly suffered from mental weariness at one point of time.
- C. Mill was close to achieving the goals of his life when he fell into depression.
- D. Mill did a lot of work on the material created by Bentham.

Q15. Consider the following scenario: You are on a trolley that is running its course without stopping. You cannot activate the brakes on the trolley. Ahead, on the track the trolley is due to run on, five people are tied. On another track, one person is tied. There is a lever in front of you that switches tracks. If you let the trolley run its course, it will kill the five people tied to the track. If you pull the lever, it will switch to the other track and kill only one person who is tied to the track. Should you pull the lever or not?

According to Utilitarian thought, you should:

- A. Yes
- B. No
- C. The case does not conform to Utilitarianism
- D. Maybe

Q16. The example of the boat in the last paragraph highlights:

- A. the ludicrousness of the situation
- B. the farcicality of the situation
- C. the irony of the situation
- D. the puerility of the situation

Directions for the Question: Identify the apt summary for the given paragraph. Enter the option number you deem as the correct answer.

Q17. But the more I have seen the way that the world actually works, the more I have grown to realize the flaws in how the mogul framed my assignment. Because money is not separate from power; it is a source of it. That's common knowledge in capitals worldwide. Look at the current U.S. presidential campaign. Primaries dominate the news, but the primary that matters most—the one that determines who can actually run for president—is the money primary in which the rich determine with their donations who is a “viable” candidate and who is just a wannabe.

- A. In order to win elections in the United States, money is essential.
- B. The origin of all authority is found in the possession of money.
- C. The difference between a viable contender and a wannabe is money.
- D. In many instances, power is generated from financial resources.

Directions for the Question: Identify the apt summary for the given paragraph. Enter the option number you deem as the correct answer.

Q18. Wey was saying one thing about Chinese reverse-merger companies, but the market was saying another. Short sellers were raising doubts about the accounting at many of these companies, and shares in some were falling. Wey was an assertive defender of the companies and accused the shorts of illegal market manipulation. I'd read up on Wey and knew he'd had his own regulatory issues: The state securities regulator in Oklahoma had accused him of failing to tell clients about his consulting relationships with companies whose shares he was touting. Wey was censured and agreed to a ban from the securities industry in the state, without admitting or denying the allegations.

- A. The viewpoint of Wey did not correspond with that of the market for Chinese enterprises engaging in reverse mergers.
- B. The opinion of Wey was not in line with what was happening in the market, and I was aware that Wey had a conflict of interest.
- C. The opinion held by Wey was detrimental to the market, and so, Oklahoma authorities condemned him.
- D. Wey received a reprimand from the authorities in Oklahoma.

Directions for the Question: Identify the apt summary for the given paragraph. Enter the option number you deem as the correct answer.

Q19. The word 'idealism' is used by different philosophers in somewhat different senses. We understand by it the doctrine that whatever exists, or at any rate whatever can be known to exist, must be in some sense mental. This doctrine, which is very widely held among philosophers, has several forms, and is advocated on several different grounds. The doctrine is so widely held, and so interesting in itself, that even the briefest survey of philosophy must give some account of it. Those who are unaccustomed to philosophical speculation may be inclined to dismiss such a doctrine as obviously absurd. We think of matter as having existed long before there were any minds, and it is hard to think of it as a mere product of mental activity. _____.

- A. In order for us to have any kind of grasp on what idealism is, we need to first comprehend the perspective of people who think it is manifestly ludicrous.
- B. If the fundamental essence of physical objects is mental, then there is no way that we can validly dismiss this opinion simply because it seems counterintuitive to us.

- C. It is a common belief, spoken with the air of a self-evident truth, that we cannot know for certain that anything exists that we do not already know about.
- D. But whether true or false, idealism is not to be dismissed as obviously absurd.

Directions for the Question: The question below has a paragraph given with one sentence missing in at the end. From among the answer choices given, select the sentence that can fill the blank to form a coherent paragraph.

Q20. In 1963, Edmund Gettier challenged the whole notion of what constitutes knowledge. Until he published a short paper that year called 'Is Justified True Belief Knowledge?', it was widely accepted that knowledge was justified true belief. In other words, it was thought that if you believe something, and you have justification for believing it, and your belief is in fact true, then we can say that you know that thing. Using two examples, Gettier tried to show that it isn't enough for these three conditions to be met. This problem has baffled philosophers ever since. However I don't believe we should so hastily abandon the idea that knowledge is justified true belief.

(_____)

- A. I will now show you that Gettier's examples were perfect when they were first presented to you.
- B. I will now demonstrate that Gettier's examples were faulty, to begin with.
- C. I shall now show that Gettier's examples were correct from the very beginning of the discussion.
- D. I will now show that Gettier's examples were, to begin, a rather precise representation of the problem.

Directions for the Question: The question below has a paragraph given with one sentence missing in at the end. From among the answer choices given, select the sentence that can fill the blank to form a coherent paragraph.

Q21. Rujuta Diwekar, another popular celebrity nutritionist, says on her social media page that you should gorge on a mango rather than eat 'fibre-rich' biscuits to up your fibre intake. She adds that mango contains no fat, so it cannot make one fat. It is inactivity that makes one fat. What about acne, you ask? Well, Diwekar says mango contributes to flawless skin, not acne. Then why do so many people still believe that mangoes lead to weight gain? Well, eating too much of something never does good to anyone and this rule applies to mangoes as well. Eating 1-2 mangoes a day is good for you, but if you eat too many, or binge on aam ras poori (which is harder to digest) or gobble up several mango shakes or shrikhand, you cannot expect the pounds to stay off. (_____)

- a. Eating mangoes hence can be dangerous if you are worried about the shape of your body.
- b. Unhealthy eating practices will be causing carcinogens to trigger whatever they are supposed to trigger.
- c. Thus mangoes are harmless but are portrayed as harmful, thanks to the hoax.
- d. So eat what nature provides you in the right quantities, at the right time and you will only gain health.

Directions for question 22: In the following question, rearrange the five sentences in order to form a meaningful paragraph.

TITA

Q.22

1. He truly became one of my closest friends.
2. My hardest day by far was the day before I left, Thursday.
3. That morning I got up and went to the gym to train with Josh. It was our last training session and it was so hard.
4. The tears started rolling down my cheek when I saw him as I walked up the stairs that morning.

Directions for question 23: In the following question, rearrange the five sentences in order to form a meaningful paragraph.

TITA

Q.23

1. As with so many issues — from trade and immigration to Russia and taxes — the Trump presidency has exposed a schism within the conservative movement when it comes to education policy.
2. How this question is resolved will have wide-ranging consequences — for education reform in general and for the design of school-choice initiatives in particular.
3. Let's start in the realm of broad agreement: Conservatives believe that parents should be able to choose schools for their children that match their educational priorities and moral values.
4. While expanding parental choice is a paramount objective on the right, a key question is whether choice alone is enough, or if results-based accountability ought to be sustained and strengthened, too.

Directions for question 24: In the following question, rearrange the five sentences in order to form a meaningful paragraph.

TITA

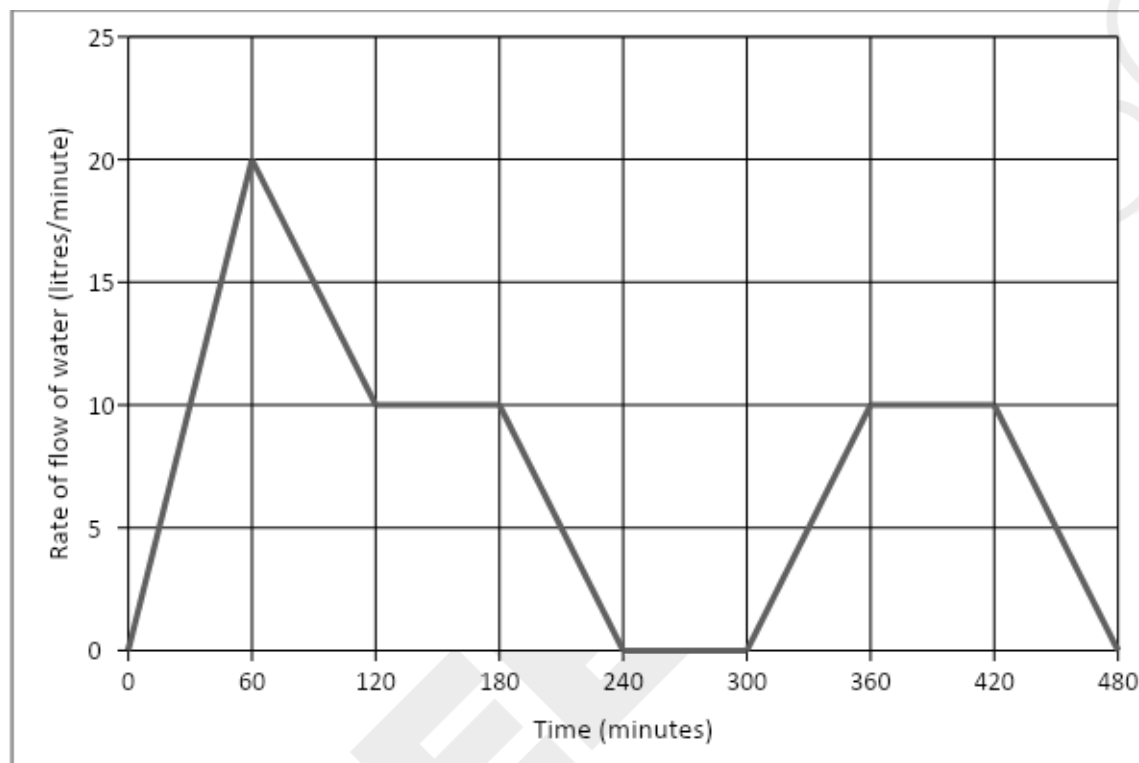
Q.24

1. Unsurprisingly therefore, one finds that companies generally pay customers a lot of attention (sometimes, too much attention!) and defer to their tastes when developing new products.
2. This implies consumer sovereignty: companies succeed at the pleasure of their customers; those that are less successful at meeting customers' interests go out of business.
3. The Art industry operates differently.
4. The theory of free market economics states that producers compete with each other to satisfy the consumption preferences of customers at the lowest price.

Section - 2 - Data Interpretation and Logical Reasoning

Directions for questions from 25 to 29 :

The graph below shows the varying rate of flow of water (litres/min) through a pipe used to fill a reservoir :



Whenever the rate of flow of water changed it did so at a uniform rate, as is apparent from the graph. The reservoir was completely filled up from being empty in the above eight hours.

Q 25 (TITA)

What was the volume of water (in litres) filled in the first two hours ?

Q 26 Quantity A : Additional volume of water that could have been filled had the filling continued at 10 litres per minute from the time of three hours to six hours after start of filling

Quantity B : 1200 litres

- A) Quantity A > Quantity B
- B) Quantity A = Quantity B
- C) Quantity A < Quantity B
- D) The relation cannot be established from the given information

Q 27 (TITA)

What volume of water (in litres) was filled in the last thirty minutes ?

Q 28(TITA)

What is the average filling rate of water (in liters per hour) for the first three hours ?

Q 29 (TITA)

What was the volume of the reservoir (in litres) ?

Directions for questions from 30 to 34 :

Amitabh, Naseeruddin, Om, Pankaj, Nawazuddin, Shahid, Shahrukh, Ajay and Jackie were nine actors from among whom three teams consisting respectively of two, three and four members had to be formed, one team each for each of the sequels of an epic trilogy to be shot by a renowned director, in any order.

The following were the conditions for the selection in the formation of the teams :

- a) Om had to have three more actors with him, as the sequel for which he was selected had four male characters
- b) Om and Jackie would represent the same character in the sequels of the trilogy, and hence they could not be in the same team
- c) Ajay and Naseeruddin would also represent the same character in the sequels of the trilogy, so could not be in the same team
- d) Shahid and Shahrukh would represent the character of twins in one of the sequels of the trilogy, and hence had to be together in the team
- e) Pankaj was acting in the sequel which had only three male characters

Q 30 If Pankaj, Nawazuddin and Ajay form the team of three members, which of the following must be true ?

- A) Jackie must be in a two member team with Naseeruddin or Amitabh
- B) Shahid must be teamed up with Naseeruddin
- C) Jackie must be in a two member team with Om or Amitabh
- D) Om would be in the team of four members with Shahid, Shahrukh and Amitabh

Q 31 If Pankaj had Amitabh as a part of his three member team, which two members among the options below should be in the team of Om ?

- A) Naseeruddin and Shahid
- B) Shahid and Shahrukh
- C) Ajay and Shahrukh
- D) Ajay and Nawazuddin

Q 32 If Om did not have Ajay in her team and Jackie and Amitabh constituted the two member team, then the actors with Om had to be ?

- A) Naseeruddin but not Shahrukh
- B) Naseeruddin and Nawazuddin
- C) Shahid, Naseeruddin and Shahrukh
- D) Shahid and Shahrukh

Q 33 (TITA)

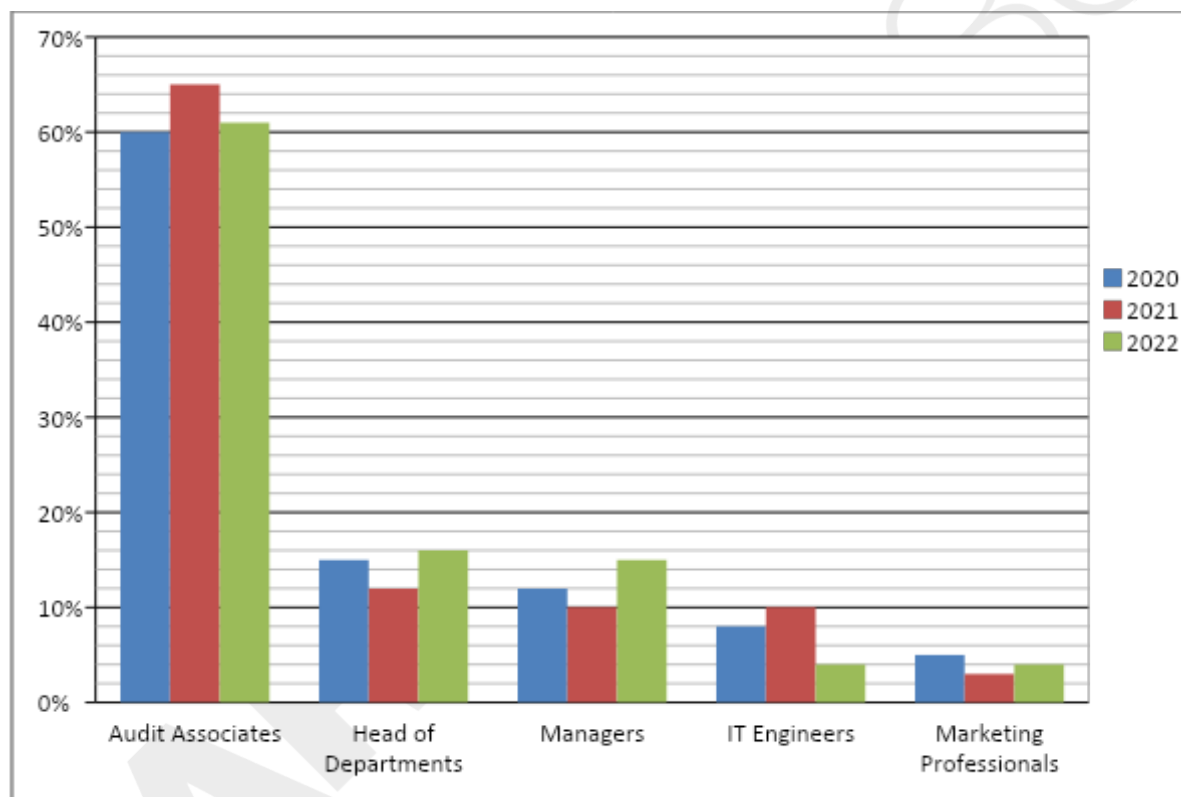
If Om and Nawazuddin were together in the same team, and Jackie was in the team having two members, then how many sets of different teams were possible ?

Q 34 If Ajay was in the same team as Om and Nawazuddin, then Jackie had to be in the same team as ?

- A) Amitabh
- B) Amitabh and Naseeruddin
- C) Naseeruddin
- D) Naseeruddin and Pankaj

Directions for questions from 35 to 39 :

The following bar-graph shows the percentage of employees working in different job profiles at M/S SPAN & Associates, a Kolkata based Audit firm over the three years – 2020, 2021 and 2022. These are the only job profiles available in the company.



Question Type: TITA

Level of Question: Level 3

Expected time to Solve: 240 secs

Topic: Data Interpretation

Chapter: Bar Graphs

Creator: Sanjay Kr Datta

Q 35 (TITA)

If the number of Managers increased by 20% in 2021 over 2020, what is the percentage change in the total number of employees working with the company between 2020 and 2021 ?

Q 36 If the number of employees increased by $x\%$ in 2021 over 2020 and the number of employees reduced by $x\%$ in 2022 over 2020, which of the following can be the value of x so that the number of employees in exactly one job profile is equal over each of the three years given ?

- A) 10
- B) 20
- C) 30
- D) 40

Q 37 Between 2020 and 2022, if the number of employees in the company increases by 10% every year over the previous year, what is the approximate difference in percentage points in the percentage change in the number of Head of Departments between 2020 and 2022 and the percentage change in the number of Managers between 2020 and 2022 ?

- A) 32.4
- B) 29.1
- C) 22.2
- D) 18.4

Q 38 If the number of employees in each of the job profiles in 2022 was greater than their corresponding numbers in 2020, which of the following can be the percentage change in the total number of employees in 2022 over 2020 ?

- A) 63%
- B) 74%
- C) 98%
- D) 105%

Q 39 Between 2020 and 2022, if the number of employees in the company increases by 12.5% in 2021 and decreases by 12.5% in 2022 over the previous year, what was the percentage growth in the number of Marketing Professionals in 2022 over 2020 ?

- A) -21.25%
- B) 25.20%
- C) -26.98%
- D) 6.80%

Directions for questions from 40 to 44 :

Anwar, Billa, Chitnis, Dilawar, Ekka, Firdous, Gulshan, Heera, Idris and Jamil were ten brave sepoy of the army of Nawab Wajid Ali Shah. They were all retiring on the same day.

At the farewell lunch organized at the Nawab's Darbar for the occasion, there was a rectangular table with four seats along each of the longer sides and one seat along each of the shorter sides.

It was seen that :

- a) Ekka was not seated to the immediate right of Anwar.
- b) Heera and Idris were not seated on the same side of the table.
- c) Dilawar was two places away from Billa but was not at the end of the table.
- d) Idris and Jamil were sitting opposite to each other.

- e) There are three of them sitting to the right of Anwar, but on the same side.
- f) Firdaus was to the immediate left of Billa and opposite to Gulshan.
- g) Chitnis and Ekka were in alternate seats.
- h) Anwar was diagonally opposite to Billa.

Q 40 The waiter started serving Mutton Biryani from Firdaus, proceeding in the anticlockwise direction. Who would be the third to be served Mutton Biryani ?

- A) Jamil
- B) Dilawar
- C) Idris
- D) Chitnis

Q 41 If Firdaus, while being seated, was facing the North direction, in which direction was Chitnis looking at, if he was looking at Billa ?

- A) West
- B) South East
- C) North
- D) North West

Q 42 How many pairs of sepoys were sitting at their seating arrangement, who had the initial letter of their names at the same gap as the twenty six arranged alphabets in english,, either clockwise or anticlockwise ?

- A) 4
- B) 5
- C) 10
- D) 8

Q 43 In the main course Mutton Biryani, Kebab, Mutton Rezala, Murg Mussallam and Pulao were on the menu. As per the Nawab's wish each sepoy had to eat two of the dishes as per their choice. In that case what is the minimum possible value of the number of the repetitions of the combination of two main courses chosen ?

- A) 4
- B) 3
- C) 2
- D) 0

Q 44 In a certain code language 'CLUELESS' is written as 'DKWC10'. How is 'GONECASE' written in that code ?

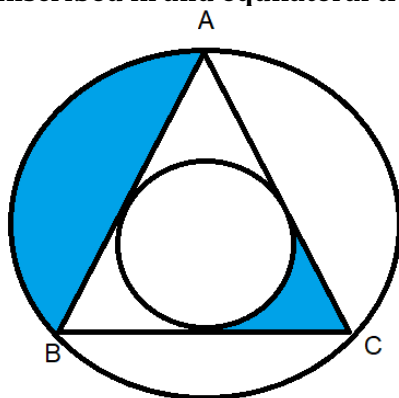
- A) EFSD23
- B) PDHR32
- C) EDPM19
- D) HNPC10

Section - 3 - Quantitative Aptitude

Q45.. From each of the two given numbers, half the smaller number is added to smaller number while subtracted from the larger number. Of the resulting numbers the larger one is four times as large as the smaller. What can be the difference between the square of the two numbers?

- (a) 1071 (b) 936 (c) 2925 (d) 11025

Q46. Two concentric circles are there as shown in the figure such that smaller circle is inscribed in and equilateral triangle of side 8 cm as shown in the figure.



Find the area of the shaded region. (in sq cm)

- (a) $16/3$ (b) 16.75 (c) 18 (d) 16π

Q47. One man can do as much work in one day as a woman can do in 3 days. A child does one half of the work in a day as a woman. If a builder hires some workers (including men, women, and children) and pays them in all Rs 14190 at the end of three days' work. Which of the following can be the ratio of men, women, and children respectively such that amount distributed among them should be integer?

- (a) 1: 2: 6 (b) 4: 5: 9 (c) 6: 2: 1 (d) 9: 5: 4

Q48. (TITA)

Find the number of factors in $5^6 - 1$

Q49. Siddhant saves his Rs 1 lakh in saving scheme which increases by at the rate of 10% per annum compounded annually. After every two years he withdrew 50% of his amount. After 6 years he has Rs n in his account. What percentage of initial amount has left in the account after 6 years?

- (a) 44.28% (b) 0%
(c) 57.71% (d) 100%

Q50. In a college, two-thirds of the students are in B. tech, one-fifth are females, and one-tenth are both. What is the fraction of students are male B. tech students?

- (a) $19/30$ (b) $2/3$ (c) $17/30$ (d) $3/2$

Q51. (TITA)

A train is moving from station A to station B and have 5 stoppages in between. Train started with the speed of x km/hr and due to some technical fault waited at 1st stoppage for x hrs. It then travels from 1st stoppage to 2nd stoppage at a speed $2x$ km/hr and again has to wait for $2x$ hours. Now Driver decided to move without stopping at any stations further in order to cover up the time wasted at a speed twice of the last speed. Train thus reaches B in 25 hrs. If distances between each stoppage are equal to 20 km. Find the total time [in hours] for which train stopped at 1st and 2nd stoppages.

X is an integer value.

Q52. (TITA)

A man has 13 friends out which 4 are boys and rest are girls. In how many ways can he invite them, if there have to be at least 2 boys and exactly 3 girls in the invitees?

Q53. If $\log_2 [\log_7 (x^2 - x + 37)] = \log_a y^2 + \log_a^{1/2} 1/y$, then what could be the value of ' x '?

- (a) a prime number (b) a composite number
(c) an even number (d) a rational number

Q54. A two-digit number exceeds the difference of the squares of its digits by 33 and exceeds sum of the squares of the digits by 15. Find the number.

- (a) 63 (b) 72 (c) 27 (d) 73

Q55. Consider a sequence of m consecutive integers. The average of the first p integers is n . If the average of all the m integers is $2n$, then what is the relation between m and p provided that n is a positive integer.

- (a) $m - p = n$ (b) $m - p = \text{multiple of } 2$ (c) $m - p$ is a perfect square
(d) $m - p = 2$

Q56. Odd natural numbers starting from 7 are divided into groups as (7), (9, 11, 13, 15), (17, 19, 21, 23, 25, 27, 29, 31, 33), ... and so on. Then, the difference of the sum of the numbers in the 9th group and sum of the numbers in group 1 to group 8 is equal to

- (a) 40095 (b) 42831 (c) 5472 (d) 2736

Q57. (TITA)

The density of a liquid is defined as the mass per unit volume of the liquid. The densities of two liquids, A and B, are in the ratio 5: 4. 70 kg of liquid A is mixed with 40 kg of liquid of B to form a mixture. In this mixture, liquid B evaporates at a rate (in kg/hr) which is twice as fast compared to that of liquid A, which evaporates at a rate of 1 kg/hour. Find the number of hours for which the mixture needs to be evaporated, for the density of the resultant mixture

to become 1.5 times that of the original mixture (i.e., before evaporation). Write value of n nearest to positive integer.

Q58. (TITA)

While multiplying three positive integers, Rohit took real numbers, Ashok took one of the numbers as 93 instead of 39. As a result, the product went up by 270. Then the square of the minimum possible value of the sum of the other two numbers is

Q59. A is 20% more efficient than B. They finish a job in a pre-decided manner in n days. A works alone till $1/3^{\text{rd}}$ of the work is done and then they both finish the $1/3^{\text{rd}}$ of the remaining work and then B alone finish the remaining work in 4 days. Then

- (a) $n > 10$ (b) $9 < n < 10$ (c) $n < 9$ (d) $n = 9$

Q60. (TITA)

Aarohi and Arun are best friends. They went to a fair and purchased some marbles in the ratio 7:11. Then Aarohi decided to make a school project and she found that 'n' marbles are short. She borrowed 'n' marbles from Arun. As a result, the ratio of the number of marbles with Arun to that with Aarohi became 4:5. What can be the maximum value of 'n' if sum of marbles cannot exceed 100?

Q61. (TITA)

A conical vessel has a radius of 14 cm. At what speed, in cm/sec (nearest to positive integer), should water flow through a pipe, of 25 sq.cm cross-section, opening into the vessel, so that the water level in the vessel rises by 3 m in 4 minutes?

Q62. $((6561)^{-2})^{-1/4} = 3^x(1/9^{2-x})$, find value of x

- (a) 4 (b) $4/3$ (c) $8/3$ (d) 8

Q63. There is a sequence of numbers whose n^{th} term is t_n . It is given that $t_n = (t_{n-1} - 1)^2 + 1$, where n is a positive integer greater than 1. If $t_1 = 3$, then the difference between its 9th term and 8th term is.....

- (a) divisible by 3 (b) an odd value (c) divisible by 9
(d) multiple of 2^{256}

Q64 Three amounts x , y and z ($z = 2x$) are such that y is the difference between CI and SI for two years on x and z respectively at 10% per annum. Then y is

- (a) 22% of z (b) 22% of x (c) 22% of x (d) 20% of x

Q65. (TITA)

In how many ways can 28800 be written as a product of two factors which are relatively prime?

Q66. The distance between two cities, Ambatipur and Bahadurgarh, is partly uphill, partly on level ground and partly downhill. It took three hours for a cab to go from A to B, whereas it took 40 minutes more to make the return journey. Find the distance (in km) between Ambatipur and Bahadurgarh, if the uphill speed, the downhill speed and that on the level ground of the cab are 40 km/hr, 60 km/hr and 48 km/hr respectively?

- a) 240 b) 160 c) 200 d) Cannot be determined

Answer Key - Mock Test 9

Section - Verbal Ability & Reading Comprehension

1-C, 2-D, 3-C, 4-C, 5-D, 6-B, 7-D, 8-B, 9-B, 10-B, 11-D, 12-B, 13-B, 14-C, 15-A, 16-C, 17-D, 18-B, 19-D, 20-B, 21-D, 22-2341, 23-1423, 24-4213

Section - Data Interpretation & Logical Reasoning

25 -1500, 26-B, 27-75, 28-700, 29-3600, 30-A, 31-B, 32-C, 33-4, 34-C, 35-44, 36-B, 37-C, 38-D, 39-A, 40-A, 41-B, 42-C, 43-D, 44-D

Section - Quantitative Aptitude

45-C, 46-B, 47-B, 48-48, 49-A, 50-C, 51-15, 52-924, 53-D, 54-D, 55-B, 56-D, 57-40, 58-200, 59-B, 60-15, 61-10, 62-C, 63-A, 64-B, 65-4, 66-B

Solutions - Mock Test 9

Section - Verbal Ability & Reading Comprehension

1. C

Option A can be derived from the lines: Mavericks such as Newton, Buffon and Darwin operated in a very different time to our own. Theirs was the age of the 'gentleman scholar', in which research was pursued by a moneyed class with time to kill.

Option B can be derived from the lines: This means that the research decisions that scientists make, particularly early on, are high-risk wagers about what will be fruitful and lead to a decent career. The road to academic stardom (and, for that matter, academic mediocrity) is littered with brilliant, passionate people who simply made bad bets.

2. D

The key in this question is that you have to keep the keywords of the passage in the mind. If you look at the overall theme and content of the passage, each of the questions mentioned does make sense to a certain degree. But only option D comes close to highlighting the most important keyword in the passage: mavericks.

Keeping this in mind, option D is the best fit in the given case.

3. C

The best way to answer this question is to go through the meanings of all the words given in the answer options:

Daunted: Frightened or worried

Cretin: A person of subnormal intelligence

Earnest: Sincerely intended and with strong feeling

Avant-garde: Radically new or original

Cautious: being careful about what you say or do, especially to avoid danger or mistakes; not taking any risks

Conformist: a person who behaves and thinks in the same way as most other people and who does not want to be different

Diffident: not having much confidence in yourself; not wanting to talk about yourself; shy

Added: Confused and vague; used especially of thinking

We can see that option C is the best answer in the given case.

4. C

In this case, the first paragraph provides us with three examples of experiments. The second paragraph states that these examples actually highlight the maverick nature of these experiments, and in fact, highlight the scientific mavericks of the time. In effect, the examples support a certain idea or description. This sentiment is best reflected by option C in the given case.

Options B and D are rejected as there is no explanation for the examples in the second paragraph; the second paragraph highlights an idea based on the nature of the experiments.

Option A is illogical in the given context.

5. D

Here, you need to know two meanings:

Taking a punt: to have an attempt or try at (something)/make a bet

Outlandish: Conspicuously or grossly unconventional or unusual

Keeping this in mind, we can see that option D is the best answer.

Remember, option A is ruled out as it is more a literal translation for the words but does not convey the real essence of the sentence.

6. B

This is an easy question.

Refer to the lines: If ours is an age in which no end of institutions and conventions are being disrupted, it shouldn't come as a surprise that one of the most basic features of everyday life seems under serious threat.

Here 'no end' means that there is no end to the list (thereby, meaning endless).

7. D

Here you need to know the meanings of the given word and options:

Throwback: A person or thing having the characteristics of a former time.

Reactionary: An extreme conservative; an opponent of progress or liberalism

Bourgeois: Conforming to the standards and conventions of the middle class

Formalist: One over-attentive to forms, or too much confined to them; especially, one who rests in external religious forms, or observes strictly the outward forms of worship, without possessing the life and spirit of religion

Atavist: An organism that has the characteristics of a more primitive type of that organism

We can see that option D is the best fit in the given case.

8. B

This is essentially a Critical Reasoning question.

Refer to the lines first: To put it another way: after a century in which the car has sat at the heart of industrial civilisation, the age of the automobile – of mass vehicle ownership, and the idea (in the western world at least) that life is not complete without your own set of wheels – looks to be drawing to a close.

What is the conclusion here?

The conclusion here is that the age of the automobile (mass vehicle ownership) looks to be drawing to a close. Why is it so? Because personal ownership of vehicles is no longer desirable. Now for this conclusion to be valid in the future, what has the author assumed? Remember, the assumption is your gap-filler: between the fact and the conclusion. Here, option B fills that gap by telling us that the scenario won't change with respect to personal vehicle ownership, thereby meaning the current trend will continue.

9. B

The problem with option B is the phrase 'very soon'. The sentiment of the option is correct but to say this is going to happen very soon is something which is not. Hence, this is the option which cannot be inferred from the passage.

Option A can be inferred from the lines: London, meanwhile, has shredded the idea that rising prosperity always triggers rising car use, and has seen a 25% fall in the share of journeys made by car since 1990.

Options C and D can be derived from the lines: To put it another way: after a century in which the car has sat at the heart of industrial civilisation, the age of the automobile – of mass vehicle ownership, and the idea (in the western world at least) that life is not complete without your own set of wheels – looks to be drawing to a close.....And in our cities, the use of cars is being overtaken by altogether greener, more liberating possibilities.....Earlier this year, forecasters at Bank of America tentatively claimed that the US may have reached “peak car”, acknowledging that “transportation is costly and inefficient, making the sector ripe for disruption”.

10. B

In the given context, the theme that stands out is the pollution of our senses. Keeping this in mind, we can see that option B best fits the given context.

Option A goes against the information provided in the last paragraph of the passage.

Option C and D are not connected with the passage.

11. D

The nervous system has a specific sensory nervous system, and a sense organ, dedicated to each sense. Humans have a multitude of senses. Sight (vision), hearing (audition), taste (gustation), smell (olfaction), and touch (somatosensation) are the five traditionally recognized senses.

This question simply replaces the simple names with the technical ones. You are not expected to know these and the best approach for such a question is to skip it. You would be essentially guessing the answer and you might end up wasting crucial time in the exam.

12. B

What does the author do in the last paragraph? He flips the narrative: he tells us how the sensory overload is actually leading to a situation where only one or two powerful stimuli remain at play and we lose touch with all others. He is, in fact, changing our assumed understanding of the given situation. This helps us identify option B as the correct answer.

13. B

Refer to the context: Utilitarianism, Mill thought, called for various social reforms: improvements in gender relations, working wages, the greater protection of free speech and a substantial broadening of the British electorate (including women's suffrage)

Suffrage means: (law) the right to vote in political elections.

14. C

Option A can be derived from the lines: As a child, his father placed him on a highly regimented home schooling regime. Between the ages of 8 and 12, he read all of Herodotus, Homer, Xenophon, six Platonic dialogues (in Greek), Virgil and Ovid (in Latin), and kept on reading with increasing intensity, as well as learning physics, chemistry, astronomy, and mathematics, while tutoring his younger sisters. Holidays were not permitted, "lest the habit of work should be broken, and a taste for idleness acquired."

Option B can be derived from the lines: Not surprisingly, one of the more commonly accepted explanations of Mill's breakdown at the age of 20, is that it was caused by cumulative mental exhaustion.

Option D can be derived from the lines: And Mill devoted much of his youthful energies to the advancement of this principle: by founding the Utilitarian Society (a fringe group of fewer than 10 members), publishing articles in popular reviews and editing Bentham's laborious manuscripts.

Option C is incorrect as it is not given that Mill was close to achieving his goals; he was scared of possibly what will happen when he achieves his goals.

15. A

A utilitarian would argue that you should pull the lever, since utilitarians believe that the greatest amount of happiness for the greatest amount of people must be sought. Saving five people instead of one would achieve the greatest amount of happiness for the greatest amount of people in this situation. Hence, a utilitarian would save the five by turning the trolley onto the track on which only one person is tied.

16. C

In order to answer the question, you need to know the meanings of the words in the options:

Ludicrousness: The state or quality of being unreasonable; that you cannot take seriously

Farcicality: the quality of being ridiculous and not worth taking seriously:

Irony: the amusing or strange aspect of a situation that is very different from what you expect

Puerility: Silliness, Childishness

Insightful: showing a clear understanding of a person or situation

17. D

The paragraph talks about money being a source of power, but not the only source. Therefore, option 2 is not correct. Winning elections and differences between candidates are mentioned as an example of this in the paragraph. Therefore, options A and C are not correct. Option D is the correct choice.

18. B

The key points in the passage are Wey's opinion being against the market and Wey having consulting relationships with the companies whose shares he was selling, i.e. conflict of interest. This is captured in option B, which is the correct choice. Remember, the option also includes the sentiment which expresses the views of the author in the given case. The author is pretty clear what he thinks about Wey in the given case.

19. D

This is a difficult question where you need to grasp the thought of the paragraph as it draws to a close. In this question, option (b) is the easiest to eliminate as it is not connected with the current thought and its references are unclear. Two options extend the concept of idealism being 'absurd', which was the thread that was mentioned in the paragraph. Out of these (option a and c), option (a) does not make sense as the option wants to understand the viewpoints of those who dismiss idealism as absurd. Who does that? Those who are unaccustomed to philosophical speculation. Clearly, the viewpoints of these

individuals would not be important and hence, this option can be rejected. Options (c) and (d) are close but option (d) is the correct answer as it extends the current thought of the passage.

20. B

The paragraph ends with the author disagreeing with Gettier. Therefore, the only logical sentence to follow is the one that proves Gettier wrong. Option B is the correct choice.

21. D

The positive side and the negative side of consuming mangoes are described in the passage. The factor of determination is nothing but the quantity consumed.

Option A completely classifies eating mangoes as a negative thing. This is incorrect.

Option B speaks about a totally irrelevant idea.

Option C completely regards mangoes as harmless fruits. This is not totally right.

22. 2341

A very easy question where you simply follow the events as they happen. This sequence of events can be observed in the set 2-3-4-1, which simply outlines how the events happened on the day.

23. 1423

Explanation:

Statement 1 is the generic opening sentence here, explaining the context.

Statement 4 provides details with regards to what the exact issue is.

Statement 2 raises a question for the issue and then statement 3 starts with the answer for the same.

24. 4213

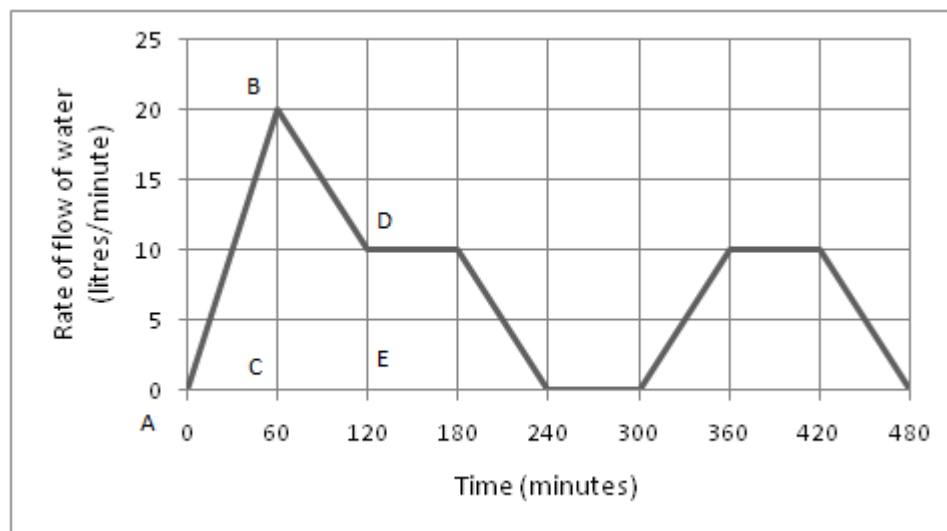
Here you need to understand the general context of the paragraph. The first three statements of the paragraph, that is 421, explain a general business scenario and then statement 3 introduces a contradiction.

Section - Data Interpretation & Logical Reasoning

25. 1500

In the above graph, the volume of water is projected by the area of the portion enclosed by the line-graph and the axes.

Thus the volume of water filled in the first two hours would be given by the portion ABDE in the graph below :

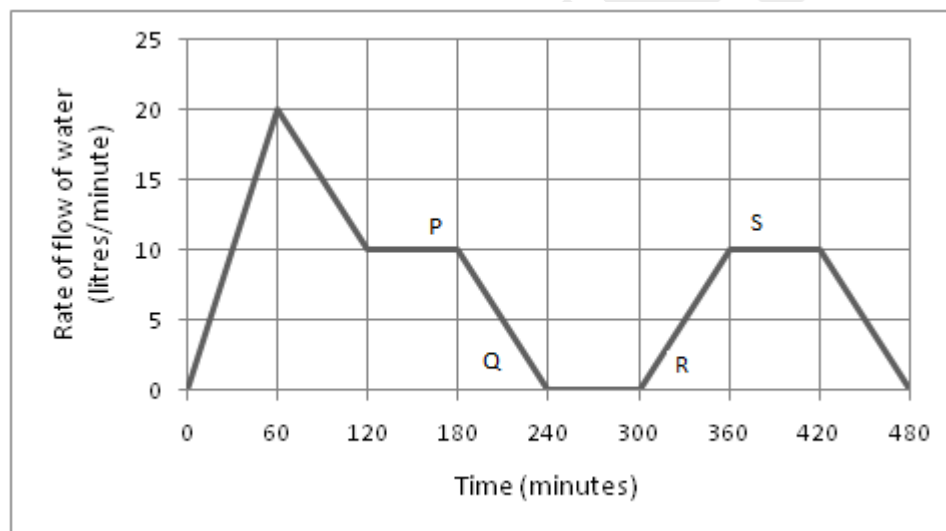


Volume of water filled in the 1st hour = Area of the triangle ABC = $(1/2) \times 20 \times 60 = 600$ litres

Volume of water filled in the 2nd hour = Area of the trapezoid CBDE = $(1/2) \times (20+10) \times 60 = 900$ litres

Hence, total volume filled in 2 hours = $600+900 = 1500$ litres

26. B



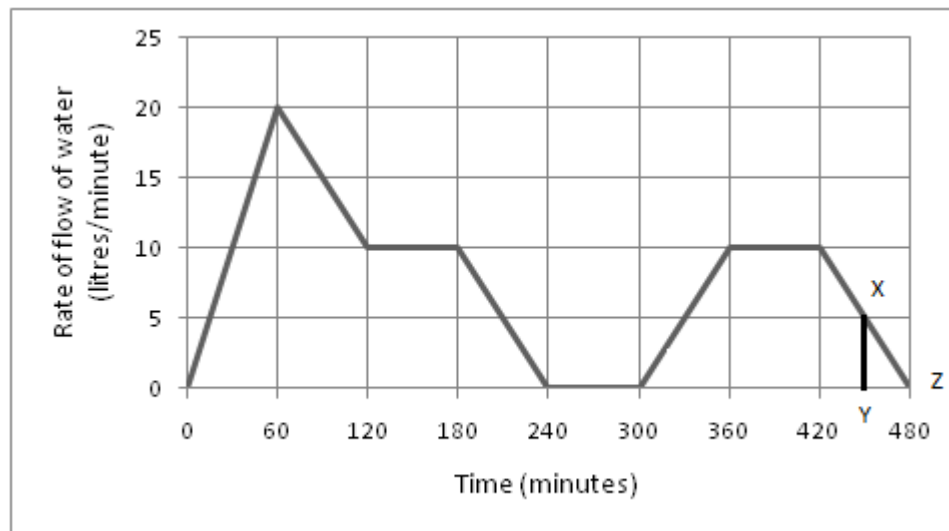
The volume as in Quantity A is shown by the region PQRS in the graph above

Hence required volume = Area of the trapezoid PQRS = $(1/2) \times 10 \times (180+60) = 1200$ liters

Hence option B is the right one

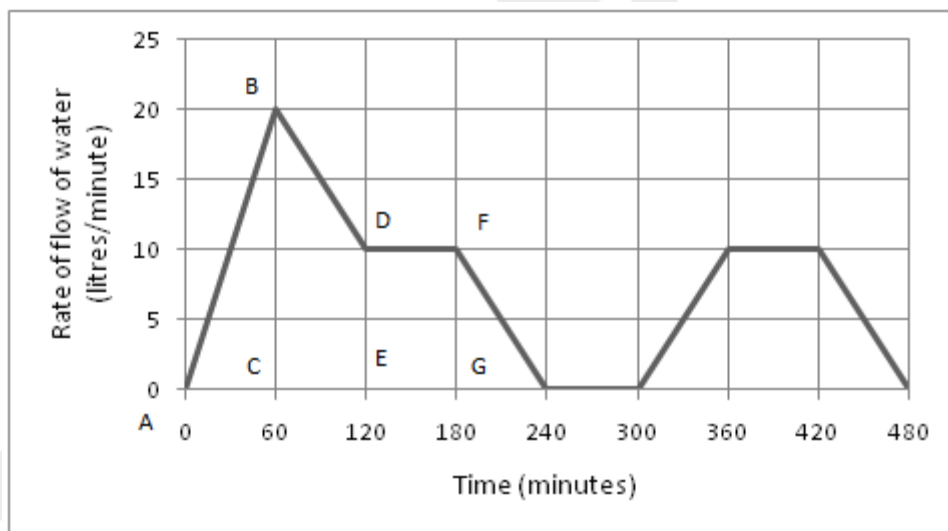
27. 75

The volume is shown by the region XYZ below :



Hence, the required volume = $(1/2) \times 5 \times 30 = 75$ litres

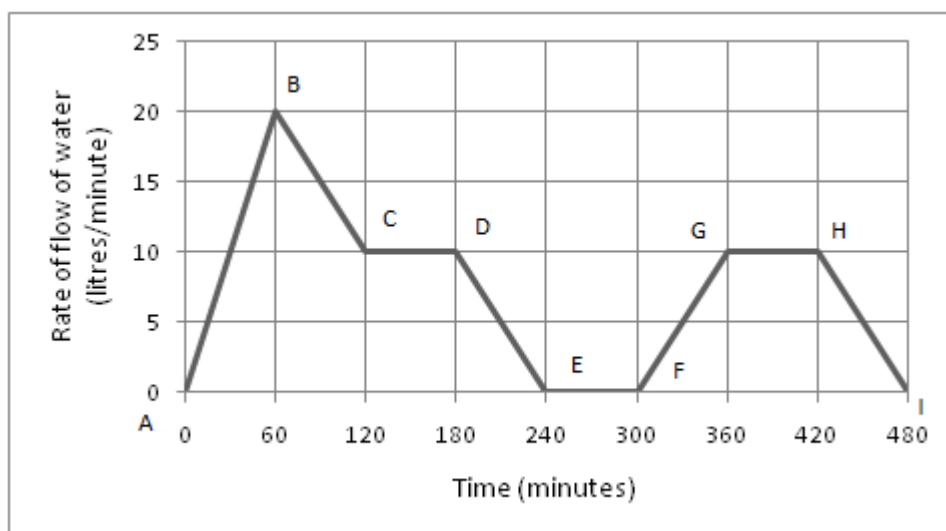
28. 700



Volume of water filled in the first three hours
 = Area of region ABDFG
 = Area of ABC + Area of CBDE + Area of EDFG
 = $(1/2) \times 20 \times 60 + (1/2) \times (10+20) \times 60 + 10 \times 60$
 = $600 + 900 + 600$
 = 2100 litres

Hence, the average filling rate of water for the first three hours = $2100/3 = 700$ litres per hour

29. 3600



The volume of the reservoir will be equal to the volume of water filled by the pipe in the eight hours as exhibited in the graph

Thus the volume of the reservoir

= Area of the region ABCDE + Area of region FGHI

$$= \left\{ \left(\frac{1}{2} \right) \cdot 20 \cdot 60 + \left(\frac{1}{2} \right) \cdot (10+20) \cdot 60 + 10 \cdot 60 + \left(\frac{1}{2} \right) \cdot 10 \cdot 60 \right\} + \left(\frac{1}{2} \right) \cdot 10 \cdot (60+180)$$

$$= \{600+900+600+300\} + 1200$$

$$= 2400 + 1200$$

$$= 3600 \text{ liters}$$

30. A

Pankaj, Nawazuddin and Ajay formed the team of three members

From (a) and (b), and the above point, we can say that Om was in the team of four members and the team of three members was already decided

Hence Jackie had to be in the team of two members

From (d), we can conclude that Shahid and Shahrukh was in the team of four members along with Om

So we are left with Amitabh and Naseeruddin, who could have occupied the single vacancies left in the team of four and the team of two, in any order

Hence, if Pankaj, Nawazuddin and Ajay form the team of three members, Jackie must be in a two member team with either Naseeruddin or Amitabh

31. B

Pankaj and Amitabh were the members of the three member team

From (a), Om was in the four member team

So, Shahid and Shahrukh, who were together in a team (d), could either be in the team of two or team of four members

Let us suppose Shahid and Shahrukh were in the team of two members

From (b), Jackie had to be in the three member team with Pankaj and Amitabh

But then all the actors left – Naseeruddin, Ajay and Nawazuddin – had to be in the same team as Om.

But condition (c) would be violated.

Hence, Shahid and Shahrukh were in the team of four members with Om

The others could be anywhere in the four places vacant, one in the team of four, one in the team of three and two in the team of two.

Hence, Shahid and Shahrukh should be in the team of Om

32. C

From the above data, Jackie and Amitabh had completed the two member team

From (a) Om was in the four member team and from the data above, Ajay was in the three member team along with Pankaj (e)

Hence from (c), Naseeruddin was in the team of Om

Shahid and Shahrukh had to be together in the same team (d), and it was only possible if they were in the four member team along with Naseeruddin and Om

Hence, the actors with Om had to be Shahid, Naseeruddin and Shahrukh

33. 4

From (a), (c) and the data given above, we can say that :

Team of 2 members	Team of 3 members	Team of 4 members
Jackie	Pankaj	Om
		Nawazuddin
X		
X	X	

Now as per (d), we have two cases. First, where both Shahid and Shahrukh are in the team of four, or the second, both are in the team of three

Case 1 : Shahid and Shahrukh are in the team of four

Team of 2 members	Team of 3 members	Team of 4 members
Jackie	Pankaj	Om
		Nawazuddin
X		Shahid
X	X	Shahrukh

As per (c), Ajay can be in team of two with Naseeruddin and Amitabh in team of three or Naseeruddin can be in team of two with Ajay and Amitabh in team of three.

So, 2 ways.

Case 2 : Shahid and Shahrukh are in the team of three

Team of 2 members	Team of 3 members	Team of 4 members
Jackie	Pankaj	Om
	Shahid	Nawazuddin
X	Shahrukh	
X	X	

As per (c), Ajay can be in team of two with Naseeruddin and Amitabh in team of four or Naseeruddin can be in team of two with Ajay and Amitabh in team of four
So, 2 ways.

Hence, $2+2 = 4$ sets of different teams were possible

34. C

Since Ajay was in the same team as Om and Nawazuddin, and as per (e), they had to be in the four member team only.

As per (b), Jackie could not be with Ajay, Om and Nawazuddin

As per (c), Naseeruddin could not be with Ajay, Om and Naseeruddin

As per (e), there were only two vacant slots in the team with three members, as Pankaj had to be one of them

Also, as per (d), Shahid and Shahrukh were together

So, if Shahid and Shahrukh were in the team of two, Jackie and Naseeruddin were in the team of three with Pankaj

However, if Shahid and Shahrukh were in the team of three with Pankaj, Jackie and Naseeruddin were in the team of two

Hence, Jackie had to be in the same team as Naseeruddin

35. 44

Suppose the number of Managers in 2020 = $100a$.

Therefore the number of Managers in 2021 = $120a$.

Managers are 12% of total employees in 2020.

Hence the number of employees in 2020 = $100a \times 100/12 = 833.33a$

Managers are 10% of total employees in 2021.

Hence the number of employees in 2021 = $120a \times 100/10 = 1200a$.

Therefore, required percentage change = $[(1200 - 833.33)/833.33] \times 100 = 44\%$

36. B

If the number of employees in exactly one job profile is to be equal over each of the three years, with an $x\%$ increase in total employees from 2020 to 2021 and an $x\%$ decrease in total employees from 2021 to 2022, it is quite clear that the job profiles of only the Head of Departments, Managers and Marketing professionals are the ones who can come under scrutiny.

This is because the base value increases from 2020 to 2021, yet the value of the numbers of the particular profile remains the same, indicating that the percentage of the total employees in 2021 must be less compared to 2020. The opposite reasoning applies for 2021 to 2022.

Only the above mentioned three job profiles satisfy the condition.

Suppose the number of employees in 2020 = $100a$.

Hence number of Head of Departments, Managers and Marketing professionals in 2020 are $15a$, $12a$ and $5a$ respectively

Let x be equal to 10 (first option given).

Then the number of employees in 2021 = $100a \times 110/100 = 110a$

Hence number of Head of Departments, Managers and Marketing professionals in 2021 are $110a \times 12/100 = 13.2a$, $110a \times 10/100 = 11a$ and $110a \times 3/100 = 3.3a$ respectively.

In no job profile the numbers of employees are equal.

So $x \neq 10$.

Let x be equal to 20 (second option given).

Then the number of employees in 2021 = $100a \times 120/100 = 120a$

Hence number of Head of Departments, Managers and Marketing professionals in 2021 are $120a \times 12/100 = 14.4a$, $120a \times 10/100 = 12a$ and $120a \times 3/100 = 3.6a$ respectively.

In the profile of Managers the numbers of employees are equal in 2020 and 2021.

The number of employees in 2022 = $100a \times 80/100 = 80a$

Hence number of Managers in 2022 are $80a \times 15/100 = 12a$.

So again in the profile of Managers the numbers of employees are equal in 2021 and 2022

So $x = 20$

37. C

Let the number of employees in 2017 be 1000.

Therefore, the number of employees in 2018 is 1100.

Also the number of employees in 2019 is 1210.

Hence we have:

	2020	2021	% change
Number of employees	1000	1210	
Head of departments	15% of 1000 = 150	16% of 1210 = 193.6	$(193.6 - 150) \times 100 / 150 = 29.07\%$
Managers	12% of 1000 = 120	15% of 1210 = 181.5	$(181.5 - 120) \times 100 / 120 = 51.25\%$

Therefore, the required percentage point difference = $51.25\% - 29.07\% = 22.2\%$.

38. D

Let the total number of employees in 2020 be $100a$ and the total number of employees in 2022 be $100b$, where $b > a$.

Hence, we have

	2020	2022
Audit associates	$60a$	$61b$
Head of departments	$15a$	$16b$
Managers	$12a$	$15b$
IT Engineers	$8a$	$4b$
Marketing Professionals	$5a$	$7b$

Now as per information given,

- a) $61b > 60a$
or, $b > (60/61)a$
- b) Similarly, $16b > 15a$
or, $b > (15/16)a$.
- c) Likewise, $15b > 12a$
or, $b > (12/15)a$.
- d) Also $4b > 8a$
or, $b > 2a$.
- e) And $7b > 5a$
or, $b > (5/7)a$.

It can now be seen that if $b/a > 2$, the number of employees in all the job profiles will show an increase in 2022 over 2020.

Therefore, the percent increase in the number of employees from 2020 to 2022 has to be more than double, that is greater than 100%.
Hence 105% is the only possible option

39. A

Let the number of employees in 2020 be 640.

$$12.5\% = 1/8$$

$$\text{Hence, number of employees in 2021} = 640 \times 9/8 = 720$$

$$\text{Also the number of employees in 2022} = 720 \times 7/8 = 630$$

$$\text{Marketing professionals in 2020} = 640 \times 5/100 = 32$$

$$\text{Marketing professionals in 2022} = 630 \times 4/100 = 25.2$$

$$\text{Hence, the percentage growth in the number of Marketing Professionals in 2022 over 2020} = (25.2 - 32) \times 100/32 = -21.25\%$$

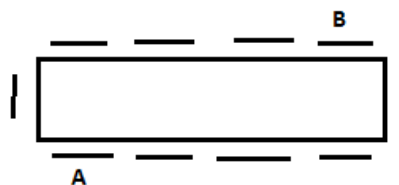
40. A

The table arrangement at the farewell lunch organized at the Nawab's Darbar was as follows :

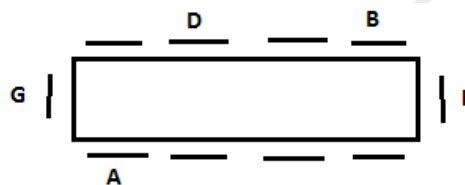


Let the sepoys be denoted by the first alphabet of their names in the diagrams.

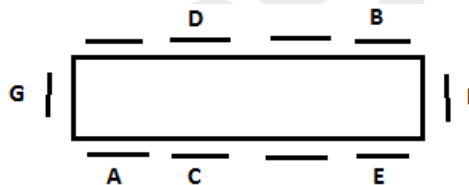
Considering points (h) and (e) :



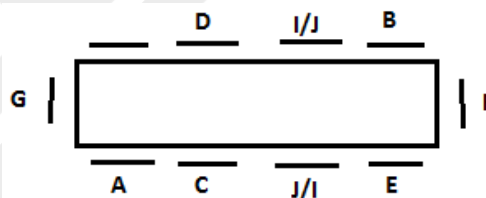
Considering point (c) and (f) :



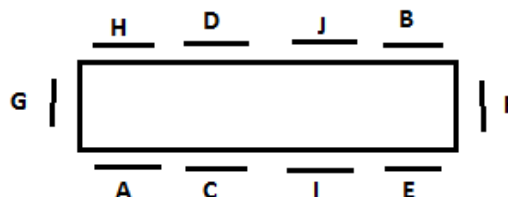
Considering point (a) and (g) :



Considering point (d) :



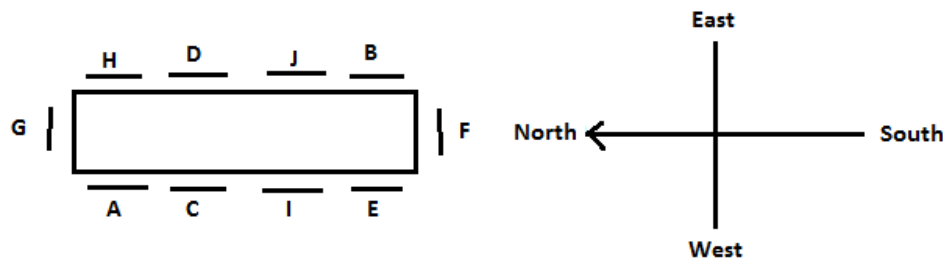
Considering point (b) :



Starting with Firdaus, Jamil will be the third sepoy in the anticlockwise direction to be served Mutton Biryani

41. B

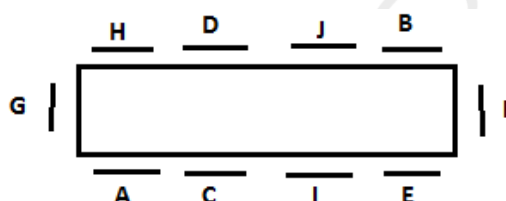
We know that the final arrangement and the direction as mentioned in the question is :



Hence, if Firdaus, while being seated, was facing North, and Chitnis was looking at Billa, then Chitnis was looking towards South East

42. C

We know that the final arrangement is :



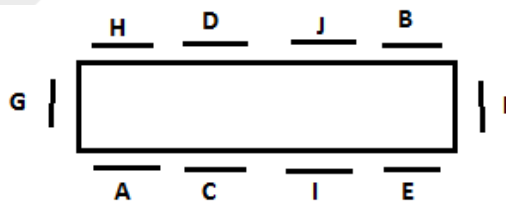
Clockwise : 1) A & D, 2) A & I, 3) G & H, 4) G & J, 5) H & J and 6) D & I

Anticlockwise : 1) C & E, 2) C & F, 3) E & F and 4) B & D.

Hence, $(6 + 4) = 10$ pairs of sepoy were sitting at their seating arrangement, who had the initial alphabet of their names at the same gap as the twenty six arranged alphabets of english, either clockwise or anticlockwise

43. D

We know that the final arrangement is :



In the main course there were five items.

Out of them, two main courses could be paired in ${}^5C_2$ ways = 10 ways.

The number of sepoy was also 10.

So it was possible that each sepoy chose a separate combination of two main courses.

Hence, the minimum possible value of the number of the repetitions of the combination of two main courses chosen would be 0

44. D

In 'CLUELESS', we can conclude :

C is equivalent to the next letter D, L is equivalent to the previous letter K, U is equivalent to the next to the next letter W and E is equivalent to the previous to the previous letter C. The summation of the positions of the letters of LESS = $12 + 5 + 19 + 19 = 55$. The summation of the digits of 55 = $5 + 5 = 10$

Similarly, in 'GONECASE', G is equivalent to the next letter H, O is equivalent to the previous letter N, N is equivalent to the next to the next letter P and E is equivalent to the previous to the previous letter C. The summation of the positions of the letters of CASE = $3+1+19+5 = 28$. The summation of the digits of 28 = $2+8 = 1$

Section - Quantitative Aptitude

45. C

Let the smaller number be x and larger number be y .

ATQ

$$y - x/2 = 4(x+x/2)$$

$$y = 11x/2$$

$$y/x = 11/2$$

Take $x = 2a$ and $y = 11a$ where a is any positive integer.

$$\text{So, } y^2 - x^2 = (11a)^2 - (2a)^2$$

$$\Rightarrow y^2 - x^2 = a^2(121 - 4) = \text{Multiple of 117 and a perfect square.}$$

(a) 1071 is not possible because 1071 is not a multiple of 117

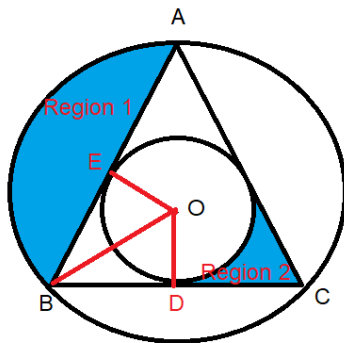
(b) 936 is a multiple of 117 but quotient is 8 which is not a perfect square.

(c) 2925 is a multiple of 117 and quotient is 25 which is a perfect square.

(d) 11025 is not a multiple of 117.

46. B

Do construction as shown in figure below



Since ABC is an equilateral triangle, AB and BC are tangents to inner circle.

$$BE = BD = \frac{1}{2} AB = 4 \text{ cm}$$

Also, triangle BOE and triangle BDO are equilateral triangles.

$$\text{So, } \angle EBO = \angle DBO = 30^\circ$$

$$OE = EB \tan 30^\circ = 4/\sqrt{3} \text{ cm (This is radius of inner circle)}$$

Using Pythagoras theorem

$$BO = \sqrt{4^2 + \left(\frac{4}{\sqrt{3}}\right)^2} \text{ cm} = 8/\sqrt{3} \text{ cm (This is radius of outer circle)}$$

By symmetry, Area of shaded region 1 and region 2 = $(1/3)$ [Area of outer circle – area of inner circle]

$$\text{Required Area} = (\pi/3) [(8/\sqrt{3}\text{cm})^2 - (4/\sqrt{3}\text{cm})^2] = 16.75 \text{ sq cm.}$$

47. B

Ratio of efficiency of 1M, 1W and 1C = 6: 2: 1

They will get wages according to their efficiencies. 1 Woman will get Rs 110 more than a child and therefore, 1Man will get Rs 440 more than 1 Woman.

Using options: Find Ratio of wages of all Men, all Women and all Children by multiplying ratio of wages per person and ratio of number of men, women and children.

Option A: Ratio of wages will be $(6: 2: 1) \times (1: 2: 6) = 3: 2: 3$, Rs 14190 cannot be divided in integer values.

Option B: Ratio of wages will be $(6: 2: 1) \times (4: 5: 9) = 3: 2: 3$, Rs 14190 can be divided in integer values. So, it is possible

Option C: Ratio of wages will be $(6: 2: 1) \times (6: 2: 1) = 36: 4: 1$, Rs 14190 cannot be divided in integer values.

Option D: Ratio of wages will be $(6: 2: 1) \times (9: 5: 4) = 36: 4: 1$, Rs 14190 cannot be divided in integer values

48. 48

$$\text{Simplify } 5^6 - 1 = (5^2 - 1) (5^4 + 1 + 5^2) = 4 \times 6 \times 651 = 2^3 \times 3^2 \times 7 \times 31$$

$$\text{Number of factors} = (3+1) \times (2+1) \times (1+1) \times (1+1) = 48$$

49. A

If Principle is P,

$$\text{Then after 2 years; Amount (A1)} = (11/10)^2 P$$

$$\text{For next two years Principle will be} = (1/2) (11/10)^2 P$$

$$\text{Then after next 2 years; Amount (A2)} = (11/10)^2 (1/2) (11/10)^2 P$$

$$\text{For next two years Principle will be} = (1/2) (11/10)^2 (1/2) (11/10)^2 P$$

$$\text{Then after next 2 years; Amount (A3)} = (11/10)^2 (1/2) (11/10)^2 (1/2) (11/10)^2 P$$

So, amount after 6 years = $(1771561/4000000)P$ which is 44.28% of initial amount.

50. C

Let Total students are 30.

B. tech students = 20

Females = 6

Female in B. tech = 3

Male in B. tech = $20 - 3 = 17$

Fraction of male B. tech students = $17/30$

51. 15

Total distance between A and B = 120 Km (Since 5 stoppages are there between A and B)

ATQ

$$\frac{20}{x} + x + \frac{20}{2x} + 2x + \frac{80}{4x} = 25$$

$\Rightarrow$

$$\frac{80 + 4x^2 + 40 + 8x^2 + 80}{4x} = 25$$

$$\Rightarrow 3x^2 - 25x + 50 = 0$$

$$\Rightarrow x = 5 \text{ or } x = 10/3$$

Since x is an integer value.

Total waiting time = $3x = 15$ hrs.

52. 924

There are 3 cases:

Case 1: 2 Boys and 3 Girls are invitees

Number of ways = ${}^4C_2 \times {}^9C_3 = 6 \times 84 = 504$

Case 2: 3 Boys and 3 Girls are invitees

Number of ways = ${}^4C_3 \times {}^9C_3 = 4 \times 84 = 336$

Case 3: 4 Boys and 3 Girls are invitees

Number of ways = ${}^4C_4 \times {}^9C_3 = 84$

Total Cases = $504 + 336 + 84 = 924$

53. D

$$\begin{aligned} \log_a y^2 + \log_a^{1/2} 1/y \\ &= \log_a y^2 + \log_a (1/y)^2 \\ &= \log_a 1 \\ &= 0 \end{aligned}$$

$$\text{So, } \log_2 [\log_7 (x^2 - x + 37)] = 0$$

$$\Rightarrow \log_7 (x^2 - x + 37) = 1$$

$$\Rightarrow x^2 - x + 37 = 7$$

$$\Rightarrow x^2 - x + 30 = 0$$

$$\Rightarrow x = 6 \text{ or } x = -5.$$

54. D

From the options it is very clear that 73 satisfies above conditions

55. B

ATQ

$$\frac{m(m+1)}{2m} = 2n \text{ and } \frac{p(p+1)}{2p} = n$$

$$\Rightarrow \frac{(m+1)}{2} = 2n \text{ and } \frac{(p+1)}{2} = n$$

$$\Rightarrow m = 4n - 1 \text{ and } p = 2n - 1$$

$$\text{So, } m - p = 2n$$

56. D

Group 1 has 1 element, group 2 has 2^2 elements, group 3 has 3^2 elements and so on.

Therefore, first 8 groups have $= 8(8+1)(16+1)/6 = 204$ elements

So, sum of these 204 elements (S_1) = sum of 204 odd numbers starting from 7 – sum of odd natural numbers up to 5

$$\text{So, } (S_1) = (204/2) (2 \times 7 + 203 \times 2) - (1 + 3 + 5) = 42831$$

Group 9 contains 81 numbers starting from $(204 \times 2 + 7 = 415)$

$$\text{Sum of numbers in group 9 } (S_2) = (81/2) (2 \times 415 + 80 \times 2) = 40095$$

$$S_1 - S_2 = 42831 - 40095 = 2736$$

57. 40

Let densities of liquids A and B are $5x$ and $4x$.

So, initial volume of A and B are $70/5x$ i.e. $14/x$ and $40/4x$ i.e. $10/x$ respectively.

$$\text{Initial density of mixture A and B} = (70 + 40)/(14/x + 10/x) = 110x/24 = 55x/12.$$

After evaporating for 'n' hours

Mass of A and B will be $(70-2n)$ and $(40-n)$ respectively.

And Volume of A and B will be $(70-2n)/5x$ and $(40-n)/4x$ respectively.

$$\text{New density of mixture A and B} = (110-3n)/[(70-2n)/5x + (40-n)/4x]$$

ATQ

$$55x/12 = 1.5[(110-3n)/\{(70-2n)/5x + (40-n)/4x\}]$$

On solving, we get $n = 39.96$

So, n is 40.

58. 200

Let the other two numbers are x and y .

So, ATQ

$$Xy(93) - xy(39) = 2700$$

$$\text{So, } xy = 54$$

As we know Arithmetic Mean $\geq$ Geometric Mean

$$\text{So, } (x+y)/2 \geq \sqrt{xy}$$

$$x+y \geq 2\sqrt{50}$$

So, square of minimum possible value of $x+y$ will be 200.

59. B

Since A is 20% more efficient than B, if B does 5-unit work in a day then A will do 6 units of work in a day.

Let total work be $30x$ units.

ATQ

$10x$ units to be done by A alone in $10x/6$ days.

$10x$ units to be done by A and B both in $10x/11$ days.

Remaining $10x$ units to be done by B in $10x/5$ days. Also, B does 5 units in a day.

$$\text{So, } 5 \times 4 = 10x$$

$$\Rightarrow x = 2$$

So, total time = n days

$$\Rightarrow 10x/6 + 10x/11 + 4 = n$$

$$\Rightarrow 20/6 + 20/11 + 4 = n$$

$$\Rightarrow n = 9.15$$

60. 15

Total marbles they had = $11x + 7x < 100$
 So, x can take maximum value of 5.

Initially Aarohi and Arun had 35 and 55 marbles respectively.
 ATQ

$$\frac{35 + n}{55 - n} = \frac{5}{4}$$

So, $n = 15$.

61. 10

Distance travelled by water in 4 minutes at the rate of x cm/sec = $(4 \times 60)x = 240x$ cm
 Volume of water flows = volume of conical vessel
 $25 \times 240x = (1/3)\pi(14)^2(300)$
 $x = 10.26$ cm/sec

62. C

$$((6561)^{-2})^{-1/4} = 3^x(1/9^{2-x})$$

$$\Rightarrow ((3^8)^{-2})^{-1/4} = 3^x(3^{2x-4})$$

$$\Rightarrow (3^{-16})^{-1/4} = (3^{3x-4})$$

$$\Rightarrow 3^4 = (3^{3x-4})$$

$$\Rightarrow 4 = 3x - 4$$

$$\Rightarrow x = 8/3$$

63. A

$$t_n = (t_{(n-1)} - 1)^2 + 1$$

$$t_1 = 3 = 2^1 + 1$$

$$t_2 = 2^2 + 1$$

$$t_3 = 2^4 + 1$$

$$\text{So, } t_9 = 2^{256} + 1$$

$$t_8 = 2^{128} + 1$$

So,

$$t_9 - t_8 = 2^{256} - 2^{128} = 2^{128} (4 - 1) = 3(2^{128})$$

Clearly, it is divisible by 3.

64. B

$$SI = 2x/10$$

$$CI = z/10 + z/10 + z/10^2 = 21z/100$$

$$\text{Difference} = y = 21z/100 - 2x/10 = (21z - 20x)/100$$

$$\Rightarrow 100y = 42x - 20x = 22x$$

y is 22% of x

65. 4

$$28800 = 2^7 \times 3^2 \times 5^2$$

Number of prime factors = 3

So, number of ways in which it can be written as product of two prime numbers = $2^{3-1} = 4$.

66. B

Let the distance on level ground be 'D'.

From A to B, let upward journey be 'x' and downward journey be 'y'.

So,

During onward journey; $x/40 + D/48 + y/60 = 3$

During return journey; $x/60 + D/48 + y/40 = 3 \text{ hours } 40 \text{ minutes} = 11/3$

Add above equations

$$x(1/40 + 1/60) + y((1/40 + 1/60) + 2D/48 = 3 + 11/3$$

$$\Rightarrow x/24 + y/24 + D/24 = 20/3$$

$$\Rightarrow (x + y + D)/24 = 20/3$$

$$\Rightarrow (x + y + D) = 160$$

So, Total distance between two cities = 160 KM

CAREERS360

MOCK TEST – 10

Section - 1 - Verbal Ability & Reading Comprehension

Directions for questions 1 to 4: The passage given below is followed by a set of questions. Choose the most appropriate answer to each question.

Passage 1

If you look around your workplace and everyone, or at least all the managers, look the same - same sex, skin colour, social class, age - then your company has a diversity problem. But why is it a problem? Because the most obvious explanation is a failure of meritocracy. Such features as the colour of one's skin or sex are arbitrary and irrelevant to people's ability to do a job. Therefore the fact that people of certain skin colours or sex are missing from your workplace relative to the wider society presents a prima facie challenge to the fairness of your company's criteria for employment and promotion. To assume otherwise - for example that people of certain colours, sex, class, age, happen to have different (inferior) career preferences or different (inferior) talents has no credibility. It is to assume the exact set of facts most convenient to make a problem someone else's, rather than to take responsibility for investigating and fixing it.

Call this the negative argument for diversity: If you don't have internal diversity in line with the wider society then you are probably treating people unfairly and you need to investigate and try to fix it. For example by identifying and mitigating biases in how job applicants are evaluated and structural impediments to their career progress. It leaves a lot of details still to be argued out, but I think it is the right way to go. But there is another kind of argument that is now much more common, the positive argument that organisations should promote diversity because it pays off. This is the argument I want to criticise, on the grounds that it jeopardises the negative argument from fairness; reduces individuals to stereotypes about groups; and perpetuates unjust stereotypes and social relations.

The positive argument for diversity in the workplace is that it produces productivity gains for the group as a whole. A large number of empirical studies seem to support this. A group with more variety of racial, gender, class, and sexuality types will tend to have more variety of life experiences and ways of looking at the world. Such groups will be able to bring more different perspectives to problems and will therefore be more likely to come up with better, more innovative solutions. An additional important mechanism is friction. Because of the social distance between members of different groups, everyone ups their mental game in comparison with the mutual complacency that might pervade a group where everyone is very comfortable with everyone else. It is like the difference between the way you clean your house when a stranger is coming to dinner and the way you clean up when it is just your friends coming over for a beer.

The problem with supporting diversity because it pays off is that it undermines the genuinely ethical concern about fairness to workers. The productivity argument at its simplest goes like this:

- Premise: Empirical research has shown that (at least some forms of well-managed) diversity increase employee productivity.
- Conclusion: Therefore, corporations should promote (those forms of) diversity.

However, there is an implied but unstated premise needed to complete the argument.

- Missing premise: If an action has higher productivity than alternatives, corporations should do it.

Thus, the productivity argument introduces a particular standard by which to judge diversity policy or any other action: will it raise productivity? This is an entirely amoral but conventional approach to business. It is not about which values we should have but only about the most efficient way to advance the material interests of the corporation. Diversity policies are to be evaluated in just the same way as schemes for minimising tax exposure.

Q1. A suitable title for the passage is:

- A. Productivity is the Wrong Argument for Diversity
- B. Productivity is the Right Argument for Diversity
- C. Productivity is the Ultimate Argument for Diversity
- D. Non-Productivity is the Wrong Argument for Diversity

Q2. According to the author of the passage:

- A. lack of diversity in the office highlights a lack of merit, in terms of people selection, in the workplace.
- B. the colour of one's skin is not related to one's ability.
- C. by assuming that certain types of people are not selecting certain types of jobs and this is what is leading to a diversity issue, one is simply passing the buck.
- D. all of the above

Q3. The author of the passage:

- A. adopts a negative view of diversity
- B. propagates the positive argument for diversity
- C. supports the negative argument for diversity
- D. is against the positive view of diversity

Q4. The author of the passage does not favour the productivity argument as:

- A. it simply focuses on the numbers without actually working for the welfare of employees
- B. it mainly focuses on the benefit of the corporation and not that of employees
- C. it simply focuses on the numbers without concerns to the moral aspect of the issue
- D. it essentially focuses on increasing productivity without improving employee welfare

Directions for questions 5 to 8: The passage given below is followed by a set of questions. Choose the most appropriate answer to each question.

Passage 2

What are the philosophical and moral implications of sending ISIS terror suspects who until recently possessed British passports to stand trial in the US, and so condemning them to capital punishment? Are the acts of El Shafee Elsheikh and Alexandra Kotey so horrific that we may revise our views on the death penalty? The debate over Elsheikh's and Kotey's cases, after raging for much of the summer, has heated up again after recent charges that British Home Secretary Sajid Javid's decision to drop the UK's objection to the death penalty in these cases was to avoid the 'outrage' of the Trump administration.

Elsheikh and Kotey, who were until recently British citizens, are currently being held by the UK allies in Syria. They are believed to be members of the notorious Isis cell nicknamed 'the Beatles' and are suspected of taking part in public beheadings, waterboarding, and other serious crimes. They would likely face the death penalty if convicted by a U.S. court, whereas the UK abolished capital punishment in 1998.

Elsheikh's and Kotey's cases are troubling in a number of ways. Most importantly, Javid's decision departs from a UK government policy of not sending people to foreign countries for trial, or aiding investigations of them, without assurances that the death penalty will not be used. Supporters of the government's decision insist that this case represents only an exception to the UK's longstanding policy regarding the death penalty, not a revision of it. In a leaked letter published in July by the Daily Telegraph, Javid told U.S. Attorney General Jeff Sessions that the decision not to seek death penalty assurances in Kotey's and Elsheikh's cases 'does not reflect a change in our policy on assistance in U.S. death penalty cases generally, nor the UK Government's stance on the global abolition of the death penalty.'

But if this is so, then why are exceptions being made in Kotey's and Elsheikh's cases? The government is in effect sending the message that the UK favours global abolition of the death penalty except in cases when it is okay. The great virtue of living under the rule of law is that it protects people against being subject to the arbitrary control of other individuals. But this means that a society that cares about the rule of law can't pick and choose to whom it extends its protections.

One explanation, suggested by the legal counsel representing Elsheikh's mother in a legal challenge to the UK's cooperation with the US on the case, is that Javid was afraid of angering the American government. Edward Fitzgerald QC, who represents Elsheikh's mother, said that Javid's departure from seeking death penalty assurances was 'in large part because of anticipated outrage among political appointments in the Trump administration.' This explanation, if correct, is especially troubling. The UK would be effectively amending its stated support of global abolition of capital punishment to make exceptions when this stance would upset the United States, or perhaps whenever it is politically inconvenient.

Javid facilitated bringing Elsheikh and Kotey to trial in the United States by revoking their British citizenship. As a legal matter, the Home Secretary has the power to deprive a person of British citizenship when he believes doing so would be 'conducive to the public good' and would not make the person stateless. In Elsheikh's and Kotey's cases, it essentially appears that the Home Secretary is using his power to strip citizenship as a way to outsource the job of holding them criminally accountable to a country that allows a form of punishment long condemned by the UK government. But the British legal system's promise to uphold certain values and respect the human rights even of those accused of heinous crimes doesn't hold much water if the accused can simply be stripped of citizenship and sent to another country that does not hold the same values.

Q5. The main topic of the passage in the given case is:

- A. the validity of the death penalty, with respect to a particular country
- B. the death penalty and its ambiguous application, with respect to a particular country
- C. the double standards in the application of the death penalty, with respect to a particular country
- D. the death penalty and its moral concerns, with respect to a particular country

Q.6. When the supporters of the government's decision insist that the case in the passage represents only an exception to the UK's longstanding policy regarding the death penalty and not a revision of it, they are essentially pointing to the fact:

- A. that how the UK government has used double standards in this case to justify their position.
- B. that how the UK government has wriggled itself out of a potentially damning situation with its ally.
- C. that how the UK government is exercising a certain approach in a specific and singular situation.
- D. that how the UK government has made exactly the call that has been needed in such similar situations.

Q7. According to the information given in the passage, all of the following are correct except:

- A. Generally, the UK government only sends people for trial in other countries if there is an assurance that the death penalty will not be used.
- B. Since the case of Elsheikh and Kotey represents an exception, most people support the decision of the UK government in this case.
- C. The official stance of the UK government is that it supports the global abolition of the death penalty.
- D. The British citizenship for Elsheikh and Kotey has been revoked.

Q8. According to the information given in the passage, in Elsheikh's and Kotey's cases:

- A. a law is being bypassed with the help of another.
- B. a legal hurdle is being removed with the help of a clever move.
- C. the degree of fairness that an inconsistent legal system should exhibit has not been done so.
- D. the framework of evaluation could have been better.

Directions for questions 9 to 12: The passage given below is followed by a set of questions. Choose the most appropriate answer to each question.

Passage 3

If we were to stop and ask ourselves how our lives might be improved, one likely answer that might occur to us is that we should spend less time at work. At least that is what the statistics suggest. According to the OECD better life index, for example, the English-speaking countries – Australia, New Zealand, the UK and the US – all perform badly when it comes to 'work-life balance' (they are all in the bottom third), though they all do quite well in the overall rankings (all in the top half). The work-life balance score is calculated on the basis of 'time devoted to leisure and personal care' and 'employees working very long hours'. So, if you live in one of these countries, and are an average member of it, a major drag in your quality of life will be lack of time for leisure and personal care and too much time at work.

Small wonder then that the recent introduction by a New Zealand financial services company of a four-day week should be greeted with such enthusiasm. The UK Green Party, which had already committed to a four-day week in its 2015 election manifesto, has also just resolved to introduce a 'Free-Time Index' that would measure the total amount of leisure time available - a sort of non-work equivalent to GDP. Since the Free-Time Index would be a better indicator of overall quality of life than GDP, growth in it rather than GDP, the Greens argue, should be a higher economic priority. We need a reorientation of

economic policy so that we get the right balance between work and leisure, a balance that the four-day week and Free-Time Index will help to achieve.

This broadening of the terms by which we measure economic performance is to be welcomed. Leisure is clearly no less an important source of goods, the things we want from life, than work is. And certainly, GDP is a hopelessly inadequate measure of success in the production and enjoyment of these things. We need an alternative set of reference points, and available leisure time, radical though it is, is one such candidate.

But is it radical enough? One problem is that, like GDP, it would be a sheer amount, a quantity indifferent to quality. Just as GDP does not distinguish between the value added by the production of nuclear warheads and life-saving medicines, a Free-Time Index would not discriminate between the use of leisure time for good and its use for bad.

Another problem is that the value of free-time is situation-dependent. It is precious for people in full-time employment, and full-time careers, but for the unemployed it can feel more like a curse. Having lots of time available isn't worth much if there isn't much to do. Doing something requires having opportunities for action – access to transport, playing fields, art galleries, adult education classes, for example – as well as time on one's hands. Lacking such opportunities, unemployed people can suffer from a surfeit of free-time (though the time-consuming business of satisfying the welfare bureaucracy may well see to that).

Q9. According to the author of the passage, the Free-Time Index can possibly suffer from the problem/s of:

- A. not being able to differentiate between quality and quantity
- B. the value of free time, in itself, is subjective and dependent on individuals.
- C. both A and B
- D. neither A nor B

Q10. The author of the passage:

- A. presents a new theory
- B. highlights a unique solution
- C. is inciting an unbiased debate
- D. is evaluating a new technique

Q11. All of the following can be deduced from the passage except:

- A. If you live in Australia, New Zealand, the UK and the US, and are an average member of it, you suffer from a lack of time for leisure and personal care.
- B. If you live in Australia, New Zealand, the UK and the US, and are an average member of it, you spend too much time on work.
- C. GDP does not do an adequate measure when it comes to measuring leisure or its impact on human productivity and so on.
- D. Four-day weeks are the way to go forward if we need to achieve the perfect scores on the Free-Time Index.

Q12. According to the information given in the passage:

- A. The 'Free-Time Index' can replace the GDP, since it is its equivalent.
- B. The 'Free-time Index' functions as GDP for non-work activities.
- C. The 'Free-Time Index' should have higher economic priority than the GDP since it does better than the GDP.
- D. All of the above

Directions for questions 13 to 16: The passage given below is followed by a set of questions. Choose the most appropriate answer to each question.

Passage 4

Deep under the Disneyland Resort Hotel in California, far from the throngs of happy tourists, laundry workers clean thousands of sheets, blankets, towels and comforters every day. Workers feed the heavy linens into hot, automated presses to iron out wrinkles, and load dirty laundry into washers and dryers large enough to sit in. It's loud, difficult work, but bearable. The workers were protected by union contracts that guaranteed a living wage and affordable healthcare, and many had worked decades at the company. They were mostly happy to work for Disney.

This changed in 2008. The union contracts were up, and Disney wouldn't renew without adjustments. One of the changes involved how management tracked worker productivity. Before, employees would track how many sheets or towels or comforters the workers washed, dried or folded on paper notes turned in at the end of the day. But Disney was replacing that system with an electronic tracking system that monitored their progress in real time.

Electronic monitoring wasn't unusual in the hotel business. But Disney took the highly unusual step of displaying the productivity of their workers on scoreboards all over the laundry facilities, says Austin Lynch, director of organising for Unite Here Local 11. According to Lynch, every worker's name was compared with the names of coworkers, each one colour-coded like traffic signals. If you were keeping up with the goals of management, your name was displayed in green. If you slowed down, your name was in yellow. If you were behind, your name was in red. Managers could see the monitors from their office, and change production targets from their computers. Each laundry machine would also monitor the rate of worker input, and flash red and yellow lights at the workers directly if they slowed down.

'They had a hard time ignoring it,' said Beatriz Topete, a union organiser for Unite Here Local 11 at the time. 'It pushes you mentally to keep working. It doesn't give you breathing space.' Topete recalled an incident where she was speaking to workers on the night shift, feeding hand-towels into a laundry machine. Every time the workers slowed down, the machine would flash at them. They told her they felt like they couldn't stop. The workers called this 'the electronic whip'. While this whip was cracking, the workers sped up. 'We saw a higher incidence of injuries,' Topete said. 'Several people were injured on the job.' The formerly collegial environment degenerated into a race. The laundry workers competed with each other, and got upset when coworkers couldn't keep up. People started skipping bathroom breaks. Pregnant workers fell behind. 'The scoreboard incentivises competition,' said Topete. 'Our human competitiveness, whatever makes us like games, whatever keeps us wanting to win, it's a similar thing that was happening. Even if you didn't want to.' The electronic whip is an example of gamification gone awry.

Gamification is the application of game elements into nongame spaces. It is the permeation of ideas and values from the sphere of play and leisure to other social spaces. It's premised on a seductive idea: if you layer elements of games, such as rules, feedback systems, rewards and videogame-like user

interfaces over reality, it will make any activity motivating, fair and (potentially) fun. 'We are starving and games are feeding us,' writes Jane McGonigal in *Reality Is Broken* (2011). 'What if we decided to use everything we know about game design to fix what's wrong with reality?'

Consequently, gamification is everywhere. It's in coupon-dispensing loyalty programmes at supermarkets. Big Y, my local supermarket chain in Boston, employs digital slot machines at the checkout for its members. Winning dispenses 'coins' that can be redeemed for deals. Gamification is in the driver interfaces of Lyft and Uber, which give badges for miles driven. Gamification is the premise of fitness games such as *Zombies, Run!*, where users push themselves to exercise by outrunning digital zombies, and of language-learning apps such as Duolingo, where scoring prompts one to master more. The playground offices of Silicon Valley, complete with slides and ball pits, have been gamified. Your credit score is one big game, too.

But gamification's trapping of total fun masks that we have very little control over the games we are made to play – and hides the fact that these games are not games at all. Gamified systems are tools, not toys. They can teach complex topics, engage us with otherwise difficult problems. Or they can function as subtle systems of social control.

Q13. A suitable title for the passage is:

- A. Gamified theories
- B. Gamified solutions
- C. Gamified life
- D. Gamified automatons

Q14. The author uses the example of Disney:

- A. to show how gamification needs to be improved
- B. to show how gamification is ubiquitous
- C. to show how gamification needs to be understood
- D. to show how gamification can have its pitfalls

Q15. Which, out of the following, are consequences of the monitoring system employed by Disney?

I. It led to higher competition among co-workers.

II. Higher number of on-job injuries.

III. It does not allow you to relax and keeps you on your toes.

- A. I & II
- B. II & III
- C. I & III
- D. All of the above

Q16. According to the information given in the passage:

- A. It is presumed that gamification, when applied to real life scenarios, can make the activity more fun and motivating.
- B. Gamification can be literally found everywhere and multiple companies are making it a part of their business.
- C. Gamified systems can be used as a means of social control.
- D. All of the above

Directions for the Question: Identify the apt summary for the given paragraph. Enter the option number you deem as the correct answer.

Q17. Various solutions have been proposed. One is to publish 'pre-analysis plans', where researchers say how they will do their analysis before they actually do it. Another is to encourage more replication. A new NBER working paper by Marcel Fafchamps and Julien Labonne suggests another, related, method. The idea is that researchers send their data to a third party, who randomly splits the data sample in half. The researchers do their analysis based on the first dataset, finalise their method, and submit for publication. If and when the paper is accepted, the same analysis is carried out on the second sample, and the unadulterated results published. If the initial result only showed up because of manipulation, then the chances of the same result in the second sample are relatively low. To avoid the embarrassment of a non-result, researchers should be stricter with themselves when it comes to tweaking their results. When sample sizes are small, this fix is difficult, as halving the sample saps power from tests. But in a world of big data, it could work. The bigger barrier might be getting career-conscious researchers to sign up.

- A. One solution to the problem of manipulation by researchers is to divide a data sample in half and have independent parties conduct tests on both halves; if the findings of the two sets of tests are the same, then the results are accurate.
- B. There is an issue with researchers manipulating data. Taking two data samples and running two experiments that are identical to one another could be one approach. If the findings are consistent, the researcher could feel ashamed of their work.
- C. There is a significant issue with researchers manipulating data. Taking two different data samples and doing two different studies could be one answer to the problem. If the findings are consistent, it indicates that the researcher made use of a large amount of data in their work.
- D. A possible solution to the problem of manipulation by researchers is to divide a data sample in half and have independent parties conduct tests on both halves; if the findings of the two sets of tests are the same, then the results are accurate. It's possible that using big data will make this strategy more effective.

Directions for the Question: Identify the apt summary for the given paragraph. Enter the option number you deem as the correct answer.

Q18. Start with vendors. Persuading vendors to extend credit terms can be a powerful source of financing. However, it is important for your buying and accounts payable teams to build trusting relationships by being open, honest and responsive, especially about the timing of payments, including unavoidably late payments. Vendors also want their businesses to grow. Share information such as projections that demonstrate growth, a schedule of when customer payments will be made that will enable you to pay a vendor or progress with a particularly promising customer that could lead to more joint business, and your vendors may be very supportive. For vendors who are supportive, reciprocate when the time comes they need support, perhaps with advance payments. When the shoe is on the other foot, they will be more inclined to help your business.

- A. Vendors are an essential component of a company, and it is essential for a company to collaborate with its suppliers in order to expand its operations.
- B. When circumstances are bad, a company's relationship with its vendors might mean the difference between success and failure for the company.
- C. Vendors are an essential component of a company, and maintaining open communication with them is one of the most effective ways to get ready for challenging times.
- D. Vendors are the ones that keep a company afloat when times are rough; for this reason, it is critical to have a positive relationship with them.

Directions for the Question: Identify the apt summary for the given paragraph. Enter the option number you deem as the correct answer.

Q19. My father had his own accounting firm in Raleigh, North Carolina. His speciality was helping people manage their tax and financial affairs as they started, expanded, or in some cases shut down their businesses. He has taken his time retiring, and I now realise how much he liked his work. I can remember the glowing terms in which his clients would tell me about the help he'd given them, as if he'd performed life-saving surgery on them. I also remember the way his voice changed when he received a call from a client when at home. Suddenly he spoke with a command and facility that I never heard at any other time, like a captive penguin released into open water, swimming in his element with natural ease.

- A. My father had a lot of enthusiasm for what he did, and you could see some of that enthusiasm in the way he carried himself.
- B. You could tell that my dad really cared about what he did, and it showed in the way that he carried himself at work.
- C. Although my father had a lot of enthusiasm for what he did, this was not really evident in the way he carried himself in the workplace.
- D. When it came to his work, my father had a far stronger passion for it than I have.

Directions for the Question: The question below has a paragraph given with one sentence missing in at the end. From among the answer choices given, select the sentence that can fill the blank to form a coherent paragraph.

Q20. When I taught at the American University in Cairo, from 1969 to 1971, it was rare to see a female student with her head covered—even at Cairo University, where Ayman al-Zawahiri, the current leader of Al Qaeda, was then studying. At the time, the U.S. and Egypt had no diplomatic relations at all. Egypt compared itself with other undeveloped nations—South Korea, India, Brazil—each of which has had a democratic revolution that has since paved the way for rapid economic development. (_____.)

- A. A comparable plan for the country's economic development was poised and ready to be implemented in Egypt.
- B. Egypt believed that it would be best for its future to maintain its relationships with these countries and to embrace models that were comparable to their own.
- C. But Egypt was stuck, trapped in a political and economic quagmire.
- D. By taking a closer look at these countries, Egypt has recognized an opportunity to adopt a more pragmatic stance toward them, and it is seizing this window of opportunity.

Directions for the Question: The question below has a paragraph given with one sentence missing in at the end. From among the answer choices given, select the sentence that can fill the blank to form a coherent paragraph.

Q21. Before the dawn of history mankind was engaged in the study of dreaming. The wise man among the ancients was preeminently the interpreter of dreams. The ability to interpret successfully or plausibly was the quickest road to royal favor, as Joseph and Daniel found it to be; failure to give satisfaction in this respect led to banishment from court or death. When a scholar laboriously translates a cuneiform tablet dug up from a Babylonian mound where it has lain buried for five thousand years or more, the chances are that it will turn out either an astrological treatise or a dream

book. If the former, we look upon it with some indulgence; if the latter with pure contempt. For we know that the study of the stars, though undertaken for selfish reasons and pursued in the spirit of charlatantry, led at length to physical science, while the study of dreams has proved as unprofitable as the dreaming of them. (_____.)

- (a) When offered a choice between astrologers and oneiromancers, the royals would always go with the charlatans because only they could interpret their dreams and ensure that their souls might finally find rest.
- (b) Nothing of value has come from the practice of dream interpretation; the only thing that has flourished is the proliferation of charlatans.
- (c) Out of astrology grew astronomy. Out of oneiromancy has grown—nothing.
- (d) Astronomy emerged from the practice of oneiromancy. Nothing productive has ever come from the study of astrology.

Directions for question 22: In the following question, rearrange the five sentences in order to form a meaningful paragraph.

TITA

Q22.

1. It has also issued a directive that there will not be any kind of letter of comfort to be given for this purpose thereby making these two modes of credit extension completely illegal until further notices.
2. The Reserve Bank of India has directed all the banks that they should not issue any more letters of undertaking for trade finance purpose because the largest banking fraud in the country has been detected recently in this area.
3. This step is going to affect the trade finance business of the country a lot and especially the import scenario will be hit due to this curb on these two most popular modes of credit for the importers in India.
4. This was an expected step from the regulator of the banking system in India given the old record of the country is going by the public mood rather than treating the actual problem in areas as important as the economy.

Directions for question 23: In the following question, rearrange the five sentences in order to form a meaningful paragraph.

TITA

Q23.

1. This is a very significant event since nothing of this sort has taken place in the history of the relations between these two countries since partition as both the countries have always honoured the Vienna Convention as well.
2. It signals a shift in stance taken by Pakistan regarding the bilateral relationship between the two countries because it seems that the diplomatic relations are being used by the countries as well.
3. This does not augur well for both the countries as cooperation between the neighbours is very necessary and without that between these two countries, it is impossible to start the talks again.
4. The diplomatic relation between India and Pakistan hit a new low when Pakistan recalled its High Commissioner in India to return to the country for discrimination against the diplomats of that country in India.

Directions for question 24: In the following question, rearrange the five sentences in order to form a meaningful paragraph.

TITA

Q24.

1. The shift in diplomatic relations between the USA and North Korea has been seen as a significant step to right the relation between countries in the historical context of such a relationship.
2. However, North Korea wants to understand the details regarding the USA policies and also the attitude of the administration towards other countries in the world.
3. The visit of the President of North Korea to China last week implies that the country is betting large on its long –time ally and confidant China just ahead of the talks with South Korea and the USA.
4. This is where China is going to play a big role in the process of negotiation since it has always supported North Korea and the present government of North Korea places great trust in China and its advice on matters relating to foreign policy.

Section - 2 - Data Interpretation and Logical Reasoning

Directions for questions from 25 to 28:

A week before Durga Puja, a Traffic Police Inspector during his beat in front of the Regional Transport Office at Padmapukur, Kolkata, noticed 120 each of brand new private Sedans, Hatchbacks and SUVs and 30 4x4 Wheelers, which had applied for new registration, queued up along the road in front of the Regional Transport Office in order to get registered. The vehicles and their owners were blocking up a substantial portion of the very busy road for about a kilometer, leading to traffic snarls.

On enquiry, the manager at the office showed the inspector on his desktop screen a currently updated table showing the data of the individual number of the four necessary documents whose verification has been completed, on all the private vehicles in queue. The manager explained that the time taken up to verify the documents was causing the delay in registration.

The table on the desktop screen is reproduced below.

COMPLETED	Sedan	Hatchback	SUV	4x4 Wheelers
Verification of Insurance Certificate	84	102	78	27
Verification of Sales Invoice from dealer	93	96	102	22
Verification of Identity proof of owner	117	111	93	10
Verification of filled up Form 20	78	99	87	29

Help the Inspector to analyze the situation at that point of time by answering the following questions using the data from the table, assuming that these four documents mentioned in the table are the only documents needed for registration.

Q 25 (TITA)

What can be the maximum number of Sedans in the queue whose registration can be processed immediately due to the completion of verification of all the four documents necessary for registration ?

Q 26 What can be the minimum number of SUVs in the queue whose registration can be processed immediately due to the completion of verification of all the four documents necessary for registration ?

- A) 102
- B) 78
- C) 48
- D) 0

Q 27 (TITA)

What can be the maximum number of Hatchbacks in the queue whose verification of exactly one document necessary for registration is completed?

Q 28 (TITA)

From the standpoint of the Inspector, what can be the minimum number of private vehicles in the queue, whose registration cannot be processed immediately at that point of time ?

Directions for questions from 29 to 34 :

Consultancy firm M/S McKinsey & Company was hired by the World Health Organization in 2022 and was given the task of evaluating the total health budgets (in million USD) of five countries namely Ghana, Egypt, Nigeria, Libya and South Africa.

Each of the above mentioned countries allocates its total health budget behind two parameters – healthcare budget and research and development budget. Moreover the total health budget of each country was different, and was a multiple of 50 million USD.

The report submitted by the firm had the following points :

- i) Among the five countries, Ghana had the lowest total health budget and also spent the lowest on healthcare.
- ii) South Africa, which had the highest total health budget and Egypt were the only countries to allocate 50% of their total health budget to healthcare.
- iii) Nigeria's healthcare budget allocation matched with that of Egypt. Also their research and development budget allocation was double than that of Ghana's research and development budget allocation.
- iv) Libya was second to only South Africa and ahead of other countries in the total health budget as well as allocation to healthcare budget and research and development budget.
- v) Ghana's healthcare budget allocation was only 10% of the highest healthcare budget allocation amongst all the five countries which was 250 million USD.
- vi) Except Ghana's healthcare budget allocation, all other healthcare budget allocations were a multiple of 50 million USD.

From the above report, find the answers to the questions that follow :

Q 29 (TITA)

What was the total health budget of Ghana (in million USD) ?

Q 30 (TITA)

What was the total health budget of Libya (in million USD) ?

Q 31 (TITA)

How much was the research and development budget allocation of Nigeria more than the same of that of Egypt (in million USD) ?

Q 32 By what percent was the research and development budget allocation of Libya less than the same as that of South Africa ?

- A) 20%
- B) 25%
- C) 30%
- D) 35%

Q 33 How many times is the healthcare budget allocation of Egypt compared to the same as that of Ghana ?

- A) 1.5
- B) 2
- C) 3
- D) 4

Q 10) The ratio of the Research and Development Budget allocation to the Healthcare Budget allocation is termed as the RPR Index. What was the RPR Index of the five countries taken together as per the report of M/S McKinsey & Company ?

- A) 0.81
- B) 1.24
- C) 2.32
- D) 2.87

Directions for questions from 35 to 38:

In the audition for the 2022 edition of the mega quiz show 'Dadagiri', hosted by the former Indian cricket captain Mr Sourav Ganguly, there were seven rounds to be passed before getting selected for the final show.

The audition for the Kolkata segment took place simultaneously in five areas – Behala, Ballygunge, Dumdum, Shyambazar and Salt Lake.

The number of auditionees who failed in the different rounds in the five areas is given below :

	Number of auditionees who failed						
	1st Round	2nd Round	3rd Round	4th Round	5th Round	6th Round	7th Round
Behala	76	64	50	42	34	36	22
Ballygunge	42	58	34	42	30	10	14
Dumdum	64	50	48	40	34	26	20
Shyambazar	56	52	56	38	28	20	8
Salt Lake	86	74	52	38	42	26	18

Q 35 What is the total count of the least number of auditionees who had cleared the first round of 'Dadagiri' in the areas of Dumdum and Shyambazar ?

- A) 340
- B) 388
- C) 420
- D) 540

Q 36 The number of auditionees in Behala who passed in the fifth round of 'Dadagiri' was found to be twice the number who got selected in the final. How many people auditioned for the first round in Behala ?

- A) 346
- B) 382
- C) 426

D) 474

Q 37 If the number of auditionees who got selected in the final show of 'Dadagiri' in Dumdum was equal to that in Salt Lake, what was the difference between those who passed the second round in both the above areas ?

- A) 54
- B) 22
- C) 8
- D) Cannot be determined

Q 38 If 240 people auditioned for the first round of 'Dadagiri' in Ballygunge, in which round was the percentage of passes at Ballygunge the fifth highest in rank ?

- A) Fourth round
- B) Third round
- C) Second round
- D) Cannot be determined

Directions for questions from 39 to 44 :

Dr Anand C Burman, the Chairman Emeritus of M/S Dabur India Ltd, had finalized the wedding plans at Kolkata of his only son Mr Aditya Burman. He allotted the responsibility of each department to one family member and kept himself in charge of the food and beverage segment. After much consultation with the whole Burman family, it was decided to incorporate eight different cuisines in the wedding dinner for the employees of Dabur India Ltd. They were namely 1) Bengali cuisine, 2) Bangladeshi cuisine, 3) Awadhi cuisine, 4) Mughlai cuisine, 5) Kolhapuri cuisine, 6) South Indian cuisine, 7) Chinese cuisine and 8) Continental cuisine.

Dr Burman's affinity and benevolence towards the Dabur India Ltd employees was legendary, and in true cognizance to that, he ordered a survey to find out the first and second preferences of all the employees of Dabur India Ltd amongst the eight cuisines finalized for the wedding.

The survey result submitted at his table was as below :

CUISINES	Bengali	Bangladeshi	Awadhi	Mughlai	Kolhapuri	South Indian	Chinese	Continental
Bengali	2280	2676	666	453	381	189	396	177
Bangladeshi	1575	642	1498	696	327	387	254	264
Awadhi	933	354	456	642	306	336	363	159
Mughlai	1320	384	228	336	432	324	321	144
Kolhapuri	1770	642	336	858	336	369	207	204
South Indian	600	237	183	222	129	216	273	93
Chinese	1110	129	159	159	204	177	249	87
Continental	204	222	354	189	207	396	222	69

The numbers represent the number of employees of Dabur India Ltd who prefer the different types of cuisines. The cuisine mentioned in the column is the first preference, while the cuisine mentioned in the row is the second preference. Where both the column and row cuisines are the same, it indicates that those employees have only one preference.

For example,

Column 1, Row 1 is 2280. It indicates 2280 employees of Dabur India Ltd prefer only Bengali cuisine.

Column 1, Row 2 is 1575. It indicates 1575 employees of Dabur India Ltd have Bengali cuisine as first preference and Bangladeshi cuisine as second preference.

From the above data please answer the questions given below.

Q 39 The number of employees of M/S Dabur India Ltd whose only preference is Bengali cuisine is what percentage more than the employees whose first preference is Mughlai and second preference Kolhapuri cuisine (rounded to the first decimal place) ?

- A) 165.7%
- B) 175.5%
- C) 182.3%
- D) 195.5%

Q 40 The number of employees of M/S Dabur India Ltd whose first preference is either South Indian or Continental and second preference is either Awadhi or Chinese is what percent of the employees whose first preference is Bangladeshi and second preference Bengali cuisine (rounded to the first decimal place) ?

- A) 17.7%
- B) 28.4%
- C) 42.3%
- D) 55.5%

Q 41 What is the total number of employees of M/S Dabur India Ltd who prefer only one type of cuisine among the eight choices ?

- A) 2280
- B) 3962
- C) 4584
- D) 5672

Q 42 The number of employees of M/S Dabur India Ltd whose first two preferences are either Bengali or Mughlai is what percent of the employees whose first preference out of the two is Awadhi cuisine (rounded to the first decimal place) ?

- A) 36.2%
- B) 41.5%
- C) 45.7%
- D) 51.8%

Q 43 If the popularity of a cuisine at the wedding dinner is to be measured by the number of employees of M/S Dabur India Ltd who select it as their first or second preference, then by what percent will the

number of employees who choose the most popular cuisine be more than those who choose the least popular cuisine (rounded to the last integer) ?

- A) 196%
- B) 392%
- C) 597%
- D) 718%

Q 44 Dr Anand C Burman had given the entire order of catering of Bangladeshi cuisine to the Taj Bengal Sonargaon Restaurant. They were so pleased with the demand for Bangladeshi cuisine among the employees that they decided to give a special discount to Dr Burman for employee welfare purposes at M/S Dabur India Ltd. For every employee who has both their preferences as Bangladeshi cuisine there would be a discount of Rs 500, for every employee whose first preference is Bangladeshi cuisine there would be a discount of Rs 400 and for every employee whose second preference is Bangladeshi cuisine there would be a discount of Rs 200. As per the survey result at the table, what was the total discount that Dr Burman would get (in lakhs of Rs rounded to the second decimal place) ?

- A) 42.42
- B) 39.01
- C) 31.79
- D) 28.32

Section - 3 - Quantitative Aptitude

Q45. If p is the product of all integers from 1 to 20, both inclusive, and q is the product of first 20 multiples of 10, what is the value of $(1/p - 1/q)$?

- (a) $\frac{10^{20}-1}{10^{20}(20!)}$ (b) $\frac{10^{20}-1}{(20!)}$ (c) $\frac{1-10^{20}}{10^{20}(20!)}$ (d) $\frac{10^{20}}{10^{20}(20!)}$

Q46. (TITA)

If X is the sum of all integers from 1 to 100, inclusive, what is the sum of all the factors of X which are perfect square?

Q47. A dosage of 24 cubic centimeters of a certain drug is prescribed to a patient whose body weight was 80 pounds per day. If the typical dosage is 4 cubic centimeters per 20 pounds of body weight per day but he had taken 6 cubic centimeters already in the morning, what percent of prescribed dosage he had to took according to typical dosage?

- (a) 33.33 (b) 66.66 (c) 41.33 (d) 58.33

Q48. (TITA)

A small production unit starts with an initial investment of \$940. Two products were produced, costing \$0.9 and \$1.1 respectively. If n units of product 1 and n^2 units of product 2 were sold at the rate of \$1.5. find the least number of units of the product must be sold before the revenue received equals or just greater than the total expense of production, including the initial investment in equipment? [n is positive integer value]

Q49 (TITA)

Arithmetic mean of marks of a student in two tests is equal to the geometric mean of the marks in two tests. She scored 72 marks in her third test but teacher add 27 instead of 72 while finding her average marks. If the difference of sum of correct average of three tests and incorrect average of three tests with average of marks in first two tests is 52, what is her average marks in first two tests?

Q50. A fruit seller has 4 varieties of fruits A, B, C and D. Ratio of number of A and number of D is 8 to 5, and the ratio of the number of A and B is 3 to 4. If the ratio of the number of C to the number of D is 3 to 2. He purchased all the fruits at same rate but sold variety A at 25% profit, B at 25% loss while C and D at purchase price. What is the net profit or loss percent he has incurred?

- (a) 2.18% Loss (b) 2.18% Profit (c) 2.14% Loss (d) 2.14% Profit

Q51. (TITA)

A biker biked for 18 hours without any break. He increases his speed by 1 mile per hour after every hour. If he travelled 165 miles in last five hours of journey. What is his average speed (in miles per hour) during first 10 hours?

Q52. A train left a station P in the morning 7 AM and reaches another station Q at 12 noon. Another train left station Q two hours after the train left from P and reaches P at 2 pm on the same day. At what time did the two trains pass one another?

- (a) 10:50 am (b) 10:13 am (c) 10:30 am (d) 10:42 am

Q53. (TITA)

A pump started filling an empty pool with water at a constant rate until the pool was $\frac{1}{3}$ full. After this another pump with thrice as efficient continue to fill the same pool for 2 hrs till the pool was $\frac{2}{3}$ filled. If both pumps fill another pool of double capacity alternatively after every hour. How much time will they take?

Q54. (TITA)

Present value of an antique watch is \$m. and it was \$m/3 before 3 yrs. At the end of each year, the value of antique watch is r percent greater than its value one year earlier, where r has the same value each year. In how many years from now, value of antique becomes 27m?

Q55 Few marbles are put into 6 boxes such that each box contains at least one marble. At the most 2 boxes can contain the marbles in prime numbers while at most 3 boxes can have same number of marbles but not equal to 1. Rest of the boxes can have any number of marbles but not the multiple of any prime number. What is the least possible number of marbles?

- (a) 23 (b) 15 (c) 18 (d) 22

Q56. If $7f(-x) - 2f(x) = 5x^2 + 10$, what is the ratio of Arithmetic mean and geometric mean of $f(0)$ and $f(1)$?

- (a) $\frac{5}{\sqrt{6}}$ (b) $\frac{3}{2\sqrt{6}}$ (c) $\frac{5}{2}$ (d) $\frac{5}{2\sqrt{6}}$

Q57. There are five letters to be posted at 5 addresses. Find the probability that exactly two letters are posted at correct address but at 1 letter is always be at correct address?

- (a) $\frac{1}{6}$ (b) $\frac{1}{12}$ (c) $\frac{1}{15}$ (d) $\frac{1}{3}$

Q58. (TITA)

A right circular conical vessel filled with water, of height 18 ft, stands on its base which has diameter 26 ft. The tip of the cone is cut off with a plane which is parallel to the base and 24 ft from the base. The remaining amount of water is poured in to a cylindrical vessel of height 6ft. What can be the diameter of cylindrical vessel in ft.

Q59. (TITA)

$|3x - y| \geq 9$ and $8 \leq |y| \leq 12$. How many ordered pairs (x, y) are solutions of the above system such that x and y both are integers?

Q60. Two varieties of rice, A and B, are mixed and then sold at Rs. 42 per kg. The profit is 20% if A and B are mixed in the ratio 2: 3, what can be the maximum profit% if they are mixed in ratio 3: 2. It is also given that $32 \leq |y| \leq 36$ and x is an integer value.

- (a) 16.66% (b) 20% (c) Cannot be determined (d) 10%

Q61. Three points $(a, 0)$, $(0, 0)$ and $(b, 4)$ are forming a triangle such that line passing through points $(a, 0)$ and $(0, 0)$ is perpendicular to the line passing through $(0, 0)$ and $(b, 4)$. What is the value of a if area of triangle formed by these points is 16 sq unit?

- (a) 2 (b) 4 (c) 8 (d) 16

Q62. A rectangle PQRS is inscribed in a circle of radius 15 cm. Which one of the following can be the value of Area of rectangle, in cm^2 ?

- (a) 540 (b) 432 (c) 216 (d) 720

Q63. How many numbers with three or more digits can be formed with the digits 1,2,3,4 so that in every such number, number looks same from either end?

- (a) 32 (b) 24 (c) 4 (d) 280

Q64. If α and β are roots of equation $x^2 + (a - 3)x - (a + 5) = 0$, the minimum possible value of α^2 and β^2 is

- (a) 19 (b) 15 (c) 0 (d) 2

Q65. Find the second term of an AP if the product of its first three even terms is equal to 5184 and the sum of the first three odd terms is equal to 45.

- (a) 3 (b) 15 (c) 12 (d) 18

Q66. The area of square base of a prism is 25 cm^2 and its volume is 150 cm^3 . Find the maximum length of rod which can be placed in this prism.

- (a) 10 cm (b) 16 cm (c) 6 cm (d) 9.72 cm

Answer Key - Mock Test 10

Section - Verbal Ability & Reading Comprehension

1-A, 2-D, 3-C, 4-C, 5-C, 6-C, 7-B, 8-B, 9-C, 10-D, 11-D, 12-B, 13-C, 14-D, 15-D, 16-D, 17-D, 18-C, 19-B, 20-C, 21-C, 22-2143, 23-4123, 24-3124

Section - Data Interpretation & Logical Reasoning

25 -78, 26-D, 27-24, 28-128, 29-100, 30-350, 31-50, 32-A, 33-D, 34-B, 35-C, 36-B, 37-C, 38-A, 39-A, 40-B, 41-C, 42-D, 43-B, 44-C

Section - Quantitative Aptitude

45-A, 46-26, 47-C, 48-2550, 49-57, 50-C, 51-22.5, 52-C, 53-18, 54-6, 55-C, 56-D, 57-C, 58-10, 59-10, 60-B, 61-8, 62-B, 63-A, 64-B, 65-C, 66-C

Solutions - Mock Test 10

Section - Verbal Ability & Reading Comprehension

1. A

In this case, the author of the passage clearly states that productivity is not the right argument for diversity. This helps us identify option A as the correct answer.

Options B and C directly go against the main sentiment of the author of the passage. Remember, non-productivity is not mentioned here. Hence, option D is ruled out.

2. D

Option A can be derived from the lines: If you look around your workplace and everyone, or least all the managers, look the same - same sex, skin colour, social class, age - then your company has a diversity problem. But why is it a problem? Because the most obvious explanation is a failure of meritocracy.

Option B can be derived from the lines: Such features as the colour of one's skin or sex are arbitrary and irrelevant to people's ability to do a job.

Option C can be derived from the lines: To assume otherwise - for example that people of certain colours, sex, class, age, happen to have different (inferior) career preferences or different (inferior) talents has no credibility. It is to assume the exact set of facts most convenient to make a problem someone else's, rather than to take responsibility for investigating and fixing it.

3. C

Refer to the lines: Call this the negative argument for diversity: If you don't have internal diversity in line with the wider society then you are probably treating people unfairly and you need to investigate and try to fix it.

This is the argument the author supports: the negative argument for diversity.

Refer to the lines: The positive argument for diversity in the workplace is that it produces productivity gains for the group as a whole. ..The problem with supporting diversity because it pays off is that it undermines the genuinely ethical concern about fairness to workers.

The author is clearly against the positive argument for diversity.

Remember, options A and D talk about the negative/positive view of diversity and not the negative/positive arguments for diversity.

VIEW vs. ARGUMENT

1. look at or inspect/the ability to see something or to be seen from a particular place.
2. regard in a particular light or with a particular attitude/a sight or prospect, typically of attractive natural scenery, that can be taken in by the eye from a particular place.

Meaning of ARGUMENT

1. an exchange of diverging or opposite views, typically a heated or angry one.
2. a reason or set of reasons given in support of an idea, action, or theory.

As we can see from above, a VIEW represents a perception/outlook for something.

An argument here essentially represents 'reasoning'.

These two cannot be interchanged.

The passage used the word ARGUMENT and we stick to it; we do not replace it with VIEW.

4. C

Refer to the lines: Thus, the productivity argument introduces a particular standard by which to judge diversity policy or any other action: will it raise productivity? This is an entirely amoral but conventional approach to business. It is not about which values we should have but only about the most efficient way to advance the material interests of the corporation

The key aspect here is that the productivity argument:

- a. focuses on productivity and material interests of the corporations
- b. sidesteps moral/ethical concerns

These two factors combine in option C in the given case.

5. C

The passage is very simply about one single issue: how the UK has changed its stance with respect to the death penalty when it comes to two ISIS members. The author of the passage highlights how this change of stance is not right and explores the duplicity of the actions of the UK. This sentiment is only expressed in option C. None of the author options highlight the double standards adopted by the UK.

6. C

This is a question where it is really tough to identify the correct answer.

The context only provides us with this information: Most importantly, Javid's decision departs from a UK government policy of not sending people to foreign countries for trial, or aiding investigations of them, without assurances that the death penalty will not be used. Supporters of the government's decision insist that this case represents only an exception to the UK's longstanding policy regarding the death penalty, not a revision of it.

In this case, we need to stick to the sentiment of the given lines because the explicit reason why the supporters say so has not been mentioned. And if you analyse the question carefully, all it asks you to do is identify 'what is this statement pointing to'. This statement just points to one thing: the UK government decided to exercise a certain line of thinking/certain approach in a particular case.

This sentiment is expressed by option C.

Option A represents the view of the author and not the supporters.

Option B ascribes a reason to this statement; we cannot verify this reason.

Option D points to the fact there are other such situations; again this is not something that is mentioned or implied in the passage.

7. B

Option A can be derived from the lines: Most importantly, Javid's decision departs from a UK government policy of not sending people to foreign countries for trial, or aiding investigations of them, without assurances that the death penalty will not be used.

Option B is incorrect. This is the viewpoint of supporters of the decision. The passage does not state that the majority of the people support this decision.

Option C can be derived from the lines: In a leaked letter published in July by the Daily Telegraph, Javid told U.S. Attorney General Jeff Sessions that the decision not to seek death penalty assurances in Kotey's and Elsheikh's cases 'does not reflect a change in our policy on assistance in U.S. death penalty cases generally, nor the UK Government's stance on the global abolition of the death penalty.'

Option D can be derived from the lines: Elsheikh and Kotey, who were until recently British citizens....Javid facilitated bringing Elsheikh and Kotey to trial in the United States by revoking their British citizenship.....In Elsheikh's and Kotey's cases, it essentially appears that the Home Secretary is using his power to strip citizenship as a way to outsource the job of holding them criminally accountable to a country that allows a form of punishment long condemned by the UK government.

8. B

Options A and B:

Is a law being bypassed in this case? If this is the answer, ask yourself which law: the law has to be that of the death penalty. Is the law of death penalty abolishment being bypassed with the help of another (change in the citizenship status)? Here, death penalty abolishment is not being bypassed; rather, the hurdle that was posed by this was these individuals could not be prosecuted in the US since it has the death penalty and that has not been waived off. This hurdle has been overcome with the help of the clever move (of stripping citizenship).

Option C incorrectly uses the word 'inconsistent'.

Option D is simply inconclusive in the given case. We do not know what it means.

9. C

Option A can be derived from the line: But is it radical enough? One problem is that, like GDP, it would be a sheer amount, a quantity indifferent to quality.

Option B can be derived from the lines: Another problem is that the value of free-time is situation-dependent. It is precious for people in full-time employment, and full-time carers, but for the unemployed it can feel more like a curse.

10. D

What is the passage all about? The author introduces 'Free-Time Index', which in effect, is a metric to measure one's quality of life. He then goes on to highlight its positives and negatives (he evaluates it).

The only option which keeps both of these sentiments in mind is option D; it keeps in mind the sense of evaluation as well the fact that we are dealing with a new way of looking at things.

11. D

Options A and B can be derived from the lines: According to the OECD better life index, for example, the English-speaking countries – Australia, New Zealand, the UK and the US...So, if you live in one of these countries, and are an average member of it, a major drag in your quality of life will be lack of time for leisure and personal care and too much time at work.

Option C can be derived from the lines: Leisure is clearly no less an important source of goods, the things we want from life, than work is. And certainly, GDP is a hopelessly inadequate measure of success in the production and enjoyment of these things.

Option D is incorrect. Even though the author mentions four-day week and the Free-Time Index in the same breath, he does not correlate the two and we have no way to arrive at the conclusion mentioned in option D.

12. B

Refer to the line: 'Free-Time Index' that would measure the total amount of leisure time available - a sort of non-work equivalent to GDP.

The 'Free-time Index' is the non-work equivalent of GDP; it cannot replace GDP. In short, it functions as GDP for non-work activities

Option C is incorrect. Refer to the line: Since the Free-Time Index would be a better indicator of overall quality of life than GDP, growth in it rather than GDP, the Greens argue, should be a higher economic priority.

Option C distorts the sentiment in this line.

13. C

The answer for this question can be derived from this line (which is more an expression for the key sentiment of the author of the passage): Consequentially, gamification is everywhere.

The author, through this passage, is trying to highlight how gamification is everywhere now and it is universally present. This sentiment is best expressed in option C.

Automatons refers to a machine built to carry out some complex task, especially one which can be programmed and with many movable parts. This does not fit the given context as the passage is not about machines or robots; it is about the process of gamification being applied everywhere in life.

14. D

Refer to the lines: But Disney was replacing that system with an electronic tracking system that monitored their progress in real time.....But Disney took the highly unusual step of displaying the productivity of their workers on scoreboards all over the laundry facilities, says Austin Lynch, director of organising for Unite Here Local 11.....The workers called this 'the electronic whip'. While this whip was cracking, the workers sped up.....The electronic whip is an example of gamification gone awry.

The author uses the example of Disney to showcase how implementation of gamification can go wrong. Option A might confuse you but remember, the question is asking you why this example has been used. The above lines clarify clearly why this example has been used: this is not for improvement but rather highlighting the fact that is wrong use of gamification

15. D

I can be derived from the lines: 'The scoreboard incentivises competition,' said Topete. 'Our human competitiveness, whatever makes us like games, whatever keeps us wanting to win, it's a similar thing that was happening. Even if you didn't want to.' The electronic whip is an example of gamification gone awry.

II can be derived from the lines: 'We saw a higher incidence of injuries,' Topete said. 'Several people were injured on the job.' The formerly collegial environment degenerated into a race.

III can be derived from the lines: 'They had a hard time ignoring it,' said Beatriz Topete, a union organiser for Unite Here Local 11 at the time. 'It pushes you mentally to keep working. It doesn't give you breathing space.' Topete recalled an incident where she was speaking to workers on the night shift, feeding hand-towels into a laundry machine. Also the lines "People started skipping bathroom breaks. Pregnant workers fell behind."

16. D

Option A can be derived from the lines: It's premised on a seductive idea: if you layer elements of games, such as rules, feedback systems, rewards and videogame-like user interfaces over reality, it will make any activity motivating, fair and (potentially) fun.

Option B can be derived from the lines: Consequentially, gamification is everywhere. It's in coupon-dispensing loyalty programmes at supermarkets. Big Y, my local supermarket chain in Boston, employs digital slot machines at the checkout for its members. Winning dispenses 'coins' that can be redeemed for deals. Gamification is in the driver interfaces of Lyft and Uber, which give badges for miles driven. Gamification is the premise of fitness games such as Zombies, Run!, where users push themselves to exercise by outrunning digital zombies, and of language-learning apps such as Duolingo, where scoring prompts one to master more. The playground offices of Silicon Valley, complete with slides and ball pits, have been gamified. Your credit score is one big game, too.

Option C can be derived from the lines: Gamified systems are tools, not toys. They can teach complex topics, engage us with otherwise difficult problems. Or they can function as subtle systems of social control.

17. D

Option D is the correct choice as it mentions all relevant points with the relevant logic, the namely problem of manipulation by researchers; splitting a data sample in half and performing independent tests and leveraging big data to make this approach work.

18. C

Explanation

The passage makes two critical points – How to build a relationship with vendors and the reciprocation that can come when the time comes. These points are included in option 3.

Option A is wrong as the passage does not mention vendors to grow the business.

Option B is wrong as the passage does not talk about make or break of business due to vendors.

Option D is wrong as the passage does not talk about vendors keeping a business float.

19. B

The key to solving this question is to identify the degree to which the author's father was passionate about his work. The author mentions several instances where the passion shone through, ex. discussions on phone, use of glowing terms, delay in retirement etc. Therefore, it's clear that the passion was very distinctly reflected in his behaviour. Option B is the correct choice.

20. C

The key question here is the tone of the passage: it is clearly not positive. The author, in making the comparison, states how these countries have progressed. The statement in its style, inherently implies that Egypt has not gone the way of these nations and has in fact faltered. This makes option C the clear answer for this question.

21. C

The first thing that you need to know in order to solve this question is the meaning of the word 'oneiromancy'. It means 'Divination through the interpretation of dreams'. This makes sense, doesn't it? The correct answer in this case is derived from the previous line. The author states that the study of stars led to a physical science, but the study of dreams only led to charlatans. This makes option (c) the correct answer. Option (b) is incorrect as it simply re-states what is given in the passage. Option (a) does not fit at the given location, as it alters the topic of discussion. Option (d) simply refers to the subjects, thus making it incorrect as well.

22.2143

Exp: Statement 2 is the generic opening sentence of the passage as it is about the central theme of the passage i.e. the move of the RBI to ban letter of comfort and letter of undertaking. Statement 1 will follow as it further explains the directives given by the RBI in this regard. Statement 4 comes after that as it is about the reaction of the author due to the step taken by the RBI and statement 3 will conclude the passage by giving the actual effect of this decision on the trade finance sector of the country. That is why the proper sequence of sentences as 2-1-4-3

23. 4123

Exp: Statement 4 is the first sentence of the passage because it is about the diplomatic relation between India and Pakistan whereas statement 1 is the next sentence since it talks about the relationship between the countries in detail, thereby taking the argument forward. Statement 2 will come after that since it gives the implication of such a relation with Pakistan and statement 3 comes after that since it is the effect of this stalemate between the two neighboring countries.

24. 3124

Exp: Statement 3 is the first sentence of the passage since it introduces the context of the whole paragraph whereas statement 1 is the next sentence since it talks about the diplomatic shift taking place between the USA and North Korea. It is followed by statement 2 as it talks about the real motive of North Korea behind this visit to China. Statement 4 will come after that as it talks about the role that China is going to play in the whole episode and how it helps North Korea with its foreign policy (in turn helping with the questions raised in statement 2).

Section - Data Interpretation & Logical Reasoning

25. 78

78 are the lowest number of Sedans whose single verification is complete, in this case verification of filled up Form 20.

Hence, the maximum number of Sedans in the queue whose registration can be processed immediately due to the completion of verification of all the four documents necessary for registration can be 78.

26. D

Total number of SUVs in the queue = 120

As per the table,

Number of SUVs whose Insurance Certificate verification is pending = $120 - 78 = 42$

Number of SUVs whose Sales Invoice from dealer verification is pending = $120 - 102 = 18$

Number of SUVs whose Identity Proof of owner verification is pending = $120 - 93 = 27$

Number of SUVs whose filled up Form 20 verification is pending = $120 - 87 = 33$

If all the SUVs above are distinct ones,

Then the total number of SUVs whose only one document verification is pending = $42 + 18 + 27 + 33 = 120$

Hence, a maximum of 120 SUVs cannot have verification completed of all the four documents necessary for registration.

Hence, the minimum number of SUVs in the queue whose registration can be processed immediately due to the completion of verification of all the four documents necessary for registration = $120 - 120 = 0$

27. 24

The total number of Hatchbacks is a constant number of 120.

Hence, if we have to maximize the number of Hatchbacks in the queue whose verification of exactly one document is completed, we have to consider as maximum the number of Hatchbacks in the queue whose verification of all the four documents are completed, and all other number of Hatchbacks with a combination of exactly two or exactly three documents with verification completed as minimum, that is zero.

Let x be the number of Hatchbacks in the queue whose verification of exactly one document is complete, and y be the number of Hatchbacks in the queue whose verification of all the four documents are complete.

Hence, $x + y = 120$ ----- (equation 1),

and

$x + 4y = (102+96+111+99) = 408$ ----- (equation 2)

Subtracting equation 1 from equation 2, we get

$$3y = 288$$

$$\text{or, } y = 96$$

Substituting the value of y in equation 1,

$$x = 120 - 96 = 24$$

Hence, the maximum number of Hatchbacks in the queue whose verification of exactly one document necessary for registration is completed may be 24

28. 128

Total number of private vehicles in queue = $(120 \times 3 + 30) = 390$

78 are the lowest number of Sedans whose single verification is complete, in this case verification of filled up Form 20.

96 are the lowest number of Hatchbacks whose single verification is complete, in this case verification of Sales Invoice from dealer.

78 are the lowest number of SUVs whose single verification is complete, in this case verification of Insurance Certificate.

10 is the lowest number of 4x4 Wheelers whose single verification is complete, in this case verification of Identity proof of owner.

Hence, the maximum number of Sedans, Hatchbacks, SUVs and 4x4 Wheelers in the queue whose registration can be processed immediately due to the completion of verification of all the four documents necessary for registration can be 78, 96, 78 and 10 respectively.

Hence, the maximum number of private vehicles in the queue whose registration can be processed immediately due to the completion of verification of all the four documents necessary for registration can be $(78+96+78+10) = 262$

Hence, from the standpoint of the Inspector, the minimum number of private vehicles in the queue whose registration cannot be processed immediately at that point of time = $390 - 262 = 128$

29. 100

a) From statements (ii) and (iv) we can clearly understand that South Africa has the highest allocation in Healthcare Budget as well as Research and Development Budget, and hence in Total Health Budget.

b) From statement (v) we can understand that the Healthcare Budget allocation of South Africa was 250 million USD, and Ghana's was 10% of that, that is 25 million USD.

c) From statement ii we can also understand that South Africa allocated 50% of the Total Health Budget towards Healthcare.

As the Healthcare Budget allocation of South Africa was 250 million USD, hence the Total Health Budget of South Africa was 500 million USD, and the Research and Development Budget was the rest 50%, that is 250 million USD.

d) From statement (ii) we also know that if Egypt's Healthcare Budget is x million USD, then its Research and Development allocation and Total Health Budget is also x and $2x$ million USD respectively.

e) Also from statement (iii) we can understand that the Healthcare Budget of Nigeria is x million USD, and if Ghana's Research and Development Budget is taken as y million USD, then the same for Nigeria will be $2y$ million USD.

Hence Total Health Budget for Nigeria is $(x+2y)$ million USD.

f) It has also been mentioned that the total health budget of each country was different, and is a multiple of 50 million USD. Now because Ghana's Healthcare Budget allocation is 25 million USD, hence the value of Research and Development allocation of Ghana, that is y , can be only 75 million USD. It cannot be 125 million or more, because otherwise Nigeria would be allocated $2y = 250$ million or more, which is not possible as only South Africa is the highest at 250 million.

Hence Ghana's Total Health Budget is $25+75 = 100$ million USD and Nigeria's Research and Development Budget is $75*2 = 150$ million USD.

We can summarize the above conclusions as :

	Healthcare Budget	Research & Development Budget	Total Health Budget
Ghana	25 million USD	75 million USD	100 million USD
Egypt	x million USD	x million USD	$2x$ million USD
Nigeria	x million USD	150 million USD	$(x+150)$ million USD
Libya			
South Africa	250 million USD	250 million USD	500 million USD

g) Now, if both Healthcare Budget of all (except Ghana) and Total Health Budget of all are multiples of 50 million USD, then the Research and Development Budget allocations of all (except Ghana) are bound to be also multiples of 50 million USD.

Hence in the Research and Development Budget allocations Libya has got to have an allocation of 200 million USD (it is second in rank to South Africa and ahead of all others), and Egypt has got to have an allocation of either 100 or 50 million USD.

But it cannot be 50 million USD, as in that case Egypt's Total Health Budget would be 100 million, becoming equal to Ghana's, which is not possible, as all Total Health Budgets are distinct.

Hence $x = 100$ million USD.

Thus the scenario becomes :

	Healthcare Budget	Research & Development Budget	Total Health Budget
Ghana	25 million USD	75 million USD	100 million USD
Egypt	100 million USD	100 million USD	200 million USD
Nigeria	100 million USD	150 million USD	250 million USD
Libya		200 million USD	
South Africa	250 million USD	250 million USD	500 million USD

h) From statement (iv) we know Libya was second to only South Africa and ahead of all others in the allocation of Healthcare Budget. From statement (vi) we know that except Ghana, all other Healthcare Budget allocations were a multiple of 50 million USD.

Hence the Healthcare Budget allocation of Libya can only be either 200, 150 or 100 million USD.

But 200 million is not an option as only South Africa and Egypt has 50% allocation of the Total Health Budget.

100 million is also not an option as Libya is ahead of all others.

Hence Libya's Healthcare Budget allocation was 150 million USD.

Thus the final scenario is :

	Healthcare Budget	Research & Development Budget	Total Health Budget
Ghana	25 million USD	75 million USD	100 million USD
Egypt	100 million USD	100 million USD	200 million USD
Nigeria	100 million USD	150 million USD	250 million USD
Libya	150 million USD	200 million USD	350 million USD
South Africa	250 million USD	250 million USD	500 million USD

Hence, Ghana's total Health Budget is 100 million USD

30. 350

We already know that :

	Healthcare Budget	Research & Development Budget	Total Health Budget
Ghana	25 million USD	75 million USD	100 million USD
Egypt	100 million USD	100 million USD	200 million USD
Nigeria	100 million USD	150 million USD	250 million USD
Libya	150 million USD	200 million USD	350 million USD
South Africa	250 million USD	250 million USD	500 million USD

Hence, Libya's total Health Budget is 350 million USD

31. 50

We already know that :

	Healthcare Budget	Research & Development Budget	Total Health Budget
Ghana	25 million USD	75 million USD	100 million USD
Egypt	100 million USD	100 million USD	200 million USD
Nigeria	100 million USD	150 million USD	250 million USD
Libya	150 million USD	200 million USD	350 million USD
South Africa	250 million USD	250 million USD	500 million USD

Nigeria's Research and Development Budget is 150 million USD.

Egypt's Research and Development Budget is 100 million USD.

Hence the research and development budget allocation of Nigeria was more than the same of that of Egypt by

$$150 - 100 = 50 \text{ million USD.}$$

32. A

We already know that :

	Healthcare Budget	Research & Development Budget	Total Health Budget
Ghana	25 million USD	75 million USD	100 million USD

Egypt	100 million USD	100 million USD	200 million USD
Nigeria	100 million USD	150 million USD	250 million USD
Libya	150 million USD	200 million USD	350 million USD
South Africa	250 million USD	250 million USD	500 million USD

South Africa's Research and Development Budget is 250 million USD.

Libya's Research and Development Budget is 200 million USD.

Hence the research and development budget allocation of Libya was less than the same of that of South Africa by

$$= (250 - 200) \times 100 / 250$$

$$= 20\%$$

33. D

We already know that :

	Healthcare Budget	Research & Development Budget	Total Health Budget
Ghana	25 million USD	75 million USD	100 million USD
Egypt	100 million USD	100 million USD	200 million USD
Nigeria	100 million USD	150 million USD	250 million USD
Libya	150 million USD	200 million USD	350 million USD
South Africa	250 million USD	250 million USD	500 million USD

Healthcare Budget allocation of Egypt = 100 million USD

Healthcare Budget allocation of Ghana = 25 million USD

Hence the healthcare budget allocation of Egypt compared to the same as that of Ghana is $100/25 = 4$ times

34. B

We already know that :

	Healthcare Budget	Research & Development Budget	Total Health Budget
Ghana	25 million USD	75 million USD	100 million USD
Egypt	100 million USD	100 million USD	200 million USD

Nigeria	100 million USD	150 million USD	250 million USD
Libya	150 million USD	200 million USD	350 million USD
South Africa	250 million USD	250 million USD	500 million USD

The total Research and Development Budget allocation of all the five countries
 $= (75+100+150+200+250)$
 $= 775$ million USD

The total Healthcare Budget allocation of all the five countries
 $= (25+100+100+150+250) = 625$ million USD

Hence, the RPR Index of the five countries taken together $= 775/625 = 31/25 = 1.24$

35. C

The total number of auditionees who failed in the seven rounds must be the minimum number of people who auditioned for the first round.

Hence the minimum number of auditionees for the first round in Dumdum $= 64+50+48+40+34+26+20 = 282$

Hence the minimum number of auditionees who cleared the first round in Dumdum $= 282 - 64 = 218$

Similarly the minimum number of auditionees for the first round in Shyambazar $= 56+52+56+38+28+20+8 = 258$

Hence the minimum of auditionees who cleared the first round in Shyambazar $= 258 - 56 = 202$

Hence the total count of the least number of auditionees who had cleared the first round of 'Dadagiri' in the area of Dumdum and Shyambazar $= 218 + 202 = 420$

36. B

Let the number of people who auditioned for the first round of 'Dadagiri' in Behala be x

Hence the number of auditionees who passed the fifth round in Behala $= x - (76+64+50+42+34) = (x - 266)$

The number of auditionees who got selected in the final round in Behala $= x - (266+36+22) = (x - 324)$

Hence,

$$(x - 266) = 2*(x - 324)$$

$$\text{or, } x = 648 - 266$$

$$\text{or, } x = 382$$

Hence, the number of people who auditioned for the first round of 'Dadagiri' in Behala $= 382$

37. C

Let the number of people who auditioned for the first round of 'Dadagiri' in Dumdum and Salt Lake be x and y respectively

Hence the number of auditionees who got selected in the final round in Dumdum and Salt Lake respectively

$$= x - (64+50+48+40+34+26+20) \text{ and } y - (86+74+52+38+42+26+18)$$

$$= (x - 282) \text{ and } (y - 336)$$

Since both the values are equal,

$$(x - 282) = (y - 336)$$

$$\text{or, } (y - x) = 54$$

The number of auditionees who passed the second round of 'Dadagiri' in Dumdum and Salt Lake respectively

$$= x - (64+50) \text{ and } y - (86+74)$$

$$= (x - 114) \text{ and } (y - 160)$$

Hence, the difference between those who passed the second round of 'Dadagiri' in both the areas

$$= (y - 160) - (x - 114)$$

$$= (y - x) + (114 - 160)$$

$$= (y - x) - 46$$

$$= 54 - 46$$

$$= 8$$

38. A

Since 240 people auditioned for the first round of 'Dadagiri in Ballygunge', the number of passes in each round of the audition in Ballygunge are as follows :

$$\text{First round} = 240 - 42 = 198$$

$$\text{Second round} = 198 - 58 = 140$$

$$\text{Third round} = 140 - 34 = 106$$

$$\text{Fourth round} = 106 - 42 = 64$$

$$\text{Fifth round} = 64 - 30 = 34$$

$$\text{Sixth round} = 34 - 10 = 24$$

$$\text{Seventh round} = 24 - 14 = 10$$

Hence the ratio of the pass percentages of the seven rounds in order will be

$$= 198/240 : 140/198 : 106/140 : 64/106 : 34/64 : 24/34 : 10/24$$

$$= 0.82 : 0.71 : 0.76 : 0.60 : 0.53 : 0.71 : 0.42$$

that is, highest : third highest : second highest : fifth highest : sixth highest : third highest : seventh highest in rank respectively

Hence, the round in which the percentage of passes in the auditions of 'Dadagiri' in Ballygunge area was the fifth highest in rank is the Fourth round.

39. A

Number of employees of M/S Dabur India Ltd whose only preference is Bengali cuisine = 2280

Number of employees whose first preference is Mughlai and second preference Kolhapuri cuisine = 858

$$\text{Hence percent more} = (2280 - 858) * 100 / 858 = 165.73\%$$

40. B

The number of employees of M/S Dabur India Ltd whose first preference is South Indian and second preference is Awadhi = 336

The number of employees whose first preference is South Indian and second preference is Chinese = 177
 The number of employees whose first preference is Continental and second preference is Awadhi = 159
 The number of employees whose first preference is Continental and second preference is Chinese = 87

Total = 759

The number of employees of M/S Dabur India Ltd whose first preference is Bangladeshi and second preference is Bengali = 2676

Hence required percentage = $759 \times 100 / 2676 = 28.4\%$

41. C

To find the total number of employees of M/S Dabur India Ltd who prefer only one type of cuisine among the eight choices, we add all the employees along the top-left to bottom-right diagonal of the chart, that is :

$(2280 + 642 + 456 + 336 + 336 + 216 + 249 + 69) = 4584$

42. D

The number of employees of M/S Dabur India Ltd whose first two preferences are either Bengali or Mughlai cuisine

= The number of employees whose first preference is Bengali and second preference is Mughlai + The number of employees whose first preference is Mughlai and second preference is Bengali

= $1320 + 453$

= 1773

The number of employees of M/S Dabur India Ltd whose first preference out of the two is Awadhi cuisine

= $(666 + 1498 + 228 + 336 + 183 + 159 + 354)$

= 3424

Hence percent = $1773 \times 100 / 3424 = 51.8\%$

43. B

It can be seen clearly on inspection of the data that the most popular cuisine was Bengali and the least popular cuisine was Continental.

The number of employees of M/S Dabur India Ltd who choose Bengali cuisine as their first or second preference

= (number who chose Bengali cuisine as their only preference) + (number who chose Bengali cuisine as their first preference) + (number who chose Bengali cuisine as their second preference)

= $2280 + (1575 + 933 + 1320 + 1770 + 600 + 1110 + 204) + (2676 + 666 + 453 + 381 + 189 + 396 + 177)$

= $2280 + 7512 + 4938$

= 14730

The number of employees of M/S Dabur India Ltd who choose Continental cuisine as their first or second preference

= (number who chose Continental cuisine as their only preference) + (number who chose Continental cuisine as their first preference) + (number who chose Continental cuisine as their second preference)

= $69 + (177 + 264 + 159 + 144 + 204 + 93 + 87) + (204 + 222 + 354 + 189 + 207 + 396 + 222)$

= $69 + 1128 + 1794$

= 2991

Hence percent more = $(14730 - 2991) \times 100 / 2991 = 392\%$

44. C

Number of employees of M/S Dabur India Ltd who chose Bangladeshi cuisine as their only preference = 642

Number of employees who chose Bangladeshi cuisine as their first preference = $(2676 + 354 + 384 + 642 + 237 + 129 + 222) = 4644$

Number of employees who chose Bangladeshi cuisine as their second preference = $(1575 + 1498 + 696 + 327 + 387 + 254 + 264) = 5001$

Hence, the total discount that Dr Burman would get = $(642 \times 500) + (4644 \times 400) + (5001 \times 200)$
 $= 3,21,000 + 18,57,600 + 10,00,200$
 $= \text{Rs } 31.79 \text{ lakhs}$

Section - Quantitative Aptitude

45. A

$$p = 1 \times 2 \times 3 \times \dots \times 20 = 20!$$

$$q = 10 \times 20 \times 30 \times \dots \times 200 = 10^{20} (1 \times 2 \times 3 \times \dots \times 20) = 10^{20} (20!)$$

$$\text{So, } (1/p - 1/q) = 1/20! - 1/10^{20} (20!) = [10^{20} - 1] / [10^{20} (20!)]$$

46. 26

Sum of integers from 1 to 100 = $100(101)/2 = 5050$

Prime factorization of 5050 = $2 \times 5^2 \times 101$

Factors which are perfect square are 1, 5^2

Sum of factors which are perfect square = $1 + 25 = 26$.

47. C

Typical dosage for a patient of 80 pounds = $4(80)/20 = 16$

Remaining amount of dosage = $16 - 6 = 10$ which is $(10/24) 100 = 41.66\%$

48. 2550

According to question

$$1.5(n + n^2) \geq 940 + 0.9n + 1.1n^2$$

$$\Rightarrow 0.4n^2 + 0.6n - 940 \geq 0$$

On solving, $n \geq 49.23$

So, $n = 50$

Minimum number of units produced = $n^2 + n = 50^2 + 50 = 2550$.

49. 57

Let her marks in first two tests be a and b respectively.

Arithmetic mean of two numbers = Geometric mean of two numbers, then the two numbers must be equal.

So, $a = b$

Average of two tests = a

Correct average of 3 tests = $(a + a + 72)/3$

Incorrect average of 3 tests = $(a + a + 27)/3$

ATQ

$(a + a + 72)/3 + (a + a + 27)/3 - a = 52$

So, $a = 57$

50. C

A: D = 8: 5

A: B = 3: 4

C: D = 3: 2

So, A: B: C: D = 48: 64: 45: 30

Let each fruit is purchased at Rs 1. So, Total CP = Rs $(48 + 64 + 45 + 30) = \text{Rs } 187$

SP = Rs $(48 \times 1.25 + 64 \times 0.75 + 45 + 30) = \text{Rs } 183$

Loss % = $(4/187) 100\% = 2.14\%$

51. 22.5

Let us say he covered x miles in first hour and he increases his speed by 1 mile per hour after every hour.

In last five hours i.e. 14th hour to 18th hour, distance covered by him will be

$(x+13) + (x+14) + (x+15) + (x+16) + (x+17) = 165$

$\Rightarrow x = 18$ miles per hour.

In first 10 hours, total journey = $10/2 [2 \times 18 + 9] = 225$ miles

{Using sum of first n terms of an AP}

So, average speed in first 10 hours = $225/10 = 22.5$ miles per hour.

52. C

Both trains took equal time to cover the same distance so their speeds are same.

When second train starts to travel first train has already completed 2 hrs journey.

At 9 AM, both trains are at 3hrs distance so after 1.5 hrs they will meet at 10: 30 AM.

53. 18

Second pump fill the pool from $1/3^{\text{rd}}$ of its capacity to $2/3^{\text{rd}}$ of its capacity in 2 hrs.

i.e. $1/3^{\text{rd}}$ of pool was filled in 2hrs

So, second pump can fill the pool in 6hrs.

Since second pump is thrice as efficient as 1st pump, 1st pump will take 18 hrs to fill the same pool.

To fill another pool of double capacity, pump 1 will take 36 hrs and pump 2 will take 12 hrs individually.

If the capacity of pool is 36 liters, pump 1 will fill 1 liter per hour and pump 2 will fill 3 liters per hour. On alternate basis, both will fill 4 liters per 2 hours. So, they will take 18 hours to fill the tank completely.

54. 6

$m/3$ becomes m in 3 yrs i.e. 3 times.

It means in every 3 years Principal becomes 3 times of itself.

In next 3 yrs it becomes 9m and in another 3 years it will 27m
So, after 6 years from now value of antique becomes 27m.

55. C

1st box should have 2 marbles

2nd box should have 3 marbles

3rd, 4th and 5th box should have 4 marbles each.

6th box must have 1 marble in it.

So, minimum possible value of marbles in 6 boxes = $2 + 3 + 4 \times 3 + 1 = 18$

56. D

Put $x = 0$;

$$7f(0) - 2f(0) = 10$$

$$\Rightarrow 5f(0) = 10$$

$$\Rightarrow f(0) = 2$$

Put $x = 1$;

$$7f(-1) - 2f(1) = 15$$

Put $x = -1$

$$7f(1) - 2f(-1) = 15$$

From above two equations, we get $f(1) = f(-1)$

$$\text{So, } 7f(1) - 2f(1) = 15$$

$$f(1) = 3$$

$$\frac{AM}{GM} = \frac{(2 + 3)/2}{\sqrt{6}} = \frac{5}{2\sqrt{6}}$$

57. C

Total number of ways posting letters = $5! = 120$

Since, exactly two letters are posted at correct addresses, 3 letters must be posted at wrong addresses.

So, first select 3 addresses out of 4 i.e. ${}^4C_3$ (Since 1 can never be wrong)

At the three addresses, all the letters can be sent in 2 ways such that they must be sent wrong addresses.

Example

Address	1	2	3
Correct Sequence	A	B	C
Wrong Sequence 1	B	C	A
Wrong Sequence 1	C	A	B

So, Favorable outcomes = $2 \times {}^4C_3 = 8$

Probability = $8/120 = 1/15$

58. 10

Volume of frustum = volume of cylinder

$$\frac{1}{3}\pi(R^2 - r^2)H = \pi X^2 H'$$

Here R = radius of lower part of frustum

r = radius of upper part of frustum

H = height of frustum

H' = height of cylinder

X = radius of cylinder

So,

$$\frac{1}{3}\pi(13^2 - 12^2)18 = \pi X^2 6$$

X = 5 ft

So, diameter = 10 ft

59. 10

Since $8 \leq |y| \leq 12$

$\Rightarrow 8 \leq y \leq 12$ or $-12 \leq y \leq -8$

So, y can have 10 different values.

Therefore, x and y can have 10 ordered solutions.

60. B

The profit is 10% if A and B are mixed in the ratio 2: 3 and SP of mixture is Rs 42 per Kg. So, CP of mixture is Rs 35 per kg.

Let cost price of A and B are Rs x and Rs y respectively.

Therefore, $2x + 3y = 35 \times 5 = 175$

Since x is an integer value then y must also be an integer value between 32 and 37

Y	X
32	39.5 (Not possible)
33	38
34	36.5 (Not possible)
35	35
36	33.5 (Not possible)

Case 1: x = 38, y = 33

CP = $(3x + 2y)/5$ per Kg = Rs 36 per Kg

Profit % = $(6/36) \times 100 = 16.66\%$

Case 2: x = 35, y = 35

CP = Rs 35 per Kg

Profit % = $(7/35) \times 100 = 20\%$

61. 8

line passing through points (a, 0) and (0, 0) will be on x-axis with length = a unit

line passing through (0, 0) and (b, 4) will be along y -axis since it is perpendicular to 1st line.

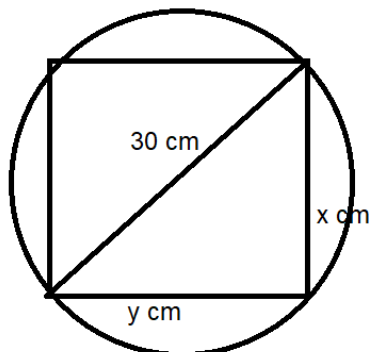
So, b = 0 and length of line = 4 units

Area of triangle formed = $\frac{1}{2} (a) (4) = 16$

So, $a = 8$ unit

62. B

Diameter of circle forms the diagonal of rectangle.



The possible lengths of x and y are 18 cm and 24 using Pythagoras triples.

So, area of rectangle = $18 \times 24 = 432 \text{ cm}^2$

63. A

Case 1: 3-digit number

Number is of the form of aba or aaa

If number is of the form of aba :

Two digits have to be selected i.e. ${}^4C_2$ ways = 6 ways and digits can be arranged in 2 ways.

So, numbers formed = 12

If number is of the form of aaa :

One digit has to be selected i.e. ${}^4C_1$ ways = 4 ways and digits can be arranged in 1 way only.

So, numbers formed = 4

Case 2: 4-digit number

Number is of the form of $abba$ or $aaaa$

If number is of the form of $abba$:

Two digits have to be selected i.e. ${}^4C_2$ ways = 6 ways and digits can be arranged in 2 ways.

So, numbers formed = 12

If number is of the form of $aaaa$:

One digit has to be selected i.e. ${}^4C_1$ ways = 4 ways and digits can be arranged in 1 way only.

So, numbers formed = 4

Total numbers formed are $12 + 4 + 12 + 4 = 32$

64. B

For $x^2 + (a - 3)x - (a + 5) = 0$

α and $\beta = -(a - 3)$

$\alpha\beta = -(a + 5)$

So, $\alpha^2 + \beta^2 = (\alpha + \beta)^2 - 2\alpha\beta$

$\Rightarrow \alpha^2 + \beta^2 = \{-(a - 3)\}^2 - 2\{-(a + 5)\} = a^2 - 4a + 19$

For minimum value $d(a^2 - 4a + 19)/da = 0$

$$\Rightarrow 2a - 4 = 0$$

$$\Rightarrow a = 2$$

$$\text{Therefore, Min } (\alpha^2 + \beta^2) = 2^2 - 4 \times 2 + 19 = 15$$

65. C

Let the series be $a-2d, a-d, a, a+d, a+2d, a+3d$ and so on.

2nd Condition:

$$\text{Sum of 1st three odd terms} = a-2d + a + a+2d = 45$$

$$\Rightarrow a = 15$$

1st Condition:

$$(\text{2nd term})(\text{4th term})(\text{6th term}) = (a-d)(a+d)(a+3d)$$

$$\Rightarrow (15-d)(15+d)(15+3d) = 5184$$

$$\text{On simplifying, } d^3 + 5d^2 - 225d + 603 = 0$$

$$\Rightarrow d = 3$$

$$\text{So, the second term of AP} = a-d = 15-3 = 12$$

66. C

Volume of prism = Area of base $\times$ height

$$150 = 25 \times h$$

$$h = 6 \text{ cm}$$

$$\text{Length of side of square base} = \sqrt{25} = 5 \text{ cm}$$

$$\text{Length of rod} = \sqrt{(5^2 + 5^2 + 6^2)} = 9.72 \text{ cm}$$

CAREERS360

MOCK TEST – 11

Section - 1 - Verbal Ability & Reading Comprehension

Directions for Questions 1 to 4: Read the passage given below and answer the questions that follow.

Passage-1

In 2006, I published a book called *Better Never to Have Been*. I argued that coming into existence is always a serious harm. People should never, under any circumstance, procreate – a position called ‘anti-natalism’. In response, readers wrote letters of appreciation, support and, of course, there was outrage. But I also got this message, which is the most wrenching feedback I have received:

I have suffered horribly since I was a teen because of severe bullying in school that left me profoundly traumatised to the point I had to abandon school. Unfortunately, I also have terrible looks and I've been judged, mocked, insulted because of being 'too ugly' even by random strangers in the street which usually happens almost daily. I've been called the ugliest person they have ever seen. That's extremely hard to deal with. Then, to finish it, I was diagnosed with a serious congenital heart disease when I was just 18, and today in my early 20s, I suffer from severe heart failure and malignant arrhythmia that threaten to kill me. My heart has almost stopped many times and I deal with the fear of sudden death each day of my existence. I am petrified by fear of death and the agony and torment of imminent death is indescribable. I don't have much time left and the unavoidable will happen soon. My life has been pure hell and I don't even know what to think anymore. Certainly, sentencing someone to such a world is the worst of all crimes, and a serious moral violation. If it wasn't by my parents' selfish desire, I wouldn't be here today suffering what I suffer for no reason at all, I could have been spared in the absolute peace of non-existence but I am here living this daily torture.

One does not have to be an anti-natalist to be moved by these words (which are quoted with permission). Some might be inclined to say my correspondent's situation is an exceptional one, which should not incline us towards anti-natalism. However, severe suffering is not a rare phenomenon, and thus anti-natalism is a view that, at the very least, should be taken seriously and considered with an open mind.

The idea of anti-natalism is not new. In Sophocles' *Oedipus at Colonus*, the chorus declares that ‘not to be born is, beyond all estimation, best’. A similar idea is expressed in *Ecclesiastes*. In the East, both Hinduism and Buddhism have a negative view of existence (even if they do not often go so far as to oppose procreation).

Anti-natalism will only ever be a minority view because it runs counter to a deep biological drive to have children. However, it is precisely because it is up against such odds that thoughtful people should pause and reflect rather than hastily dismiss it as mad or wicked. It is neither. Of course, distortions of anti-natalism, and especially attempts to impose it forcefully, might well be dangerous – but the same is true of many other views. Appropriately interpreted, it is not anti-natalism but its opposite, that is the dangerous idea. Given how much misfortune there is – all of it attendant on being brought into existence – it would be better if there were not an unbearable lightness of bringing into being.

Q1. In the given case, the author of the passage will agree with the statement:

- A. There is an emotive case against procreation
- B. There is a scientific case against procreation
- C. There is no case against procreation
- D. There is a moral case against procreation

Q2. The author of the passage will agree with which of the following statements?

- I. Anti-natalism is not a popular view per se.
- II. Anti-natalism needs more thought than it is accorded right now.
- III. The suffering children go through can be avoided.

- A. I & II
- B. II & III
- C. I & III
- D. All of the above

Q3. The message shared by the author highlights that:

- A. the writer of the note blames her environment for her condition.
- B. the writer of the note blames her school-mates for her problems.
- C. the writer of the note blames her parents for her condition.
- D. all of the above

Q4. The approach adopted by the author of the passage can be identified as all of the following except:

- A. rational
- B. metaphysical
- C. scholarly
- D. discursive

Directions for questions 5 to 8: The passage given below is followed by a set of questions. Choose the most appropriate answer to each question.

Passage-2

Just who was Elie Wiesel? Did we get him wrong? By the time he died on July 2 of last year, Elie Wiesel had become what you might call a Jewish celebrity thinker. More well known as a celebrity than for his thinking. He would have turned 89 tomorrow.

He had become a living icon—a Symbol of Suffering, of Survivorhood, of piety under pressure. Adding his name to any given cause gave it a kind of instant gravitas. People gave him a knee-jerk, default, reverential respect for who he was—for the aura of tragedy that seemed to radiate from his presence. He also seemed to serve as a shield against painfully explicit memory. A kind of anesthetic buffer for the pain of the Holocaust, a golem of grief sitting endless shiva on our behalf.

He earned that respect for the service he performed in the decades immediately after the war—when there were no Holocaust memorials on every street corner, no “Shoah package” in every middle-school curriculum—he became a one-man walking Holocaust museum, the person who demanded from the world remembrance and respect for all victims and survivors.

But no more. There was by the time he died a sense that he had passed his moment of real relevance. The time when he stood virtually alone as a public figure had passed. Now fewer paid attention to his stoic mien, his quietism. He was no Simon Wiesenthal who—until the moment of his death—devoted his entire being, with grim relentlessness, to the pursuit, capture, and punishment of Nazi collaborators wherever in the world they were hiding. Too controversial, people would think, the idea that Jews had a right to continue to demand justice rather than merely memory. And so after a while the world paid Wiesel respect with a guilt-tinged Nobel Peace Prize and a “very special episode” of Oprah’s Book Club. And then didn’t want to hear any more from him.

Meanwhile, Wiesel glided through the Jewish world in shadowy black suits, eyes circled in gloomy Dantean darkness, the Man in Black, the Johnny Cash of the death camps. He did the work of grief for us, and we were grateful: As long as we could glimpse him and his cloud of gloom, we could check that box and go about our business.

Q5. According to the author of the passage:

- A. Elie Wiesel did not get the recognition he deserved.
- B. Elie Wiesel was always respected for the work he did and his Nobel prize was the final piece of distinction for this work.
- C. The work and thoughts of Elie Wiesel lost relevance over a period of time.
- D. The work and views of Elie Wiesel did not stand for much.

Q6. It can be inferred from the passage:

- A. Elie Wiesel was a Holocaust survivor.
- B. At one point of time, Elie Wiesel helped substantially in helping the world understand the horrors of Holocaust.
- C. Both A and B
- D. Neither A nor B

Q7. What does the author mean by 'instant gravitas'?

- A. An air of permanence was added to an issue.
- B. An air of importance was added to a cause.
- C. A feeling of brilliance was added to a cause.
- D. A feeling of completeness was added to an issue.

Q8. It can be deduced that Simon Wiesenthal, in comparison to Elie Wiesel, was:

- A. far more aggressive and proactive in his approach
- B. concerned only with token appearances
- C. did not care for financial rewards or important recognitions
- D. all of the above

Directions for questions 9 to 12: The passage given below is followed by a set of questions. Choose the most appropriate answer to each question.

Passage-3

A student of literature in the university today can be forgiven a certain bafflement about what constitutes the function of the discipline. What, exactly, is literary studies? Is it a kind of history, a

branch of philosophy, the study of rhetoric? Is it about becoming a better reader, in an ethical or technical sense? It's not about learning how to write; that's what MFA programs are for. One might turn to histories of the discipline in an effort to clear things up — but here, too, the same confusions apply. The history of methods of scholarship and criticism is its own subfield, and one can find convincing arguments to suit mostly any purpose.

In practice, what one believes literary studies is, or should be, often depends on where one went to university. Certain figures loom larger in the imagination of one institution than another. The history of literary studies at Columbia must include Lionel Trilling and Edward Said; at Yale, the genealogy needs to account for a transition from William Wimsatt to Harold Bloom and Paul de Man. The fact that almost no one currently teaching at Yale wants to claim these ancestral figures as influential is itself part of the story. Influence is cunning and seldom direct. But even a perfect genealogy would not imply that the methods and traditions these figures espoused were handed down in an unbroken line. It turns out that no one has really measured how accurately or effectively any understanding of how to read literature propagates throughout a culture. The Modern Language Association does not own a patent or have a monopoly on reading practices. Mutations happen often. And there remains the uncomfortable fact that most people's deepest reading habits are developed in a secondary education system, not the university.

Imagine a "people's history of literary studies" as unglamorous and antiheroic as the accounts of Austerlitz and Waterloo sketched by Tolstoy and Stendhal — a chronicle of mixed intentions and earnest people, a hundred high school classrooms steeped in adolescent hormones, misunderstandings, weirdos, conscripts, mediocrities, two hundred Lucky Jims and Janes for every J. Hillis or D. A. Miller. Moments of brilliance — the founding of new schools and new ways of reading — would be of less import than the countless hours spent plodding through conferences, faculty meetings, and exams. It would be something like social histories of epidemics, focused on describing the multiple points and routes of contact and transmission, the conditions and practices that facilitated or forestalled the spread.

Q9. According to the author of the passage:

- A. Yale has continued with its literary traditions.
- B. Yale has not continued with its literary traditions.
- C. Yale has not respected its literary traditions enough.
- D. None of the above

Q10. Through the passage, the author clearly exhibits:

- A. a sense of potent omniscience dominating members of a certain group.
- B. a sense of angst developing among students of a certain stream.
- C. a sense of despondency attacking members of a certain group.
- D. a sense of befuddlement afflicting members of a certain stream.

Q11. According to the author of the passage:

- A. the university at which one studies literary studies determines the kind of outlook one has for the subject.
- B. Important reading habits for most people are developed before they enter university.
- C. Both A and B
- D. Neither A nor B

Q12. As per the information given in the passage, which of the following statements is correct?

- I. The work of certain individuals dominates thinking at those particular universities.**
- II. Reading practices do not follow a linear model of distribution and vary in cultures.**
- III. Reading practices are often changed in different cultures.**

- A. I & II
- B. II & III
- C. I & III
- D. All of the above

Directions for Questions 13 to 16: Read the passage given below and answer the questions that follow.

Passage-4

It is not always good to have the opportunity to make a choice. When we must decide to take one action rather than another, we also, ordinarily, become at least partly responsible for what we choose to do. Usually this is appropriate; it's what makes us the kinds of creatures who can be expected to abide by moral norms.

Sometimes, making a choice works well. For instance, imagine that while leaving the supermarket parking lot you accidentally back into another car, visibly denting it. No one else is around, nor do you think there are any surveillance cameras. You face a choice: you could drive away, fairly confident that no one will ever find out that you damaged someone's property, or you could leave a note on the dented car's windshield, explaining what happened and giving contact information, so that you can compensate the car's owner. Obviously, the right thing to do is to leave a note. If you don't do this, you've committed a wrongdoing that you could have avoided just by making a different choice. Even though you might not like having to take responsibility – and paying up – it's good to be in the position of being able to do the right thing.

Yet sometimes, having a choice means deciding to commit one bad act or another. Imagine being a doctor or nurse caught in the following fictionalised version of real events at a hospital in New Orleans in the aftermath of Hurricane Katrina in 2005. Due to a tremendous level of flooding after the hurricane, the hospital must be evacuated. The medical staff have been ordered to get everyone out by the end of the day, but not all patients can be removed. As time runs out, it becomes clear that you have a choice, but it's a choice between two horrifying options: euthanise the remaining patients without consent (because many of them are in a condition that renders them unable to give it) or abandon them to suffer a slow, painful and terrifying death alone. Even if you're anguished at the thought of making either choice, you might be confident that one action – let's say administering a lethal dose of drugs – is better than the other. Nevertheless, you might have the sense that no matter which action you perform, you'll be violating a moral requirement.

Are there situations, perhaps including this one, in which all the things that you could do are things that would be morally wrong for you to do? If the answer is yes, then there are some situations in which moral failure is unavoidable. In the case of the flooded hospital, what you morally should do is something impossible: you should both avoid killing patients without consent and avoid leaving them to suffer a painful death. You're required to do the impossible.

To say this is to go against something that many moral philosophers believe. That's because many moral philosophers have adopted a principle – attributed to the 18th-century German philosopher Immanuel Kant – that for an act to be morally obligatory, it must also be possible: so the impossible cannot be

morally required. This principle is typically expressed by moral philosophers with the phrase: 'Ought implies can.' In other words, you can only be obligated to do something if you're also able to do it.

Q13. The most likely profession for the author of the passage is:

- a. professor of ethics
- b. professor of semantics
- c. professor of sociology
- d. professor of psychology

Q14. The author of the passage will agree with the statement:

- a. Sometimes giving a person a choice is an act of altruism
- b. Sometimes giving a person a choice is an act of treachery
- c. Sometimes giving a person a choice is an act of terrible cruelty
- d. Sometimes giving a person a choice is an act of divination

Q15. The author of the passage will agree with the statement:

- a. Generally, when we take one action rather than another, there are times when we are partly responsible for the moral outcomes.
- b. Mostly, when we take one action rather than another, we become wholly and solely responsible for the moral outcomes.
- c. Generally, when we take one action rather than another, we are never responsible for the moral outcomes of the action we did not take.
- d. Mostly, when we take one action rather than another, there are times when we are responsible for the moral outcomes

Q16. According to the author of the passage:

- a. Every action that is possible is morally obligatory.
- b. There can be situations where moral failure is ineluctable.
- c. There are actions which one is able to do as one is obligated to do so.
- d. None of the above

Chapter: Parasummary

Directions for the Question: Identify the apt summary for the given paragraph. Enter the option number you deem as the correct answer.

Q17. Dutch disease refers to the phenomenon wherein countries that are rich in natural resources witness uneven growth across sectors. According to the thesis, when resource-rich countries export their resources to the rest of the world, it causes the exchange rate of their currency to appreciate significantly; this, in turn, affects other sectors in the country by discouraging their exports while encouraging the import of cheaper alternatives. The term was coined by The Economist in 1977 to describe the decline of the manufacturing industry in the Netherlands.

- A. Dutch Disease is a phenomenon that originated in the Netherlands and only happens there.
- B. Dutch Disease is a phenomenon that sets the benchmark in exchange rate of currency theory.
- C. Dutch Disease is a phenomenon that explains uneven growth across sectors in countries that are rich in natural resources
- D. Dutch Disease is a phenomenon that helps countries formulate their export and import policies.

Directions for the Question: Identify the apt summary for the given paragraph. Enter the option number you deem as the correct answer.

Q18. Corporate and political power has overwhelmed and overawed large sections of the media, both print and visual, where boldness and fearlessness are no doubt displayed but very selectively and in a slanted manner. Corporates have humongous financial interests in the media. First, they have large financial stakes in either print or visual media. Second, they have full ownership of both categories in innumerable cases. Third, they have significant control even of rival visual platforms.

- A. The control of print and visual media derives profits in this industry.
- B. Corporate power has made the media less effective.
- C. Rival Visual platforms to compete with each other corrupt the media.
- D. Political Power has led to consolidation of the large media houses.

Directions for the Question: Identify the apt summary for the given paragraph. Enter the option number you deem as the correct answer.

Q19. Influenced by the archaeology of the Black Death in London, generations of archaeologists have assumed that mass mortality events go hand in hand with large, communal burials. A close examination of the textual sources reveals, however, that even in London plague pits were not employed until the city's usual burial places were exhausted. It follows, then, that smaller settlements in the countryside may never have faced the same burial crises as large cities: The combination of more open space and less people would have meant that the majority of the population may never have had to change its burial practices.

- A. Archaeologists assume that mass deaths result in large communal burials, but evidence does not support this
- B. Archaeologists assume that mass deaths result in large communal burials.
- C. There is no evidence in London to support the hypothesis that mass deaths result in large communal burials.
- D. London had not started using large burial places till the usual places were exhausted.

Directions for the Question: The question below has a paragraph given with one sentence missing in at the end. From among the answer choices given, select the sentence that can fill the blank to form a coherent paragraph.

Q20. Wheelchair users will not be allowed to travel on a third of trains on a major route in northern England this summer following the temporary reintroduction of 45-year-old carriages. The main rail workers' union accused TransPennine Express (TPE) of flouting disability discrimination legislation and in effect operating a heritage railway by bringing back into service Mark 3 trains that were built in the 1970s for British Rail. Documents leaked to the Disability News Service show that wheelchairs will not be able to travel on 12 of the 34 hourly services to and from Liverpool and Scarborough via Manchester Victoria, Huddersfield, Leeds and York. (_____)

- a. The documents were actually causing a lot of disturbance in the society based on the contents.
- b. The document should be reconfigured as soon as possible as we cannot avoid what has been given initially to this section of the society.
- c. Immediate termination of the new scheme cannot be implemented as careful planning might have been carried out.

- d. The documents say there will be “no space on the train for wheelchairs” and that “the trains will run without wheelchair or cycle provision”.

Directions for the Question: The question below has a paragraph given with one sentence missing in at the end. From among the answer choices given, select the sentence that can fill the blank to form a coherent paragraph.

Q21. North West, the oldest of Kim Kardashian and Kanye West's brood, may still have her age in single digits but her life is way more glamorous than most of ours. North will be turning all of 5 years old on 15th June and even before the D-day arrives, the little girl is being spoiled silly. And we aren't talking about new shoes or dollhouses. On Instagram, Kim Kardashian took to sharing birthday presents that North had received much before she turned a year older. The presents are from none other than designer Alexander Wang. The designer sent North two bags - a leopard print shoulder sling and another sparkling silver one, both mini sized for the little girl from his designer brand.

(_____)

- Along with it is a sweet note signed by the designer saying, "North happy birthday! Every girl needs a lil sparkle. Hope you <3 it. Alex"
- These very expensive gifts have been winning a lot of tweets and it sure makes her parents happy.
- Along with it, there were expensive gifts from other stars in the music and film industry.
- A long list of gifts awaits her and we need to focus on the relevance of them to sharpen our economics.

Directions for question 22: In the following question, rearrange the five sentences in order to form a meaningful paragraph.

TITA

Q22.

- The document is mainly a book in which it has been established that customer is the king and it has not been factored anywhere that there may be fraud done by them as well
- It has been a trend that in all the cases junior officers are held responsible for wrongdoing and they are punished because of pressure from the higher management to fulfil the target at any cost
- This mentality will not stop until the regulator takes a balanced view and also gives the insurer ample opportunity to establish that the customer deserves the best whereas a malicious one deserves punishment as well
- The Insurance Regulatory and Development Authority has brought out of the Protection of Policyholders' Interest in order to inform the customers regarding the rights of the consumers regarding insurance policies

Directions for question 23: In the following question, rearrange the five sentences in order to form a meaningful paragraph.

TITA

Q23

- "Markets have become increasingly concerned that the austerity programmes in the eurozone are causing a vicious circle of recession", and "Markets were confused by mixed messages from European capitals".

2. I have only one word of reply. Bollocks.
3. Two quotes from yesterday's newspaper got me.
4. Did anyone phone me to ask how I, The Markets, was feeling about these subjects? Did they?

Directions for question 24: In the following question, rearrange the five sentences in order to form a meaningful paragraph.

TITA

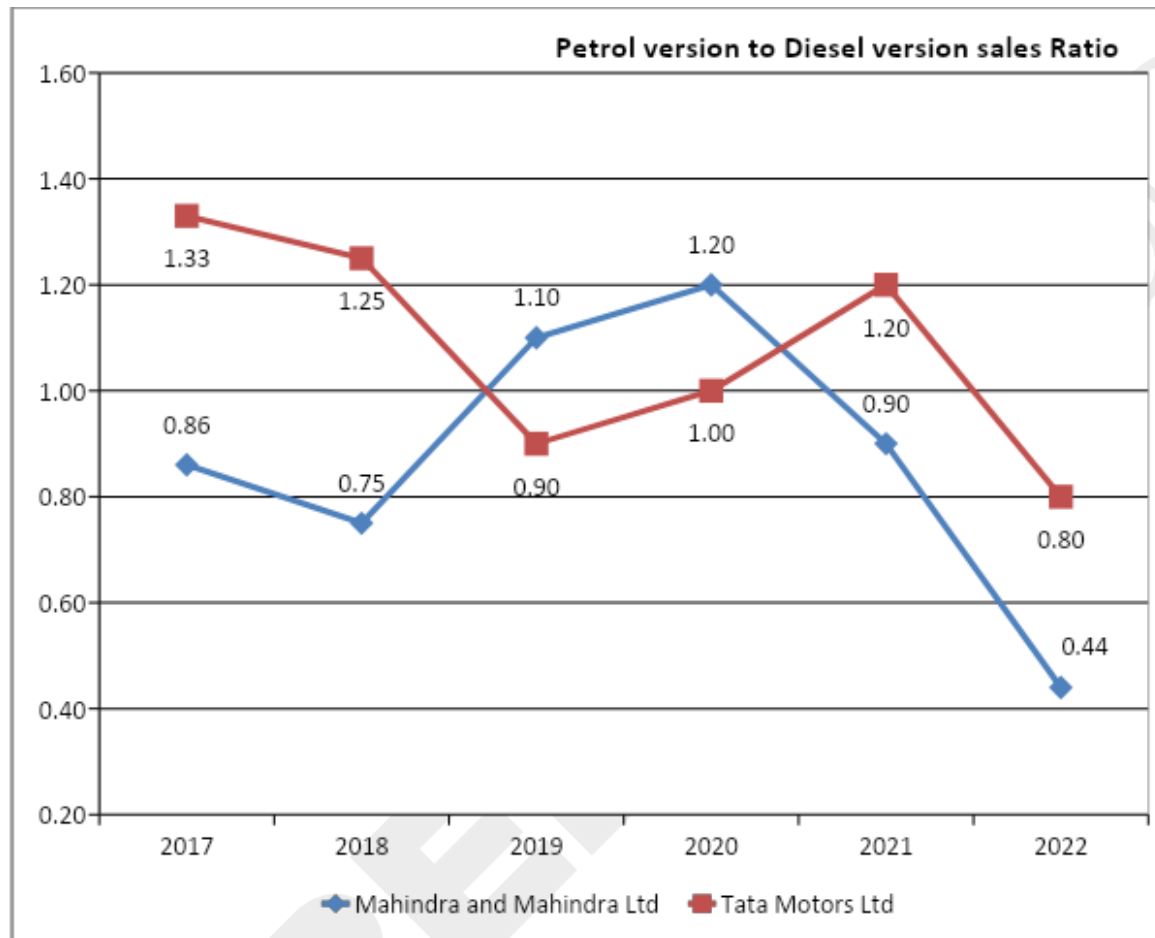
Q24.

1. You need to remember I'm not the one who created a whole array of inherently flawed financial instruments that no one properly understood.
2. Also, I'm not the idiot who decided property prices were going to go up forever and ever and that every country could max out its credit card.
3. I will not be the fall guy. I have done nothing wrong.
4. In fact, I am merely the blank canvas for other people's incompetence; a blank canvas to which errors financial and economic errors committed by others are ascribed.

Section - 2 - Data Interpretation and Logical Reasoning

Directions for questions from 25 to 29 :

The following line graph shows the ratio of the sales of the Petrol and Diesel version of SUVs (calculated in rupees) made by the two automobile giants of India – Tata Motors Ltd and Mahindra and Mahindra Ltd (M and M Ltd), in India, for a period of six years from 2017 to 2022 :



Q 25 (TITA)

In how many of the years from 2017 to 2022 were the Diesel version of SUV sales less than or equal to the Petrol version of SUV sales for both Mahindra and Mahindra Ltd and Tata Motors Ltd ?

Q 26 (TITA)

If the Diesel version SUV sales of Mahindra and Mahindra Ltd in 2020 were 235 crores of rupees, what was the amount of Petrol version SUV sales of M and M Ltd in the same year (in crores of rupees) ?

Q 27 If the Petrol version SUV sales of Tata Motors Ltd in 2019 were increased by forty percent, what would be the ratio of the Diesel version SUV sales of Tata Motors Ltd to the increased Petrol version SUV sales of Tata Motors Ltd in the same year ?

- A) 0.79
- B) 0.97
- C) 1.02
- D) 1.26

Q 28 (TITA)

From 2017 to 2022, if the Petrol version SUV sales of Tata Motors Ltd had consistently decreased at a rate of five percent per annum, then in which year was the Diesel version SUV sales of Tata Motors Ltd the maximum among the six years ?

Q 29 (TITA)

From 2017 to 2022, if the Diesel version SUV sales of Mahindra and Mahindra Ltd had consistently increased at a rate of three percent per annum, then in which year was the Petrol version SUV sales of Mahindra and Mahindra Ltd the minimum among the six years ?

Directions for questions from 30 to 34 :

At the Jaidip Mukherjea Tennis Academy in Salt Lake, Kolkata, 16 tennis players of the academy were scheduled to take part in an intra-academy clay court tennis tournament in December 2022. The players were seeded from 1 to 16 (Seed 1 being the top seeded player, that is the player with most points earned till the beginning of the tournament, and Seed 16 being the last seeded player, that is the one with the lowest points earned till the beginning of the tournament)

The tournament was pre-formatted in a knock-out fashion, with different rounds. In each round the winner of the match between two players advanced to the next round, while the loser got eliminated. This process was followed till the finals. It was fixed that in the first round, the player seeded 1 would play the player seeded 16, the player seeded 2 would play the player seeded 15 and so on. This process was to continue till the finals.

As per tennis language, if a lower seeded player beats a higher seeded player, it is called an upset. In case of no upset in a match, it is understood that a higher seeded player has beaten a lower seeded player.

It was also known that in the tournament the player seeded 6 got injured a few minutes before the start of the tournament and had to retire hurt without playing a single game. It was also observed that the player seeded 11 made two upsets.

Q 30 (TITA)

What was the total number of rounds in the tennis tournament at the Jaidip Mukherjea Tennis Academy in Salt Lake, Kolkata in December 2022 ?

Q 31 (TITA)

How many matches were played in the tennis tournament at the Jaidip Mukherjea Tennis Academy in Salt Lake, Kolkata in December 2022 ?

Q 32 Which seeded player played against the player seeded 2 in the semi-finals ?

- A) 3
- B) 6
- C) 11
- D) None of the above

Q 33 In which round was the player seeded 11 eliminated ?

- A) 1st
- B) 2nd
- C) 3rd

D) 4th

Q 34 How many matches did the player who lost in the finals, play and win in the tournament ?

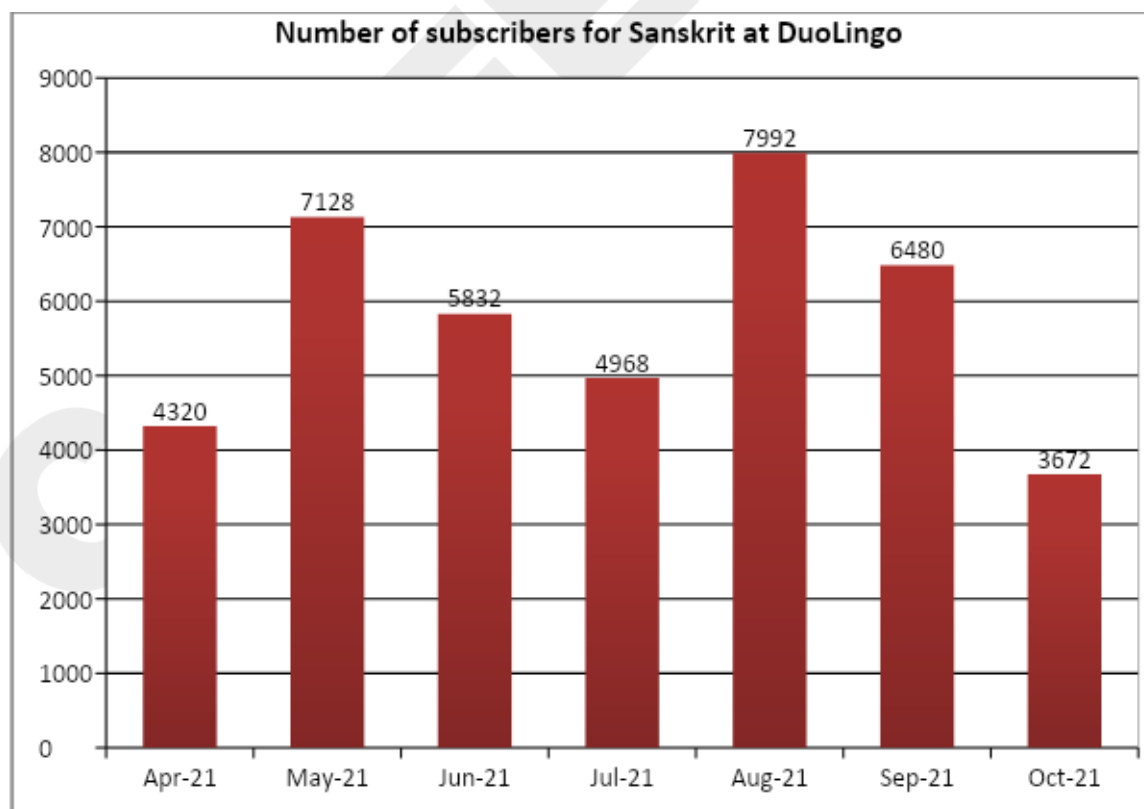
- A) 1
- B) 2
- C) 3
- D) 4

Directions for questions from 35 to 38:

DuoLingo is a language teaching app established with the aim to teach and hence protect the ancient and ethnic languages of the world. Forty-five such languages, including Sanskrit, are taught via live, online classes of one hour every weekday, for a period of three months on subscription basis. The subscription had to be done before the start of the course, at the beginning of a month. DuoLingo started its services from 1st January 2021.

Throughout the year 2021, it was observed that all of those who had subscribed at the beginning of a month, say month X, watched all the classes of that month X. In the month (X+1), it was found that exactly 75% of those who had subscribed at the beginning of month X watched all the classes of the current month. In the month (X+2), exactly 50% of those who had subscribed at the beginning of month X watched all the classes of the current month. These trends were prevalent from January 2021 to December 2021.

The following bar-graph depicts the number of subscribers of Sanskrit classes at DuoLingo from April 2021 to October 2021 :



It was also known that an equal number of subscribers were attending the classes in the month of January, February and March 2021. Furthermore, starting from October till December 2021, the number of subscribers who were attending the classes increased by at least 10% and at most 20% every month compared to the previous months.

Q 35 In which of the following months did the highest number of subscribers attend the Sanskrit classes at DuoLingo ?

- A) September 2021
- B) August 2021
- C) July 2021
- D) June 2021

Q 36 How many subscribers of Sanskrit classes at DuoLingo were there in the month of January 2021?

- A) 13432
- B) 12288
- C) 10124
- D) Cannot be determined

Q 37 In which of the following months was the percentage decrease in the number of subscribers who attended the classes in the current month as compared to the previous month the highest ?

- A) July 2021
- B) August 2021
- C) September 2021
- D) October 2021

Q 38) If the number of subscribers who subscribed to the Sanskrit classes at DuoLingo at the beginning of each of the months in 2021 is a multiple of four, find the maximum possible subscribers to the Sanskrit classes at DuoLingo in December 2021 ?

- A) 10244
- B) 10104
- C) 9732
- D) 9424

Directions for questions from 39 to 44 :

In 2022, on the occasion of their 450th year of being established, the Order of the Jesuit Missionaries, who founded the chain of St Xavier's Schools in India, decided to honour the Fathers as well as the Principles of their Indian schools who helped propagate quality education in India.

For that, they had to choose one of the schools where they would carry out this landmark ceremony at. In the final contention were St Xavier's Collegiate School Kolkata, St Xavier's School Durgapur, St Xavier's School Mumbai and St Xavier's School Ranchi. St Xavier's Schools in India as per rule had one Principal per school, and all the schools in India were represented by their individual Principals in the selection.

The eventual winner was determined through several rounds of voting by all the Principles of all the St Xavier's Schools. In any round of voting, the school receiving the minimum number of votes in that round

got eliminated. The surviving St Xavier's School after the last round of voting would get the chance to host the ceremony.

Each Principal was allowed to cast votes for at most two schools in all rounds of voting combined. Hence, a Principal would become ineligible to cast a vote in a given round if both the St Xavier's Schools he voted for in earlier rounds were out of contention in that round of voting. A Principle was also ineligible to cast a vote in a round if the St Xavier's School he represented was in contention in that round of voting. As long as the Principal was eligible, he had to vote for only one contesting St Xavier's School in any round of voting.

The following incomplete table shows the information on St Xavier's Schools that received the maximum and minimum votes in different rounds of voting, the number of votes cast in their favor, and the total votes that were cast in those rounds.

Round No	Total Votes	Maximum Votes		Minimum Votes	
		School	No of Votes	School	No of Votes
1		St Xavier's School Durgapur	42	St Xavier's Collegiate School Kolkata	21
2	127	St Xavier's School Ranchi		St Xavier's School Mumbai	38
3	114				

The following facts were also known :

- All the Principals who voted for St Xavier's School Durgapur and St Xavier's School Ranchi in round one went on doing so as long they were in contention
- Three fourth of those Principals who voted for St Xavier's School Mumbai in round one voted for St Xavier's School Mumbai in round two
- Those Principals who voted for St Xavier's Collegiate School Kolkata in round one voted for either St Xavier's School Ranchi or St Xavier's School Mumbai in round two
- Half of the Principals who voted for St Xavier's School Mumbai in round one voted for St Xavier's School Ranchi in round three
- The difference in votes between the two contending schools in the last round was 2.

Q 39 What percentage of Principals who had voted for St Xavier's Collegiate School Kolkata in round one voted for St Xavier's School Mumbai in round two ?

- 75%
- 66.67%
- 62.5%
- 33.33%

Q 40 What is the number of votes cast in favour of St Xavier's School Ranchi in round one ?

- 24
- 28
- 30

D) 31

Q 41 What is the number of votes cast in favour of St Xavier's School Ranchi in round two ?

- A) 47
- B) 42
- C) 38
- D) 36

Q 42 Assuming that all the Principals of all the St Xavier's Schools in India had the right to vote to elect one of the schools where the Order of the Jesuit Missionaries in Rome would carry out the landmark ceremony on the 450th year of their establishment, how many St Xavier's Schools were there in India in 2022 ?

- A) 127
- B) 128
- C) 130
- D) 148

Q 43 Which school finally got selected as the venue of the landmark ceremony on the occasion of the 450th year of establishment of the Order of the Jesuit Missionaries ?

- A) St Xavier's School Ranchi
- B) St Xavier's School Durgapur
- C) St Xavier's Collegiate School Kolkata
- D) St Xavier's School Mumbai
- E)

Q 44 What percentage of Principals who had voted for St Xavier's School Mumbai in round two and were eligible to vote, voted for St Xavier's School Durgapur in round three ?

- A) 38.10%
- B) 45%
- C) 50%
- D) 66.67%

Section - 3 - Quantitative Aptitude

Q45. (TITA)

In a country, there are only two sports being played and one player can opt for 1 sport only. The ratio of number of male players to female players is 7: 5. The ratio of number of male cricketers to female cricketers is 2: 3. The ratio of the number of male football players to female football players is 5: 3. If 4200 male players are cricketers, then the total number of female players in the country is

Q46. (TITA)

A cricket league has a pool of n ($3000 \leq n \leq 3500$) players and if the players are divided equally into teams of either 12 or 15 or 20 each, exactly 5 are always sort. However, if they are divided into teams of 25 each, no one is left out. Find the maximum number of teams of 25 players that can be formed from these players are

Q47. (TITA)

The arithmetic mean of all 4-digit terms in the geometric progression 35, 140, 560, ... is

Q48. (TITA)

An NGO accepts only cheques of ₹1000, ₹2500, and ₹5000. On a particular day, the NGO receives 200 cheques which amounts to ₹305000. Then, the maximum possible number of cheques of ₹2500 they could have received, is

Q49. Lonavala and Khandala are two stations 540 km apart. A train starts from Lonavala and moves towards Khandala at the rate of 27 km/h. After 4 hours, another train starts from Khandala at the rate of 29 km/h. How far from Khandala will they will cross each other?

- (a) 250 km (b) 300 km (c) 279.166 km (d) 232 km

Q50. (TITA)

If $(\sqrt[4]{7/8})^{4y/3x} = (343/512)^{1/x}$ and $(a/b)^{5-x} = (b/a)^{y+3x}$, find value of $(x + y)$

Q51. Rahul and Harish travel the same distance at the rate of 7 km per hour and 13 km per hour respectively. If Rahul took 3 hrs longer than Harish, the distance travelled by each is

- (a) 6 km (b) 10 km (c) 45.5 km (d) 20 km

Q52. The lengths of a pentagon are integer valued. If four of its sides are of length 3 cm, 5 cm, 7 cm and 9 cm. then the total number of possible lengths of the remaining side is

- (a) 21 (b) 23 (c) 19 (d) 24

Q53. A student got his result. He got 0 marks in none and maximum marks in each subject is 100. His marks in the five subjects are such that average of the marks in two subjects in which he got minimum marks is 28, and the average of the marks in two subjects in which he got minimum marks is 64. Then, if he has not got equal marks in any of the two subjects, the maximum possible value of the average marks in all subjects is

- (a) 56 (b) 63 (c) 49.2 (d) 64

Q54. In a right triangle ABC right angled at B, a perpendicular BD is drawn on AC such that $BD:AB = 1:2$. What is the ratio of area of triangle BDC to area of triangle ABD?

- (a) 1: 1 (b) 4: 1 (c) 1: 2 (d) 1: 3

Q55. Amit is twice as efficient as Bunty and thrice as efficient as Chintu. Bunty can finish a job in 40 days, if he works alone. They started work in following manner:

- (i) On day 1 all the three work together
- (ii) On day 2 Amit worked alone, on day 3, Bunty work alone, and on day 4 Chintu work alone
- (iii) On day 5 again all the three worked together, and then, they continue the work by repeating this four-day roster.

Then, the total number of days Amit would have worked when the job gets finished, is

- (a) 12 days (b) 120/11 days (c) 110/11 days (d) 60/11 days

Q56. Anita buys 5 kg Mangoes, 10 kg Apples and 20 kg Oranges at the same price. She mixes all the three and marks a price for the mixture in order to make a profit of ₹600. She sells 10 kg of the mixture at this marked price, 10 Kg of the mixture at cost price and the remaining at a 20% discount on the marked price, thus making a total profit of ₹318. Then the amount, in rupees, that she had spent in buying Apples is

- (a) 540 (b) 1800 (c) 2300 (d) 230

Q57. (TITA)

In how many ways 20 mangoes can be purchased from a fruit seller so that number of fruits purchased are even numbered [At-least 1 fruit must be purchased]?

Q58. In a society of 100 people, 64 like to walk, 75 like YOGA and 50 like to go for GYM. It may be possible that some people do not like any of these three activities. Then the difference between maximum possible number of people who like all the three activities and minimum possible number of people who like all the three activities are

- (a) 54 (b) 64 (c) 45 (d) 19

Q59. $3x - y \leq 12$ and $2 \leq |y-4| \leq 5$. What is maximum value of $x+y$ if x any y both are positive integers?

- (a) 9 (b) 16 (c) 10 (d) 12

Q60. Amita invested her savings in two schemes. The simple interest earned on the first scheme at 25% per annum for 3 years is the same as the simple interest earned on the second scheme at 20% per annum for 5 years. Then, the percentage of her savings invested in the first part is

- (a) 57.12% (b) 42.88% (c) 50% (d) 10%

Q61. Saket is climbing on a moving escalator that is going up and takes 20 steps to reach the top. Ashish on the other hand is coming down on the same escalator. For every 5 steps that Ashish takes, Saket takes only 4 steps. Both of them take the same amount of time to reach the other end. Find the total number of steps in the escalator?

- (a) 10 (b) 40 (c) 90 (d) 30

Q62. (TITA)

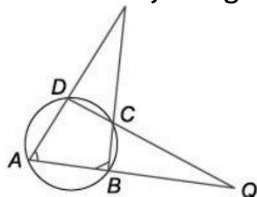
For any real number p , $[p]$ is defined as the largest integer less than or equal to p . If

$$\sum_{n=1}^N \left[\frac{2}{7} + \frac{n}{49} \right] = 45, \text{ then } N \text{ is}$$

Q63. After receiving two successive raises, Harish's salary became equal to $21/7$ times of his initial salary. By how much percent was the salary raised the first time if the second raise was twice as high (in percent) as the first?

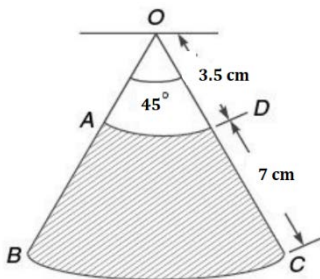
- (a) 15% (b) 20% (c) 25% (d) 50%

Q64. In the adjoining figure $\angle A = 72^\circ$ and $\angle ABC = 88^\circ$, $\angle BQC$



- (a) 16° (b) 8° (c) 20° (d) 32°

Q65. The diagram represents the area swept by the wiper of a car in a rainy season. With the dimensions given in the figure, calculate the shaded area swept by the wiper.



- (a) 12.67 cm^2 (b) 20.34 cm^2 (c) 14.437 cm^2 (d) 28.16 cm^2

Q66. (TITA)

An isosceles trapezium ABCD has side AB (= 8cm) parallel to CD ($CD > AB$) such that its perimeter is 48 cm. What can be the maximum value of its area, in sq. cm. if all the sides and distance between parallel lines are integer values.

Answer Key - Mock Test 11

Section - Verbal Ability & Reading Comprehension

1-D, 2-D, 3-C, 4-D, 5-C, 6-C, 7-B, 8-A, 9-B, 10-D, 11-C, 12-C, 13-A, 14-C, 15-A, 16-B, 17-C, 18-B, 19-A, 20-D, 21-A, 22-4123, 23-3124, 24-3412

Section - Data Interpretation & Logical Reasoning

25 -1, 26-282, 27-A, 28-2019, 29-2022, 30-4, 31-14, 32-C, 33-D, 34-B, 35-A, 36-B, 37-D, 38-D, 39-B, 40-D, 41-A, 42-C, 43-B, 44-D

Section - Quantitative Aptitude

45-23625, 46-139, 47-5610, 48-2550, 49-D, 50-2, 51-C, 52-B, 53-C, 54-D, 55-B, 56-D, 57-10, 58-C, 59-D, 60-B, 61-B, 62-43, 63-D, 64-A, 65-C, 66-112

Solutions - Mock Test 11

Section - Verbal Ability & Reading Comprehension

1. D

In the given case, the author of the passage is highlighting why humans should not go down the route of procreation. He does not provide any scientific argument, ruling out option B. Option C runs counter to what has been implied. This leaves us with two options: option A or D.

Does the author appeal to emotions or is he highlighting the moral issues with procreation? The last line of the passage offers us a clue for the same: Given how much misfortune there is – all of it attendant on being brought into existence – it would be better if there were not an unbearable lightness of bringing into being. Here, the author is talking about the consequences of pro-creating and he is essentially positioning his argument on the fact that there is suffering born out of these actions.

Remember, what does the word 'moral' mean? It is concerned with principles of right and wrong or conforming to standards of behaviour and character based on those principles and the same is being appealed to here by the author. This makes option D the better choice in the given case.

2. D

Statements I and II can be derived from the lines: However, severe suffering is not a rare phenomenon, and thus anti-natalism is a view that, at the very least, should be taken seriously and considered with an open mind.

Statement III is actually what anti-natalism is driving at ultimately. This is the aim of anti-natalism: by not procreating, the suffering of children can be prevented.

Keeping this in mind, all of the above statements are correct.

3. C

The answer can be derived from the lines: Certainly, sentencing someone to such a world is the worst of all crimes, and a serious moral violation. If it wasn't by my parents' selfish desire, I wouldn't be here

today suffering what I suffer for no reason at all, I could have been spared in the absolute peace of non-existence but I am here living this daily torture.

Remember, the ultimate blame here is with the parents of the given person.

4. D

In order to identify the correct answer, we need to evaluate the meanings of the answer options:

Rational: Consistent with or based on or using reason

Metaphysical: Pertaining to or of the nature of metaphysics (the branch of philosophy that deals with the first principles of things, including abstract concepts such as being, knowing, identity, time, and space.)

Scholarly: involving or relating to serious academic study.

Discursive: digressing from subject to subject.

We can see that the only word that does not fit in the given context is discursive. Therefore, D is the correct option.

5. C

The answer can be derived from the lines: But no more. There was by the time he died a sense that he had passed his moment of real relevance. The time when he stood virtually alone as a public figure had passed.

Option A is incorrect as Elie Wiesel was recognised (mentioned right at the start of the passage).

Option B is incorrect as it only highlights the positive view.

Option D is incorrect as it is too extreme in nature; the work of Elie Wiesel lost relevance but we cannot say it did not stand for much.

6. C

Option A can be derived from the lines: He had become a living icon—a Symbol of Suffering, of Survivorhood, of piety under pressure...Meanwhile, Wiesel glided through the Jewish world in shadowy black suits, eyes circled in gloomy Dantean darkness, the Man in Black, the Johnny Cash of the death camps. Remember, death camps were a part of Holocaust.

Option B can be derived from the lines: He earned that respect for the service he performed in the decades immediately after the war—when there were no Holocaust memorials on every street corner, no “Shoah package” in every middle-school curriculum—he became a one-man walking Holocaust museum, the person who demanded from the world remembrance and respect for all victims and survivors.

7. B

Gravitas means dignity, seriousness, or solemnity of manner.

Refer to the context: He had become a living icon—a Symbol of Suffering, of Survivorhood, of piety under pressure. Adding his name to any given cause gave it a kind of instant gravitas.

Keeping the above two in mind, we can see that option B is the best answer here.

8. A

In the given case, refer to the lines: He was no Simon Wiesenthal who—until the moment of his death—devoted his entire being, with grim relentlessness, to the pursuit, capture, and punishment of Nazi collaborators wherever in the world they were hiding.

We can see that Simon Wiesenthal was far more proactive in his approach and in fact, was in pursuit of those who committed Holocaust crimes. This is unlike Wiesel, who simply provided a commentary on the same.

9. B

Refer to the lines: The history of literary studies at Columbia must include Lionel Trilling and Edward Said; at Yale, the genealogy needs to account for a transition from William Wimsatt to Harold Bloom and Paul de Man. The fact that almost no one currently teaching at Yale wants to claim these ancestral figures as influential is itself part of the story. Influence is cunning and seldom direct.

These lines clearly indicate that no one at Yale wants to carry forward the influence of the past; this helps us identify option B as the correct answer.

10. D

In order to arrive at the answer, let us evaluate the meanings of the keywords in the given options:

Omniscience: The state of being omniscient; having infinite knowledge

Angst: An acute but unspecific feeling of anxiety; usually reserved for philosophical anxiety about the world or about personal freedom

Despondency: Feeling downcast and disheartened and hopeless

Befuddlement: Confusion resulting from failure to understand

We can see from the above that option D is the best answer in the given case.

11. C

Option A can be derived from the lines: In practice, what one believes literary studies is, or should be, often depends on where one went to university.

Option B can be derived from the lines: And there remains the uncomfortable fact that most people's deepest reading habits are developed in a secondary education system, not the university.

12. C

Statement I can be derived from the lines: In practice, what one believes literary studies is, or should be, often depends on where one went to university.

Statement III can be derived from the lines: It turns out that no one has really measured how accurately or effectively any understanding of how to read literature propagates throughout a culture. The Modern Language Association does not own a patent or have a monopoly on reading practices. Mutations happen often.

Statement II cannot be derived from the passage. There is no mention of linear/non-linear models of distribution of reading practices in the passage.

13. A

The topic of morals and ethics falls under the subject of ethics. This makes option A the correct answer in the given case.

14. C

The meanings of the tough words in the answer options are as follows:

Altruism: The quality of unselfish concern for the welfare of others

Treachery: Betrayal of a trust

Divination: the act of finding out and saying what will happen in the future

We can see that none of these words fits with the sentiment implied in the passage.

The example of the hospital helps us identify option C as the correct answer.

15.A

Refer to the lines: When we must decide to take one action rather than another, we also, ordinarily, become at least partly responsible for what we choose to do. Usually this is appropriate; it's what makes us the kinds of creatures who can be expected to abide by moral norms.

Option A can be derived from these lines.

Option B is too strong in the given case.

Option C is illogical in nature.

Option D is incorrect as it changes 'generally' to 'mostly' and also removes the sentiment of 'partial blame' implied by the passage.

16.B

The one thing that you need to be careful about in this question is that the question asks you the viewpoint of the author and not the philosophers mentioned in the last paragraph.

Refer to the lines: Are there situations, perhaps including this one, in which all the things that you could do are things that would be morally wrong for you to do? If the answer is yes, then there are some situations in which moral failure is unavoidable.

Ineluctable means impossible to avoid or evade.

17. C

The Paragraph explains the meaning of Dutch Disease and the correct meaning is explained in option C.

18. B

The paragraph clearly focuses on how corporate power is negatively affecting the media industry.

19. A

The key themes of the passage are that large communal burials are performed for mass mortality events and that this is not found to be true in London. This is best captured in option A, which is the correct choice. Also, note that large communal burials being a consequence of mass mortality events is an assumption in the passage, not a hypothesis (as given in option C).

20. D

The last line of the paragraph says that the document has been given (leaked) to a news company. Hence, we are expecting to know what it contains before going to its impacts. We cannot judge the nature of the document in order to conclude the passage without digesting the contents of the documents.

Option A is talking about the impact of the document. But we are unaware of what it had in it.

Option B gives us the next step after getting to know the content of the document. It should follow option D.

Option C suggests the steps that should come after getting to know the passage completely.

Option D perfectly reveals what the document is all about. Hence this would be the right answer.

21.A

As soon as we notice option A, we can spot the idea that the gifts are accompanied with some notes. Here option A can perfectly fit in as the right answer.

Option B is an after effect. This can come later in the passage but not before the note (option A).

Option C speaks of other gifts that we are unaware of. Hence this is just an assumption.

Option D more or less looks like the last line of the passage. Hence it can be a conclusion but definitely after the note (option A).

22. 4123

Exp: Statement 4 is the generic opening sentence of the passage since it gives the central theme of the paragraph as the Protection of Policyholders' Interest to the readers. It is followed by statement 1 in which the details of the document as mentioned in the preceding sentence have been provided whereas

statement 2 comes after that with the actual scenario of the insurance industry in India. Statement 3 concludes the passage by giving the solution to the problem as discussed in the passage. This makes the proper sequence of sentences as 4-1-2-3

23. 3124

Explanation:

Statement 3 introduces the context to us.

Statement 1 provides the two comments to us.

Statement 2 is the reply of the author to the same and then statement 4 continues the same thread of thought.

24. 3412

Explanation:

Statement 3 is the opening sentence here. It tells us the writer wants to clarify what he is not.

Statement 4 then continues the sentiment and describes what the author is.

Statements 1 and 2 then provide further with respect to the financial and economic errors mentioned in statement 4.

Section - Data Interpretation & Logical Reasoning

25. 1

From the data provided in the line graphs, we can say :

	M and M Ltd SUVs		Tata Motors Ltd SUVs	
	Petrol/Diesel Sales Ratio	Fraction Value	Petrol/Diesel Sales Ratio	Fraction Value
2017	0.86	6/7	1.33	4/3
2018	0.75	3/4	1.25	5/4
2019	1.10	11/10	0.90	9/10
2020	1.20	6/5	1.00	1
2021	0.90	9/10	1.20	6/5
2022	0.44	4/9	0.80	4/5

Hence, it is only in 2020 that the Diesel version SUV sales were less than or equal to the Petrol version SUV sales for both M and M Ltd and Tata Motors Ltd

Hence, the answer is 1.

26. 282

We know that :

	M and M Ltd SUVs		Tata Motors Ltd SUVs	
	Petrol/Diesel Sales Ratio	Fraction Value	Petrol/Diesel Sales Ratio	Fraction Value
2017	0.86	6/7	1.33	4/3
2018	0.75	3/4	1.25	5/4
2019	1.10	11/10	0.90	9/10
2020	1.20	6/5	1.00	1
2021	0.90	9/10	1.20	6/5
2022	0.44	4/9	0.80	4/5

Ratio of the sales of the Petrol and Diesel version of SUVs of M and M Ltd in 2020 = $1.20 = 6/5 = 6 : 5$

So 5 units of Diesel version SUV sales of M and M Ltd was equal to Rs 235 crores

So 6 units of Petrol version SUV sales of M and M Ltd = $(235/5)*6 = \text{Rs } 282 \text{ crores}$

Hence, Petrol version SUV sales of M and M Ltd in 2020 = Rs 282 crores

27. A

We know that :

	M and M Ltd SUVs		Tata Motors Ltd SUVs	
	Petrol/Diesel Sales Ratio	Fraction Value	Petrol/Diesel Sales Ratio	Fraction Value
2017	0.86	6/7	1.33	4/3
2018	0.75	3/4	1.25	5/4
2019	1.10	11/10	0.90	9/10
2020	1.20	6/5	1.00	1
2021	0.90	9/10	1.20	6/5
2022	0.44	4/9	0.80	4/5

Ratio of the Petrol version SUV sales of Tata Motors Ltd to the Diesel version SUV sales of Tata Motors Ltd in 2019

$$= 0.90 = 9/10 = 9 : 10$$

Hence Petrol version SUV sales = 9 units

After 40% increase, new value of Petrol version SUV sales = $(9 \times 140)/100 = 63/5$ units

After the increase in Petrol version SUV sales, value of Ratio of the Petrol version SUV sales of Tata Motors Ltd to the Diesel version SUV sales of Tata Motors Ltd in 2019 = $63/5 : 10 = 63 : 50$

Hence, after the increase in Petrol version SUV sales, the ratio of the Diesel version SUV sales of Tata Motors Ltd to the increased Petrol version SUV sales of Tata Motors Ltd in 2019 = $50 : 63 = 50/63 = 0.79$

28. 2019

Let the Petrol version SUV sales of Tata Motors Ltd in 2017 be 100 units.

Hence, as per the criterion that the Petrol version SUV sales of Tata Motors Ltd had consistently decreased at a rate of five percent per annum, the Diesel version SUV sales of Tata Motors Ltd can be expressed as below :

	Tata Motors Ltd SUVs			
	Petrol/Diesel Sales Ratio	Fraction Value	Petrol sales	Diesel sales
2017	1.33	4/3	100 units	$(100/4) \times 3 = 75$ units
2018	1.25	5/4	$(100 \times 95)/100 = 95$ units	$(95/5) \times 4 = 76$ units
2019	0.90	9/10	$(95 \times 95)/100 = 90.25$ units	$(90.25/9) \times 10 = 100.28$ units
2020	1.00	1/1	$(90.25 \times 95)/100 = 85.74$ units	85.74 units
2021	1.20	6/5	$(85.74 \times 95)/100 = 81.45$ units	$(81.45/6) \times 5 = 67.88$ units
2022	0.80	4/5	$(81.45 \times 95)/100 = 77.38$ units	$(77.38/4) \times 5 = 96.72$ units

Hence, we can see that if the Petrol version SUV sales of Tata Motors Ltd had consistently decreased at a rate of five percent per annum, Diesel version SUV sales of Tata Motors Ltd of the year 2019 stand maximum at 100.28 units.

Hence the answer is 2019

29. 2022

Let the Diesel version SUV sales of M and M Ltd in 2017 be 100 units.

Hence, as per the criterion that the Diesel version SUV sales of M and M Ltd had consistently increased at a rate of three percent per annum, the Petrol version SUV sales of M and M Ltd can be expressed as below :

	M and M Ltd SUVs			
	Petrol/Diesel Sales Ratio	Fraction Value	Diesel sales	Petrol sales
2017	0.86	6/7	100 units	$(100/7)*6$ = 85.71 units
2018	0.75	3/4	$(100*103)/100$ = 103 units	$(103/4)*3$ = 77.25 units
2019	1.10	11/10	$(103*103)/100$ = 106.09 units	$(106.09/10)*9$ = 95.48 units
2020	1.20	6/5	$(106.09*103)/100$ = 109.27 units	$(109.27/5)*6$ = 131.12 units
2021	0.90	9/10	$(109.27*103)/100$ = 112.55 units	$(112.55/10)*9$ = 101.30 units
2022	0.44	4/9	$(112.55*103)/100$ = 115.93 units	$(115.93/9)*4$ = 51.52 units

Hence, we can see that if the Diesel version SUV sales of M and M Ltd had consistently increased at a rate of three percent per annum, Petrol version SUV sales of M and M Ltd of the year 2022 stand minimum at 51.52 units.

Hence the answer is 2022

30. 4

From the data given in the set, we can exactly conclude the scenario of the tennis tournament at the Jaidip Mukherjea Tennis Academy in Salt Lake, Kolkata in December 2022, which was as below :

	ROUND 1		ROUND 2		ROUND 3 (Semi-Final)		ROUND 4 (Final)
1	1 - 16, won 1	1	1 - 8, won 1	1	1 - 4, won 1	1	1 - 11, won 1
2	2 - 15, won 2	2	2 - 7, won 2	2	2 - 11, won 11 (upset)		
3	3 - 14, won 3	3	3 - 11, won 11 (upset)				
4	4 - 13, won 4	4	4 - 12, won 4				
5	5 - 12, won 5						
	Walkover for 11, as 6 retired hurt						
6	7 - 10, won 7						
7	8 - 9, won 8						

So, we can see that there were 4 rounds in the tennis tournament at the Jaidip Mukherjea Tennis Academy in Salt Lake, Kolkata in December 2022

31. 14

From the data given in the set, we can exactly conclude the scenario of the tennis tournament at the Jaidip Mukherjea Tennis Academy in Salt Lake, Kolkata in December 2022, which was as below :

	ROUND 1		ROUND 2		ROUND 3 (Semi-Final)		ROUND 4 (Final)
1	1 - 16, won 1	1	1 - 8, won 1	1	1 - 4, won 1	1	1 - 11, won 1
2	2 - 15, won 2	2	2 - 7, won 2	2	2 - 11, won 11 (upset)		
3	3 - 14, won 3	3	3 - 11, won 11 (upset)				
4	4 - 13, won 4	4	4 - 12, won 4				
5	5 - 12, won 5						
	Walkover for 11, as 6 retired hurt						
6	7 - 10, won 7						
7	8 - 9, won 8						

The sixth match scheduled between seed 6 and seed 11 did not take place due to seed 6 having to retire hurt due to injury.

Hence, $7+4+2+1 = 14$ matches were played in the tennis tournament at the Jaidip Mukherjea Tennis Academy in Salt Lake, Kolkata in December 2022

32. C

From the data given in the set, we can exactly conclude the scenario of the tennis tournament at the Jaidip Mukherjea Tennis Academy in Salt Lake, Kolkata in December 2022, which was as below :

	ROUND 1		ROUND 2		ROUND 3 (Semi-Final)		ROUND 4 (Final)
1	1 - 16, won 1	1	1 - 8, won 1	1	1 - 4, won 1	1	1 - 11, won 1
2	2 - 15, won 2	2	2 - 7, won 2	2	2 - 11, won 11 (upset)		
3	3 - 14, won 3	3	3 - 11, won 11 (upset)				
4	4 - 13, won 4	4	4 - 12, won 4				
5	5 - 12, won 5						
	Walkover for 11, as 6 retired hurt						
6	7 - 10, won 7						
7	8 - 9, won 8						

Hence, the player seeded 11 played against the player seeded 2 in the semi-finals

33. D

From the data given in the set, we can exactly conclude the scenario of the tennis tournament at the Jaidip Mukherjee Tennis Academy in Salt Lake, Kolkata in December 2022, which was as below :

	ROUND 1		ROUND 2		ROUND 3 (Semi-Final)		ROUND 4 (Final)
1	1 - 16, won 1	1	1 - 8, won 1	1	1 - 4, won 1	1	1 - 11, won 1
2	2 - 15, won 2	2	2 - 7, won 2	2	2 - 11, won 11 (upset)		
3	3 - 14, won 3	3	3 - 11, won 11 (upset)				
4	4 - 13, won 4	4	4 - 12, won 4				
5	5 - 12, won 5						
	Walkover for 11, as 6 retired hurt						
6	7 - 10, won 7						
7	8 - 9, won 8						

Hence, the player seeded 11 was eliminated in the finals, that is the 4th round

34. B

From the data given in the set, we can exactly conclude the scenario of the tennis tournament at the Jaidip Mukherjea Tennis Academy in Salt Lake, Kolkata in December 2022, which was as below :

	ROUND 1		ROUND 2		ROUND 3 (Semi-Final)		ROUND 4 (Final)
1	1 - 16, won 1	1	1 - 8, won 1	1	1 - 4, won 1	1	1 - 11, won 1
2	2 - 15, won 2	2	2 - 7, won 2	2	2 - 11, won 11 (upset)		
3	3 - 14, won 3	3	3 - 11, won 11 (upset)				
4	4 - 13, won 4	4	4 - 12, won 4				
5	5 - 12, won 5						
	Walkover for 11, as 6 retired hurt						
6	7 - 10, won 7						
7	8 - 9, won 8						

The player who lost in the finals was seed 11.

Seed 11 did not play his first match. He got a walk-over.

Hence, the number of matches the player who lost in the finals, play and win in the tournament = 2

35. A

Let the number of subscribers of the Sanskrit classes at DuoLingo for the month of January 2021, February 2021, March 2021, November 2021 and December 2021 be J, F, M, N and D respectively

Now, the data informs us that throughout 2021, all of those who had subscribed at the beginning of a month X, watched all the classes of that month X, whereas in the month (X+1), exactly 75% of those who had subscribed at the beginning of month X watched all the classes of the current month and in the month (X+2), exactly 50% of those who had subscribed at the beginning of month X watched all the classes of the current month.

Also DuoLingo started its services from 1st January 2021.

Hence we can see :

	Subscribers in month X attending classes of month X (100%)	Subscribers in Month X attending classes of month X+1 (75%)	Subscribers in Month X attending classes of month X+2 (50%)	Total attendees
Jan-21	J	nil	nil	J

Feb-21	F	3J/4	nil	(F + 3J/4)
Mar-21	M	3F/4	J/2	(M + 3F/4 + J/2)
Apr-21	4320	3M/4	F/2	(4320 + 3M/4 + F/2)
May-21	7128	$(4320 \times 3)/4 = 3240$	M/2	(10368 + M/2)
Jun-21	5832	$(7128 \times 3)/4 = 5346$	$4320/2 = 2160$	13338
Jul-21	4968	$(5832 \times 3)/4 = 4374$	$7128/2 = 2376$	12906
Aug-21	7992	$(4968 \times 3)/4 = 3726$	$5832/2 = 2916$	14634
Sep-21	6480	$(7992 \times 3)/4 = 5994$	$4968/2 = 2484$	14958
Oct-21	3672	$(6480 \times 3)/4 = 4860$	$7992/2 = 3996$	12528
Nov-21	N	$(3672 \times 3)/4 = 2754$	$6480/2 = 3240$	(N + 5994)
Dec-21	D	3N/4	$3672/2 = 1836$	(D + 3N/4 + 1836)

Hence, out of the months of June, July, August and September 2021, the highest number of subscribers who attended the Sanskrit classes at DuoLingo was in September 2021

36. B

We know that :

	Subscribers in month X attending classes of month X (100%)	Subscribers in Month X attending classes of month X+1 (75%)	Subscribers in Month X attending classes of month X+2 (50%)	Total attendees
Jan-21	J	nil	nil	J
Feb-21	F	3J/4	nil	(F + 3J/4)
Mar-21	M	3F/4	J/2	(M + 3F/4 + J/2)
Apr-21	4320	3M/4	F/2	(4320 + 3M/4 + F/2)
May-21	7128	$(4320 \times 3)/4 = 3240$	M/2	(10368 + M/2)
Jun-21	5832	$(7128 \times 3)/4 = 5346$	$4320/2 = 2160$	13338
Jul-21	4968	$(5832 \times 3)/4 = 4374$	$7128/2 = 2376$	12906
Aug-21	7992	$(4968 \times 3)/4 = 3726$	$5832/2 = 2916$	14634
Sep-21	6480	$(7992 \times 3)/4 = 5994$	$4968/2 = 2484$	14958
Oct-21	3672	$(6480 \times 3)/4 = 4860$	$7992/2 = 3996$	12528
Nov-21	N	$(3672 \times 3)/4 = 2754$	$6480/2 = 3240$	(N + 5994)
Dec-21	D	3N/4	$3672/2 = 1836$	(D + 3N/4 + 1836)

We also know that an equal number of subscribers were attending the classes in the month of January, February, March and April 2021.

Thus, $J = (F + 3J/4)$ or, $F = J/4$

Also, $J = (M + 3F/4 + J/2)$ or, $J/2 = M + 3F/4$ or, $J/2 = M + 3J/16$ or, $M = 5J/16$

Also, $J = (10368 + M/2)$ or, $J = 10368 + 5J/32$ or $27J/32 = 10368$ or, $J = 12288$

Hence, the number of subscribers of Sanskrit classes at DuoLingo in the month of January 2021 was 12288

37. D

We know that :

	Subscribers in month X attending classes of month X (100%)	Subscribers in Month X attending classes of month X+1 (75%)	Subscribers in Month X attending classes of month X+2 (50%)	Total attendees
Jan-21	J	nil	nil	J
Feb-21	F	$3J/4$	nil	$(F + 3J/4)$
Mar-21	M	$3F/4$	$J/2$	$(M + 3F/4 + J/2)$
Apr-21	4320	$3M/4$	$F/2$	$(4320 + 3M/4 + F/2)$
May-21	7128	$(4320 \times 3)/4 = 3240$	$M/2$	$(10368 + M/2)$
Jun-21	5832	$(7128 \times 3)/4 = 5346$	$4320/2 = 2160$	13338
Jul-21	4968	$(5832 \times 3)/4 = 4374$	$7128/2 = 2376$	12906
Aug-21	7992	$(4968 \times 3)/4 = 3726$	$5832/2 = 2916$	14634
Sep-21	6480	$(7992 \times 3)/4 = 5994$	$4968/2 = 2484$	14958
Oct-21	3672	$(6480 \times 3)/4 = 4860$	$7992/2 = 3996$	12528
Nov-21	N	$(3672 \times 3)/4 = 2754$	$6480/2 = 3240$	$(N + 5994)$
Dec-21	D	$3N/4$	$3672/2 = 1836$	$(D + 3N/4 + 1836)$

In July 2021, there was a decrease of 400 attendees approximately on a base value of 13000 approximately, making the percentage decrease slightly more than 3%

In August 2021, there was an increase

In September 2021, there was also an increase

In October 2021, there was a decrease of 2400 attendees approximately on a base value of 15000 approximately, making the percentage decrease little more than 15%

Hence, the percentage decrease in the number of subscribers who attended the Sanskrit classes at DuoLingo in the current month as compared to the previous month, out of the options given, was the highest in October 2021

38. D

We know that :

	Subscribers in month X attending classes of month X (100%)	Subscribers in Month X attending classes of month X+1 (75%)	Subscribers in Month X attending classes of month X+2 (50%)	Total attendees
Jan-21	J	nil	nil	J
Feb-21	F	3J/4	nil	(F + 3J/4)
Mar-21	M	3F/4	J/2	(M + 3F/4 + J/2)
Apr-21	4320	3M/4	F/2	(4320 + 3M/4 + F/2)
May-21	7128	$(4320 \times 3)/4 = 3240$	M/2	$(10368 + M/2)$
Jun-21	5832	$(7128 \times 3)/4 = 5346$	$4320/2 = 2160$	13338
Jul-21	4968	$(5832 \times 3)/4 = 4374$	$7128/2 = 2376$	12906
Aug-21	7992	$(4968 \times 3)/4 = 3726$	$5832/2 = 2916$	14634
Sep-21	6480	$(7992 \times 3)/4 = 5994$	$4968/2 = 2484$	14958
Oct-21	3672	$(6480 \times 3)/4 = 4860$	$7992/2 = 3996$	12528
Nov-21	N	$(3672 \times 3)/4 = 2754$	$6480/2 = 3240$	$(N + 5994)$
Dec-21	D	3N/4	$3672/2 = 1836$	$(D + 3N/4 + 1836)$

We also know that starting from October till December 2021, the number of subscribers who were attending the classes increased by at least 10% and at most 20% every month compared to the previous months.

Had there been a 10% increase in the number of subscribers who were attending the classes in December from November 2021, then we can say :

$$(N + 5994) \times (110/100) = (D + 3N/4 + 1836)$$

$$\text{or, } 11N/10 + 6593.4 = D + 3N/4 + 1836$$

$$\text{or, } D = 7N/20 + 4757.4$$

Had there been a 20% increase in the number of subscribers who were attending the classes in December from November 2021, then we can say :

$$(N + 5994) \times (120/100) = (D + 3N/4 + 1836)$$

$$\text{or, } 6N/5 + 7192.8 = D + 3N/4 + 1836$$

$$\text{or, } D = 9N/20 + 5356.8$$

$(9N/20 + 5356.8)$ is greater than $(7N/20 + 4757.4)$ for any positive value of N

Thus, clearly the value of D is maximized when there is a 20% increase from November to December 2021

Also, in that case, since $D = (9N/20 + 5356.8)$, the value of D will be maximized if the value of N is maximized

So for the value of D to be maximized, there also had to be a 20% increase in the number of subscribers who were attending the classes in November from those in October 2021

So, the maximum possible attendees In November 2021 = $12528 \times (120/100) = 15033.6$

Hence the value of N, that is the number of subscribers in November 2021 = $(15033.6 - 5994) = 9039.6$

But, N cannot be a decimal, and also it is given that the number of subscribers who subscribed to the Sanskrit classes at DuoLingo at the beginning of each of the months in 2021 is a multiple of four.
So the next best value of $N = 9036$

The maximum possible attendees In December 2021 = $12528 * (120/100) * (120/100) = 18040.32$

Thus,

$$(D + 3N/4 + 1836) = 18040.32$$

$$\text{or, } D = 16204.32 - (3 * 9036)/4$$

$$\text{or, } D = 16204.32 - 6777$$

$$\text{or, } D = 9427.32$$

But, D cannot be a decimal, and also it is given that the number of subscribers who subscribed to the Sanskrit classes at DuoLingo at the beginning of each of the months in 2021 is a multiple of four
So the next best value of $D = 9424$

Hence, the maximum possible subscribers to the Sanskrit classes at DuoLingo in December 2021, subject to the conditions = 9424

39. B

All the St Xavier's Schools in India were represented by their individual Principals in the selection, with each school having one Principal each.

Let the number of St Xavier's Schools in India be x .

Also, x number of St Xavier's Schools had x number of Principals.

Total number of Principals who voted in round one was $(x - 4)$, because the Principals of the four St Xavier's Schools in contention could not vote.

Total number of Principals who voted in round two was $(x - 3)$, because in round two only three St Xavier's Schools were in contention and hence three Principals could not vote.

$$\text{Hence, } (x - 3) = 127$$

$$\text{or, } x = 130$$

$$\text{Hence, total number of Principals who voted in round one} = (x - 4) = 130 - 4 = 126.$$

Let y be the number of Principals who voted for St Xavier's Collegiate School Kolkata in round one and for St Xavier's School Mumbai in round two.

They could not vote anymore after round two, as by then both St Xavier's Collegiate School Kolkata and St Xavier's School Mumbai were eliminated by dint of minimum number of votes in the first two rounds.

Also in round three only two St Xavier's Schools were in contention and hence two Principals could not vote

$$\text{Hence, total number of Principals who voted in round three} = (130 - 2 - y) = (128 - y)$$

$$\text{Hence, } 128 - y = 114 \text{ or, } y = 14$$

Point (c) says that those Principals who voted for St Xavier's Collegiate School Kolkata in round one voted for either St Xavier's School Ranchi or St Xavier's School Mumbai in round two.

Now 21 Principals voted for St Xavier's Collegiate School Kolkata in round one.

Out of them 14 voted for St Xavier's School Mumbai in round two.

So the rest of $(21 - 14) = 7$ Principals must have voted for St Xavier's School Ranchi in round two.

Hence the rest of the votes $(38 - 14) = 24$ in favour of St Xavier's School Mumbai in round two must have been of those Principals who voted for St Xavier's School Mumbai in round one.

But that was three fourth of those Principals who voted for St Xavier's School Mumbai in round one, as per point (b).

Hence total number of votes for in favour of St Xavier's School Mumbai in round one = $24 \times (4/3) = 32$.

The rest one fourth, that is $32 \times (1/4) = 8$ of the Principals who voted for St Xavier's School Mumbai in round one must have voted for St Xavier's School Ranchi in round two.

Hence in round one :

Total votes cast = 126,

St Xavier's School Durgapur = 42 votes

St Xavier's Collegiate School Kolkata = 21 votes

St Xavier's School Mumbai = 32 votes

Hence, St Xavier's School Ranchi = $126 - (42+21+32) = 31$ votes.

St Xavier's Collegiate School Kolkata gets minimum votes and is eliminated.

In round two St Xavier's School Durgapur will get the 42 votes of the same Principals who voted for it in round one, as per point (a).

In round two St Xavier's School Mumbai will get the 24 votes which was three fourth of those Principals who voted for St Xavier's School Mumbai in round one.

Added to that will be the 14 votes of the Principals who voted for St Xavier's Collegiate School Kolkata in round one and for St Xavier's School Mumbai in round two.

Hence, total votes for St Xavier's School Mumbai in the second round will be $(24 + 14) = 38$, as is showing in the table given.

In round two St Xavier's School Ranchi, as per point (a), will also get the 31 votes of the same Principals who voted for it in round one.

Added to that will be the votes of the 7 Principals who had voted for of St Xavier's Collegiate School Kolkata in round one but voted for St Xavier's School Ranchi in round two.

Also added will be the votes of the 8 Principals who voted for St Xavier's School Mumbai in round one, but must have voted for St Xavier's School Ranchi in round two.

Also added would be the 1 vote of the Principal of St Xavier's Collegiate School Kolkata, who was ineligible to vote in round one as his school was in contention, but could do so in round two as his school had been eliminated in round one. His vote could not go to St Xavier's School Mumbai as their votes had already tallied with the number given in the table.

Hence in round two :

Total votes cast = 127

St Xavier's School Durgapur = 42 votes

St Xavier's School Mumbai = 38 votes

St Xavier's School Ranchi = $(31+7+8+1) = 47$ votes

St Xavier's School Mumbai gets minimum votes and is eliminated.

As per point (d), half of the Principals who voted for St Xavier's School Mumbai in round one voted for St Xavier's School Ranchi in round three.

Hence the other half has to vote for St Xavier's School Durgapur, as there are now only two schools in contention.

Value of half of the votes in favour of St Xavier's School Mumbai in round one = $(1/2) \times 32 = 16$

Hence total votes in favour of St Xavier's School Durgapur in round three = $(42 + 16) = 58$

Already 8 Principals who voted for St Xavier's School Mumbai in round one have voted for St Xavier's School Ranchi in round two, and they continue their support in round three.

Hence another $(16 - 8) = 8$ votes must have shifted in favour of St Xavier's School Ranchi in round three such that point (d) could be fulfilled.

Also added would be the 1 vote of the Principal of St Xavier's Mumbai, who was ineligible to vote in round one and two as his school was in contention, but could do so in round three, as his school had been eliminated in round two. His vote could not go to St Xavier's School Durgapur, as otherwise the difference between the maximum and minimum votes could not have been 2, as per point (e).

Hence total votes in favour of St Xavier's School Ranchi in round three = $(47 + 8 + 1) = 56$

Hence, in round three :

Total votes cast = 114

St Xavier's School Durgapur = 58 votes

St Xavier's School Ranchi = 56 votes

St Xavier's School Ranchi gets minimum votes and is eliminated.

The final venue for the landmark ceremony celebrating the occasion of the 450th year of establishment of the Order of the Jesuit Missionaries was St Xavier's School Durgapur.

The completed table read as follows :

Round No	Total Votes	Maximum Votes		Minimum Votes	
		School	No of Votes	School	No of Votes
1	126	St Xavier's School Durgapur	42	St Xavier's Collegiate School Kolkata	21
2	127	St Xavier's School Ranchi	47	St Xavier's School Mumbai	38
3	114	St Xavier's School Durgapur	58	St Xavier's School Ranchi	56

The number of Principals who voted for St Xavier's Collegiate School Kolkata in round one = 21

The number of Principals who voted for St Xavier's Collegiate School Kolkata in round one and for St Xavier's School Mumbai in round two = 14

Hence, the percentage of Principals who had voted for St Xavier's Collegiate School Kolkata in round one and voted for St Xavier's School Mumbai in round two = $(14/21) \times 100 = 66.67\%$

40. D

We already have found that :

In round one :

Total votes cast = 126,

St Xavier's School Durgapur = 42 votes

St Xavier's Collegiate School Kolkata = 21 votes

St Xavier's School Mumbai = 32 votes

Hence, St Xavier's School Ranchi = $126 - (42+21+32) = 31$ votes.

St Xavier's Collegiate School Kolkata gets minimum votes and is eliminated

Hence, in round one, St Xavier's School Ranchi gets 31 votes

41. A

We already have found that :

Round No	Total Votes	Maximum Votes		Minimum Votes	
		School	No of Votes	School	No of Votes
1	126	St Xavier's School Durgapur	42	St Xavier's Collegiate School Kolkata	21
2	127	St Xavier's School Ranchi	47	St Xavier's School Mumbai	38
3	114	St Xavier's School Durgapur	58	St Xavier's School Ranchi	56

Hence, in round two, St Xavier's School Ranchi gets 47 votes

42. C

We already have found that :

All the St Xavier's Schools in India were represented by their individual Principals in the selection, with each school having one Principal each.

Let the number of St Xavier's Schools in India be x .

Also, x number of St Xavier's Schools had x number of Principals.

Total number of Principals who voted in round one was $(x - 4)$, because the Principals of the four St Xavier's Schools in contention could not vote.

Total number of Principals who voted in round two was $(x - 3)$, because in round two only three St Xavier's Schools were in contention and hence three Principals could not vote.

Hence, $(x - 3) = 127$

or, $x = 130$

Hence, 130 St Xavier's Schools were there in India in 2022

43. B

We already have found that :

Round No	Total Votes	Maximum Votes		Minimum Votes	
		School	No of Votes	School	No of Votes
1	126	St Xavier's School Durgapur	42	St Xavier's Collegiate School Kolkata	21

2	127	St Xavier's School Ranchi	47	St Xavier's School Mumbai	38
3	114	St Xavier's School Durgapur	58	St Xavier's School Ranchi	56

Hence, St Xavier's School Durgapur finally got selected as the venue of the landmark ceremony on the occasion of the 450th year of establishment of the Order of the Jesuit Missionaries

44. D

The number of Principals who voted for St Xavier's School Mumbai in round two and was eligible to vote
 = Three fourth of those Principals who voted for St Xavier's School Mumbai in round one
 = $(3/4) \times 32$
 = 24

The number of Principals who voted for St Xavier's School Mumbai in round two and was eligible to vote, voted for St Xavier's School Durgapur in round three = 16

Hence, the percentage of Principals who had voted for St Xavier's School Mumbai in round two and were eligible to vote, voted for St Xavier's School Durgapur in round three = $(16/24) \times 100 = 66.67\%$

Section - Quantitative Aptitude

45. 23625

Male cricketer: Female Cricketer = 2: 3

Since male cricketer are 4200; female cricketer will be 6300.

Let male footballer and female footballer are $5x$ and $3x$ respectively.

Therefore,

$$\frac{4200 + 5x}{6300 + 3x} = \frac{7}{5}$$

$$\Rightarrow x = 5775$$

$$\text{So, female players} = 6300 + 3x = 23625.$$

46. 139

If the players are divided equally into teams of either 12 or 15 or 20 each, exactly 5 are always sort
 $n = \text{LCM}(12, 15, 20)k - 5 = 60k - 5$ and it should be divisible by 25 and must lie between 3000 and 3500.

So, n can be either 3175 or 3475

Maximum number of teams of 25 that can be formed = $\max(3175/25, 3475/25) = 139$

47. 5610

Since common ratio of GP is 4;

First term of four digits will be $560 \times 4 = 2260$

Next term of four digits will be $2260 \times 4 = 8960$

No other terms of 4 digits are there.

So, Arithmetic mean of 2260 and 8960 = 5610

48. 2550

According to question

$$1.5(n+n^2) \geq 940 + 0.9n + 1.1n^2$$

$$\Rightarrow 0.4n^2 + 0.6n - 940 \geq 0$$

On solving, $n \geq 49.23$

So, $n = 50$

Minimum number of units produced = $n^2 + n = 50^2 + 50 = 2550$.

49. D

According to question:

After 4 hours distance between the two trains = $540 - 27 \times 4 = 432$ Kms

Relative speed = $27 + 29 = 54$ Km/ Hr

Time taken to cross each other after the train from Khandala left the station = $432/54 = 8$ hrs.

Distance from Khandala at the time of crossing = $8 \times 29 = 232$ Kms

50. 2

$$(7/8)^{y/3x} = (7/8)^{3/x}$$

$$\Rightarrow y/3x = 3/x$$

$$\Rightarrow y = 9$$

$$(a/b)^{5-x} = (b/a)^{y+3x}$$

$$\text{So, } x - 5 = 3x + y$$

$$\Rightarrow x = -7$$

$$\text{So, } x + y = -7 + 9 = 2.$$

51. C

Since distance is same

$$S_R / S_H = T_H / T_R$$

$$\Rightarrow T_H / T_R = 7/13$$

$$\Rightarrow T_R - T_H = 13x - 7x = 3\text{hrs}$$

$$\Rightarrow x = 0.5 \text{ hrs}$$

Time taken by Ramesh = $13 \times 0.5 = 6.5$ Hrs

Distance = $7 \times 6.5 = 45.5$ Kms

52. B

In a pentagon, sum of the four sides must be greater than the fifth side.

If fifth side is x cm

$$\text{Then, } 3 + 5 + 7 + 9 > x$$

$$\text{Or, } x < 24$$

Also, $3 + 5 + 7 + x > 9$ which is always true for any positive integer value.

So, x can take any value less than 24.

Therefore, 23 values of x are possible.

53. C

We know the sum of the first pair of marks = $2 \times 28 = 56$

Sum of the last pair of marks = $64 \times 2 = 128$

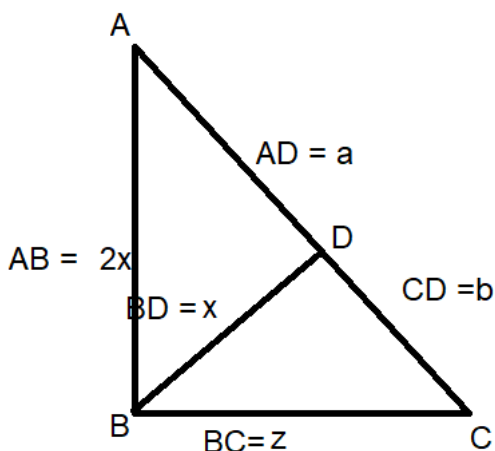
To maximize the average of all the 5 numbers, we must try to maximize the number in between.

This is possible when the last pair of numbers are 63 and 65.

The maximum average is possible if total of least two, 62, 63 and 65

So, Average = $(56 + 62 + 63 + 65) / 5 = 49.2$

54. D



$\triangle ADB \sim \triangle BDC$ (from figure using AA Axiom)

So,

$$\frac{AD}{BD} = \frac{AB}{BC} = \frac{DB}{DC}$$

$$\Rightarrow \frac{a}{x} = \frac{2x}{z} = \frac{x}{b}$$

Clearly $b/z = 1/2$ which means $\angle C = 60^\circ$ (using cosine of angle C in triangle BDC) and $\angle A = 30^\circ$

In triangle BDC, $\tan C = x/b$ i.e. $b = x/\sqrt{3}$

Also, In triangle ABD, $\tan A = x/a$ i.e. $a = x\sqrt{3}$

$$\frac{\text{ar}(BDC)}{\text{ar}(ABD)} = \frac{\frac{1}{2} bx}{\frac{1}{2} ax} = \frac{b}{a} = \frac{x/\sqrt{3}}{x\sqrt{3}} = \frac{1}{3}$$

55. B

Since Amit is twice as efficient as Bunty and thrice as efficient as Chintu. Bunty can finish a job in 40 days

Amit can finish the job in 20 days and Chintu can finish the job in 60 days.

Let the total work be 120 units.

Amit's 1 day work = 6 units; Bunty's 1 day work = 3 units; Chintu's 1 day work = 2 units

Day 1 = $6 + 3 + 2 = 11$ units work is done

Day 2 = 6 units work is done

Day 3 = 3 units work is done

Day 4 = 2 units work is done

In this manner, 22 units work is done in four days.
 So, in 20 days 110 units work will be done in which each of them has worked for 10 days.
 Remaining 10 units work be done by Amit in 10/11 days.
 So, Amit has worked for $10 + 10/11 = 120/11$ days.

56. D

Let She spends Rs x for buying each 5kg Mangoes, 10 Kg Apples and 20 Kg Oranges.

Total CP = Rs 3x; Total Fruits = 35 Kg

Case 1: Total MP = Total SP = Rs $(3x + 600)$

Case 2: Total SP = Rs $[(3x + 600)/35] \times 10 + Rs (3x/35) \times 10 + Rs 0.8 \times [(3x + 600)/35] \times 15 = (19.2x + 2640)/7$

Profit = $(19.2x + 2640)/7 - 3x = 318$

So, $(-1.8x + 2640)/7 = 318$

So, x = Rs 230

Total amount spending in buying apples = Rs 230

57. 10

Number of fruits can be purchased are 2, 4, 6, 8, 10....., 20.

So, there are 10 ways to purchase the fruits.

58. C

64 like to walk

75 like Yoga

80 like to go for GYM

A maximum of 50 students can do all the three activities.

Max (all three) = 64

Min (all three) = $219 - 2 \times 100 = 19$

Required difference = $64 - 19 = 45$.

59. D

$$2 \leq |y-4| \leq 5$$

$$y-4 \leq 5 \text{ or } y-4 \geq -5 \Rightarrow y \text{ belongs to } [-1, 9]$$

$$\text{Also, } 2 \leq y-4 \text{ or } -2 \geq y-4 \Rightarrow y \text{ belongs to } [2, 6]$$

So, possible values for y are 2, 3, 4, 5, 6

$$3x - y \leq 12$$

$$\Rightarrow 3x \leq 12 + y$$

Maximum value of x will be at y = 6 i.e x (max) = 6

$$\text{Maximum value of } x + y = 6 + 6 = 12$$

60. B

Let x rupees invest in scheme 1 and y rupees invest in scheme 2

Then,

ATQ

$$75\% \text{ of } x = 100\% \text{ of } y$$

$$x : y = 4 : 3$$

$$\text{So, percentage of investment in scheme 1} = 4 \times 100 / 7 = 57.12\%$$

61. B

Let us assume their speeds are 5 steps per second and 3 steps per second respectively, and the speed of the escalator is 'x'

Since both of them take the same time for the same distance, their effective speed is the same.

$$\Rightarrow 5 - x = 3 + x$$

$$\Rightarrow x = 1$$

Speed of Saket: Speed of escalator = 3: 1

When Saket takes 30 steps, the escalator takes 10 steps.

Total number of steps = 30 + 10 = 40 steps.

62. 43

$$f(n) = \left[\frac{2}{7} + \frac{n}{49} \right] = \left[\frac{14+n}{49} \right]$$

Till $n=34$, this function give value equal to 0.

At $n=35$, $f(35)=1$

$f(36)=2$ and so on

So, $1+2+3+ \dots = 45$

It is possible if we add values up to 9.

And we get $f(n)=9$ at $n=43$

So, $N=43$.

63. D

Let the first raise in salary is $x\%$

Then second raise is $2x\%$

Net change = $[x + 2x + x(2x)/100] \%$

Also, net change = $14 \times 100/7 = 200\%$

Therefore,

$$x + 2x + x(2x)/100 = 200$$

$$\Rightarrow 300x + 2x^2 = 20000$$

$$\Rightarrow x^2 + 150x - 10000 = 0$$

On solving, $x = 50\%$

64. A

Let the first raise in salary is $x\%$

Then second raise is $2x\%$

Net change = $[x + 2x + x(2x)/100] \%$

Also, net change = $14 \times 100/7 = 200\%$

Therefore,

$$x + 2x + x(2x)/100 = 200$$

$$\Rightarrow 300x + 2x^2 = 20000$$

$$\Rightarrow x^2 + 150x - 10000 = 0$$

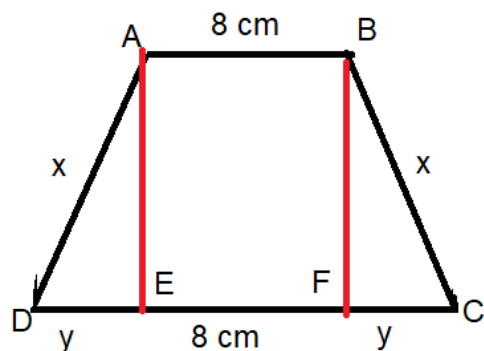
On solving, $x = 50\%$

65. C

Area of shaded region = $45\pi/360 (7^2 - 3.5^2) = 231/16 \text{ cm}^2 = 14.437 \text{ cm}^2$
 (Use the formula for area of sector)

66. 112

Consider the diagram as shown



$$8 + x + y + 8 + y + x = 48$$

$$\text{So, } x + y = 16$$

Let $AE = z$

$$\text{So, } x^2 + y^2 = z^2$$

Only triplets possible for this situation is $x = 10$; $y = 6$; $z = 8$

$$\text{So, Area of trapezium} = \left(\frac{1}{2}\right) (8 + 8 + 6 + 6)(8) = 112 \text{ sq cm.}$$

MOCK TEST – 12

Section - 1 - Verbal Ability & Reading Comprehension

Directions for Questions 1 to 3: Read the passage given below and answer the questions that follow.

Passage 1

Given all the roiling debates about how America's children should be taught, it may come as a surprise to learn that students spend less than 15% of their time in school. While there's no doubt that school is important, a clutch of recent studies reminds us that parents are even more so. A study published earlier this month by researchers at North Carolina State University, Brigham Young University and the University of California-Irvine, for example, finds that parental involvement — checking homework, attending school meetings and events, discussing school activities at home — has a more powerful influence on students' academic performance than anything about the school the students attend. Another study, published in the Review of Economics and Statistics, reports that the effort put forth by parents (reading stories aloud, meeting with teachers) has a bigger impact on their children's educational achievement than the effort expended by either teachers or the students themselves. And a third study concludes that schools would have to increase their spending by more than \$1,000 per pupil in order to achieve the same results that are gained with parental involvement (not likely in this stretched economic era).

So parents matter — a point made clear by decades of research showing that a major part of the academic advantage held by children from affluent families comes from the “concerted cultivation of children” as compared to the more laissez-faire style of parenting common in working-class families. But this research also reveals something else: that parents, of all backgrounds, don't need to buy expensive educational toys or digital devices for their kids in order to give them an edge. They don't need to chauffeur their offspring to enrichment classes or test-prep courses. What they need to do with their children is much simpler: talk.

But not just any talk. Although well-known research by psychologists Betty Hart and Todd Risley has shown that professional parents talk more to their children than less-affluent parents — a lot more, resulting in a 30 million “word gap” by the time children reach age three — more recent research is refining our sense of exactly what kinds of talk at home foster children's success at school. For example, a study conducted by researchers at the UCLA School of Public Health and published in the journal Pediatrics found that two-way adult-child conversations were six times as potent in promoting language development as interludes in which the adult did all the talking. Engaging in this reciprocal back-and-forth gives children a chance to try out language for themselves, and also gives them the sense that their thoughts and opinions matter. As they grow older, this feeling helps middle- and upper-class kids develop into assertive advocates for their own interests, while working-class students tend to avoid asking for help or arguing their own case with teachers, according to research presented at the American Sociological Association conference earlier this year.

Q1. The author of the passage implies that:

- A. working-class families do not take care of their children

- B. working-class families allow leeway to their kids in terms of deciding what they want to do.
- C. working-class families do not allow the kind of freedom required by children to develop their skills.
- D. working-class families, restricted by their means, are no longer able to provide the kind of mental nourishment that is required by kids in these families.

Q2. It can be inferred from the passage that:

- A. children from affluent families are more skilled than the children from working-class families.
- B. children from working-class families do better than the ones from affluent families.
- C. children from affluent families do better than the ones from working-class families.
- D. children from working-class families are more skilled than the ones from affluent families.

Q3. The requirements highlighted by the author of the passage, in order to deliver better education to kids, are:

I. technological devices and facilities

II. parental association enabling the development of their children

III. ability to communicate in parents

- A. I & II
- B. I & III
- C. II & III
- D. All of the above

Direction for questions 4 to 7: Answer the questions on the basis of the information provided in the passage.

Passage 2

Earlier this month, researcher Kevin Beaver of Florida State University reported that he and his co-authors had identified genetic markers associated with academic achievement. In their study, published in the journal *Developmental Psychology*, the scientists found that young people who possessed particular versions of three genes were more likely to finish high school and go on to college than those who carried other forms of the genes. The genes in question — DAT1, DRD2 and DRD4 — are involved in regulating the action of dopamine in the brain, and have been linked in other studies to levels of motivation, attention and intelligence. The notion that how well we learn is influenced considerably by our genes has gone from being “taboo,” Beaver writes, to achieving something like “common acceptance.”

It is true that in recent years, scientists have produced a growing number of studies linking the capacity to learn to specific genes. A team at King’s College London, for example, has published several articles relating ability in mathematics to variations in DNA. Children who carried 10 or more of the “risk” gene variants identified by the researchers were nearly twice as likely to perform poorly in math, according to a 2010 study generated by the group. In another intriguing experiment, scientists Dan Dediu and Robert Ladd of the University of Edinburgh in Scotland reported in the *Proceedings of the National Academy of Sciences* that some individuals possess variants of two genes involved in brain development that may make it easier for them to learn tonal languages like Chinese.

But scientists have long warned against attributing complex human behaviors to the action of a few genes — and learning is among the most complex things we do. The authors of these studies acknowledge this. “Mathematical ability and disability are influenced by many genes generating small

effects across the entire spectrum of ability,” writes Sophia Docherty, who heads the King’s College team. Moreover, environment matters, even in the context of genes: Docherty’s research finds that children with the “risk” gene variants were especially likely to do poorly in math when they lived in chaotic homes and had negative, punitive parents. More generally, Florida’s Beaver notes, research indicates that genetic factors account for about half of the variance in educational achievement.

That leaves plenty of room for the role of support and encouragement on the part of parents, and hard work and persistence on the part of kids. Indeed, studies from another realm of research, conducted by Stanford University psychologist Carol Dweck, demonstrate the importance of focusing on the contribution made by our own actions and choices. Dweck’s work shows that students with a “growth mind-set” — those who believe that intelligence is not fixed but is expandable through effort and practice — are more likely to keep trying when faced with a challenge, and ultimately more likely to succeed, than those who are convinced that intelligence is something you’re born with. From the perspective of Dweck’s research, the one lesson we shouldn’t draw from science is that academic achievement is all in our genes.

Q4. Which one of the following is an assumption in the research results provided by Kevin Beaver (in the first paragraph of the passage)?

- A. Our genes can be co-related to learning activities.
- B. Our genetic make-up is consistent across the whole species.
- C. There is nothing else in our genetic make-up that links the production of dopamine and learning.
- D. Genetic markers are produced in ample quantities for them to be studied.

Q5. The evidence presented in the third paragraph of the passage does which of the following for the research results provided in the first paragraph of the passage?

- A. it provides support to them
- B. it obfuscates the given result
- C. it highlights a caveat from the given result
- D. it showcases the given result in practice

Q6. All of the following are suitable titles for the passage except:

- A. Born to Be Bright: Is There a Gene for Learning?
- B. Can Genes Influence Academic Success?
- C. It is not all in the Genes!
- D. Genes and Glory: An inextricable link!

Q7. The author of the passage is clear that:

- A. genes take the bulk of the blame or credit when it comes to the educational development of children.
- B. genes only have a limited role when it comes to the educational development of children.
- C. Both genes and parental involvement have significant roles when it comes to educational development of children.
- D. none of the above

Directions for Questions 8 to 10: Read the passage given below and answer the questions that follow.

Passage-3

The rise of the Internet and social media is great for a lot of things. But is it hurting our democracy?

That's the central question some Georgetown University students are grappling with in a class called "Social Media and Democracy", which looks at issues like the rise of fake news, the ability of Internet "echo chambers" to shape public opinion and the real meaning of concepts like truth. I was honored to speak to this class last week, mostly sharing experiences as a former journalist in Silicon Valley who has seen the decline of the "real" news industry first-hand.

Marketers at all technology companies and, in my opinion, all citizens should be engaging in this debate, mulling the broader ramifications of how news and information is shared and consumed today. What does it mean, for instance, that as of last year, only two in 10 Americans (22%) said they trust the information they get from local news organizations "a lot"—but that 62% of citizens report getting their news from social-media sites, which may not be fact-checked or vetted in the traditional journalistic sense?

I talked to the students last week about the critical but dying art of real journalism, and how sites like Facebook and Twitter can easily—sometimes virally—spread fringe viewpoints or outright falsehoods. They all knew this already, of course, both from the readings they're doing for the course as well as the news from across town on Capitol Hill.

The rise of social media and the upending of the traditional news business means there's simply less agreement about what constitutes actual news—and if it's possible to have objective reporting at all. The financial decimation of the print-newspaper business, fueled partly by the rise of the Internet and the decline of revenue sources like classified ads (and publicly held newspaper companies pushing for profits), means there are fewer and fewer reporters out there even trying to be objective. The American Society of News Editors reported there were just under 33,000 full-time journalists plying their trade in the U.S. in 2015, down significantly from a high of 56,900 in 1990. Last year, the group stopped counting, saying it was too difficult to classify who was really a full-time journalist anymore.

I saw this contraction play out first-hand over the course of my 18-year career in journalism. The Indianapolis Star, a once-venerable big-city newspaper where I worked from 1992 to 1996, after I graduated from college, struggled financially and was sold to Gannett in 2000. The paper quickly assumed the brightly colored, short-story format of other newspapers owned by its parent company, and newsroom staff shrank. Similarly, at the Wall Street Journal, the Bancroft family offloaded Dow Jones & Co. to Rupert Murdoch's News Corp. in 2005. There was a slow exodus of top investigative reporters from the paper, whose new editors also extolled the virtues of shorter, less-detailed stories, which are of course cheaper and easier to produce. Then-managing editor (now News Corp. executive) Robert Thomson alienated large corners of the staff when he told reporters that there were too many stories that had "the gestation of a llama"—11 months, to be exact.

Q8. It can be inferred that the author of the passage is:

- A. pessimistic about the chances of demise of traditional news media
- B. echoing the sentiments of majority about the role of media in the modern world
- C. showcasing the loss of journalistic ethos
- D. lamenting the loss of traditional journalism

Q9. Which factors have fuelled the change in traditional news media?

I. Social Media and Internet

II. Loss of interest in the art of real journalism

III. Change in the financial models for print-newspapers

- A. I & II
- B. II & III
- C. I & III
- D. All of Above

Q10. The statement attributed to Robert Thomson implies that:

- A. The bosses at News Corp. were sticklers for deadlines.
- B. The bosses at News Corp. did not appreciate quality.
- C. The bosses at News Corp. were fine with a short-changing journalistic approach.
- D. The bosses at News Corp. were fine with cutting corners.

Directions for Questions 11 to 13: Read the passage given below and answer the questions that follow.

Passage-4

If, like writer Will Self, you loved every misanthropic moment of *Straw Dogs: Thoughts on Humans and Other Animals*, or like novelist AS Byatt you gleefully devoured the equally cheery *Black Mass: Apocalyptic Religion and the Death of Utopia*, then John Gray's latest, *Gray's Anatomy*, a selection of his articles and essays published over the past 30 years, will once again leave you poised, noose in hand, excitedly contemplating the sheer wretchedness of human existence. All the classic Gray components are here: the contrived aphoristic wisdom; the tedious, derivative anti-Enlightenment riffs; and, knitting it all together, the pompous insistence that humans, forever deluded by a mistaken, Christian-inspired sense of their uniqueness, will, in striving to shape the world in their image, only bring misery upon not just themselves but every living thing on Earth. 'The peculiar flavour of modern mass murder', Gray tells, 'comes from the fact that it has so often been committed in the name of creating a new world'. For those less willing to embrace Gray's one-sided vision of human history, in which barbarism eclipses civilization at every point, his lugubrious disdain for all things *Homo sapiens* might seem a little absurd. After all, John Gray is to all intents and purposes a human being himself; he's not, despite his namesake's claim, from Mars. All of which raises the question: knowing what he knows of the absurd futility of existence, literally how does he live with himself? One can only assume that, given the depth of his inhuman insight, he's somehow exempt from the charges he levels at his kind. And what charges they are. In a typical formulation, he writes, 'Knowledge advances while the human animal stays the same', before concluding '*Homo sapiens* will not cease to be predatory and destructive, nor will *Homo religious* cease to pursue the intimations of faith'. Or as he proudly puts it elsewhere, 'human history is a succession of catastrophes and occasional lapses into peace and civilization'. Unfortunately, despite his Swiftian pretensions, Gray's intent is not comic; he is deadly – in every sense – serious. What the range of writings contained in *Gray's Anatomy* reveal is a thinker with a consistent target: human hubris; that is, the delusional belief held by humans that we are progressing towards a society in which reason, in all its universality, prevails. Or in the words of *Straw Dogs*, the 'post-Christian faith that humans can make a world better than any in which they have so far lived'.

Q11. The primary purpose of the author of the passage is to:

- A. to highlight Gray's assumptions
- B. to rebuke Gray's conclusions
- C. to understand Gray's predicament

- D. to explain Gray's thinking

Q12. It can be inferred from the context that 'Swiftian' would refer to something:

- A. dark and gloomy
- B. comic and frivolous
- C. rational and contemplative
- D. ironic and illogical

Q13. According to the information given in the passage:

- A. In his work, Gray targets human ignorance in understanding the plight of mankind and how our progress is actually limited in nature.
- B. In his work, Gray targets that human folly wherein humans arrogantly believe that we are progressing towards a better world than the one that already exists.
- C. In his work, Gray targets human bias in understanding the true nature of their impact on this planet and falsely believing they are doing more than they actually are.
- D. In his work, Gray targets that human instinct to convert everything into something which showcases human prowess as the ultimate saviour in every situation.

13. B

The answer to this question can be found in the last lines of the passage: That the range of writings contained in *Gray's Anatomy* reveal is a thinker with a consistent target: human hubris; that is, the delusional belief held by humans that we are progressing towards a society in which reason, in all its universality, prevails. Or in the words of *Straw Dogs*, the 'post-Christian faith that humans can make a world better than any in which they have so far lived'.

'Hubris' means arrogance. This helps us identify option B as the correct answer.

None of the other options targets the sentiment given above and each introduces an error.

Option A wrongly talks about the plight of mankind, something not mentioned in the passage.

Option C wrongly talks about human bias and human impact on the planet; these are things not mentioned in the passage.

Option D talks about human prowess as the ultimate saviour; this is another sentiment not expressed in the passage.

Directions for Questions 14 to 17: Read the passage given below and answer the questions that follow.

Passage 2

I met an oriental man in an authentic-looking dark costume, with a Fu Manchu mustache, dark orange skin, a black oriental skullcap, who I knew brought with him certain essences of oriental wisdom. I wanted to ask him questions, to get answers, but I didn't know what to ask. I asked him why oriental wisdom stressed passivity and passive reaction (I'm not sure what I meant). And he didn't exactly answer. Then somehow I found myself doing a task, as if he directed me to do it, as if he was my master guide, sort of like the oriental teacher from the old television show, *Kung Fu*.

The task was not very physical, I could do it sitting down somewhere (I was near a tree, in the sun); but it was a frustrating task and made me tense and somewhat hostile to my teacher. But then I realized I was approaching a sort of recognition about how trust and frustration and discouragement relate and about

how you arrive at a moment of tension and hostility where you don't know how to do something, or you don't want to do it anymore. I realized that there is a certain kind of understanding to be learned from this type of experience of being suspicious but going on anyway.

I decided to continue trying to do the task, but I didn't yet arrive at the purpose behind it, and I didn't get back to the teacher to find out if I was doing it right or not.

But I sensed that for me there is a central link, not related to logic, between that experience of being at the edge of your patience, feeling frustrated and yet involved in the experience. It is also important to me that I met such a distinctly and thoroughly traditional oriental, even an historic stereotype oriental. This tells me something about my respect for oriental wisdom and gives me some issues I might think more about in my life these days.

Nearly everyone agrees that it takes imagination for a person to produce the most lively and effective writing possible. English teachers can certainly be counted among those in academia who have long paid at least lip service to the value of the imagination. But it is only recently as more and more fields of study have focused on the imagination and its importance to us that we seem to have become actively concerned with "teaching the imagination." As a profession we are novices at organizing and describing the ingredients of a pedagogy of the imagination, although some English teachers have no doubt had great individual successes in working with the creative possibilities of the mind. In this essay I claim no such history of personal success, however. I simply wish to report on an experiment I have engaged in during the last year or so to attempt to teach my students to use their imaginations more effectively. The above "vision" of the oriental man was the mental experience I had the first time. I tried to lead my students in probing their imagination in a writing class.

Q14. The passage aims to:

- A. Highlight the importance of creative thinking and show how oriental thinking is mandatory for creative writing.
- B. Showcase the needs of the process of writing and how oriental wisdom can be used for the same.
- C. Point out the shortcomings of the existing English teachers and writers and show how they can undergo self improvement.
- D. Show the need for creative thinking in writing as well as teaching English and how one should probe one's imagination.

Q15. The tone of the author of the passage is:

- A. Euphemistic
- B. Exuberant
- C. Empirical
- D. Expounding

Q16. The author's experience with the oriental man helped him in which of the following ways:

- I. He found that such exercises really served no tangible utility; no one can clearly recognize the actual purpose it serves.
- II. He became aware of his respect for oriental wisdom.
- III. He developed a certain understanding of experience wherein one is suspicious but still goes on with the task at hand.

- A. II only
- B. I and II

- C. II and III
- D. I and III

Q17. What is the role of the 'Oriental Man' in this passage?

- A. To be the master guide for the author throughout his complete spiritual journey.
- B. To explain in detail why oriental wisdom stressed passivity and passive reaction.
- C. To help the author realize the importance of Imagination in writing and teaching English.
- D. To propagate the teachings of a historic stereotype oriental.

Directions for the Question: Identify the apt summary for the given paragraph. Enter the option number you deem as the correct answer.

Q18. The moral superiority of nonviolence is often evoked to condemn violent resistance and discredit unruly activists. States regularly conscript the language of nonviolence in this way, adding to worries that nonviolence carries risks of co-option and compromise. The wars and occupations of the past two decades seem unlikely portents of a new era of nonviolence. The enthrallment of force and violence seem as overwhelming as ever. And yet the encircling violence – from state violence and increasingly deadly military technology, to global terrorism and asymmetrical warfare – seems to be self-defeating at best, nihilistic at worst. That is, there is little prospect that all this violence has or will achieve its purported ends. This fact – and reckoning with it – holds out the promise of nonviolence.

- A. Non-violence is a discredited approach and wars have become all the more enthralling in recent times.
- B. Non-violence continues to have a strong future, despite short term trends that may seem contrary to this.
- C. Wars are nihilistic in nature and non-violence continues to be a discredited approach.
- D. Non-violence is nihilistic, only if carried out in an asymmetrical scenario.

Directions for the Question: Identify the apt summary for the given paragraph. Enter the option number you deem as the correct answer.

Q19. Directions: Identify the apt summary for the given paragraph. Enter the option number you deem as the correct answer.

Pakistan's Defence Minister Khawaja Muhammad Asif, for all practical purposes, recently threatened Israel with a retaliatory nuclear attack, in response to a fake news report that the Israelis had said they would use nuclear weapons against Pakistan if it sent ground troops to Syria. Even in India, a fake story said there was a GPS tracking chip embedded in the new Rs.2,000 note. Fake news — the deliberate creation of factually incorrect content to mislead people for some gain — is becoming an increasingly serious problem. And tackling it is imperative in a perpetually wired and click-happy world. Everyone with an Internet connection and a social media presence is now a content generator.

- A. Access to the web at all times on mobile platforms has raised expectations for real-time news.
- B. Fake news, or otherwise, spreads rapidly on Facebook, which has hundreds of millions of users.
- C. Fake news is spreading like wildfire and it is very important to control it.
- D. Different websites spread fake news as click bait content.

Directions for the Question: Identify the apt summary for the given paragraph. Enter the option number you deem as the correct answer.

Q20. Directions: Identify the apt summary for the given paragraph. Enter the option number you deem as the correct answer.

The debate on allowing euthanasia as a means to protect the dignity of patients in a vegetative state has crystallised into a key question before a Constitution Bench of the Supreme Court. Should the law allow 'living wills'? These are advance directives that people can lay down while being sound of mind, on whether they should continue to get life-sustaining treatment after they reach a stage of total incapacitation, that is, a vegetative state. The question is fraught with legal, moral and philosophical implications. The court will have to resolve the question whether the right to life under Article 21 of the Constitution, which according to an earlier verdict does not include the right to die, is being voluntarily waived by a person giving such an advance directive.

- A. A living will may actually relieve the close family members and caregivers of a terminally ill patient of the moral burden of making a life-ending decision.
- B. The question of living will and euthanasia has legal, moral and philosophical association and is a tough question for the Supreme Court.
- C. Euthanasia is all about protecting the dignity of patients in a vegetative state and therefore the question of it being legalised is a simple one and the answer by the judiciary must be yes.
- D. Euthanasia and right to life under Article 21 of the Constitution are two conflicting ideas but the law shows a clear path towards the resolution of this problem.

Directions for the Question: The question below has a paragraph given with one sentence missing in at the end. From among the answer choices given, select the sentence that can fill the blank to form a coherent paragraph.

Q21. Chris Grayling announced an inquiry into the timetable fiasco that has left passengers in northern and south-east England facing widespread cancellations and delays. In the face of calls for him to resign, Grayling told the Commons he had been personally assured by GTR that it was ready to deliver the new timetable, "as little as three weeks before". He repeated criticism of Network Rail, for overrunning engineering work and delays in approving the new timetables. But he said it was now "clear that GTR and Northern were not sufficiently prepared to manage a timetable change of this scale". (_____)

- A. He blamed the Thameslink Readiness Board, an expert industry group set up to advise him, for not raising the apparent risks.
- B. His actions were found unacceptable by the Minister and he demanded an explanation.
- C. This caused a serious loss to the entire railway sector as it has been showing a lot of fluctuations here and there causing a widespread altercation in the railway ministry.
- D. He accepted that there was a lack of planning on his side and he will solely take the responsibility for the confusion.

Directions for questions 22: In the following question, rearrange the five sentences in order to form a meaningful paragraph.

TITA

Q22

1. It's got a technical institute and two universities, which means maybe a quarter of its population are students.
2. It's an attractive place between mountain and sea, with an elegant lower town laid out on a grid pattern devised in the 1850s by a Greek engineer in the French army and an older, more random upper town.
3. The south-western port of Patras, population 300,000, is Greece's third city.
4. One of them is Spyros Theodoritsis, 27, who hopes to graduate next year with a degree in computer engineering (a field in which Patras has an international reputation).

Directions for questions 23: In the following question, rearrange the five sentences in order to form a meaningful paragraph.

TITA

Q23.

1. The sight of tens of thousands of cops taking to the streets is unusual, and the presence in their midst of a chief constable - Tony Melville - even more so.
2. The demonstration is the strongest show of defiance available to members of the Police Federation and comes as the call from some officers for full industrial rights grows.
3. Up to 20,000 rank and file police officers will march in London on Thursday in a protest at the cuts and "privatisation" of the service.
4. The more radical amongst them believe if they are to lose the job protection they have always had as Crown servants, then they need real industrial muscle to defend their jobs and their working conditions.

Directions for questions 24: In the following question, rearrange the five sentences in order to form a meaningful paragraph.

TITA

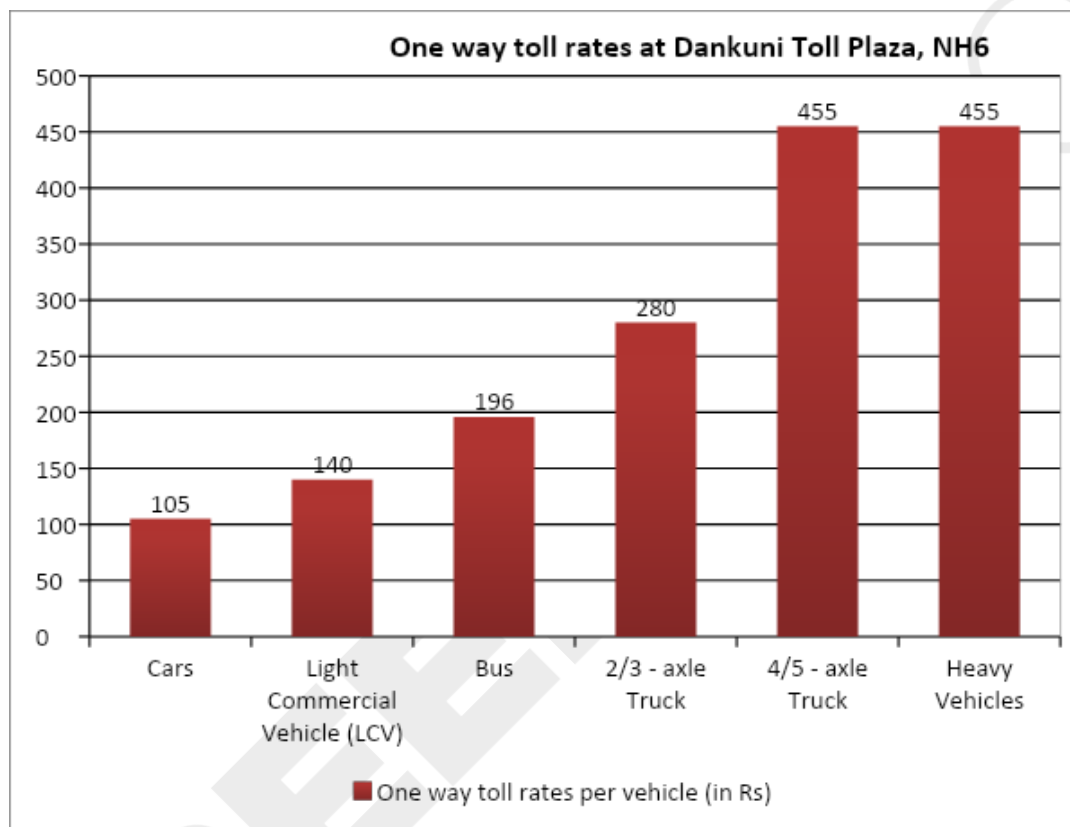
Q24.

1. It is ubiquitous, yet hidden.
2. As a result, women from the northeast continue to be seen as 'loose' and African students like Yannick are given a subhuman status because of the colour of their skin.
3. You can sense it but you can't really pin it down. Worse still, in India it is institutionalised with law enforcers themselves complicit in perpetuating stereotypes.
4. The biggest hurdle in tackling racism is its invisible character.

Section - 2 - Data Interpretation and Logical Reasoning

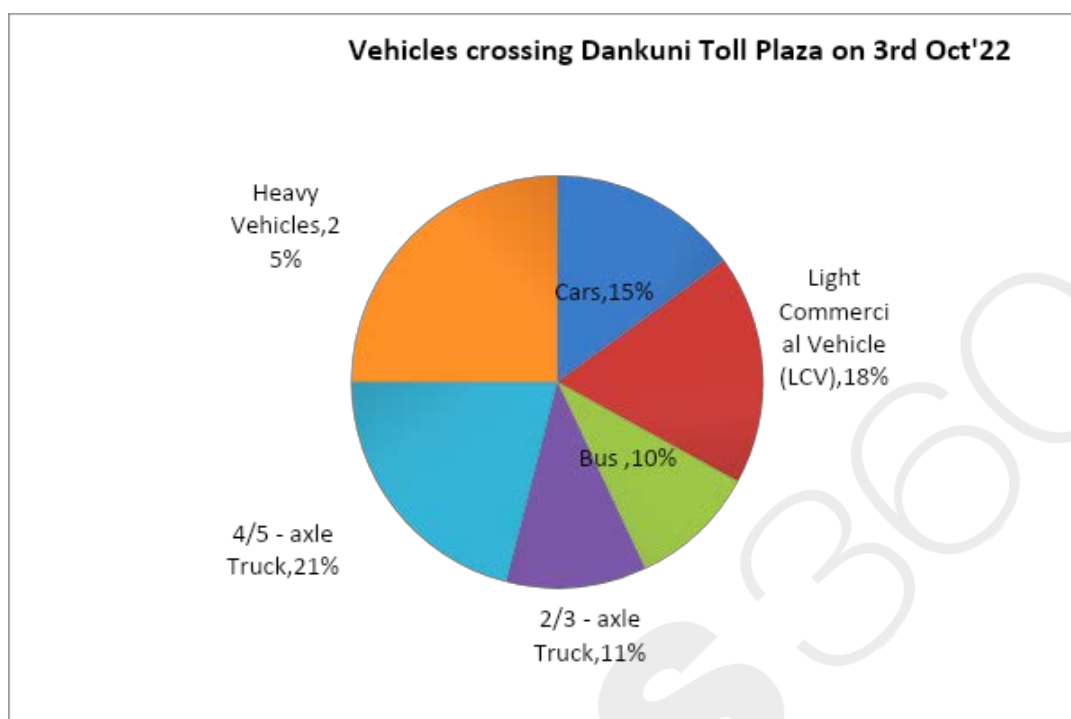
Directions for questions from 25 to 28 :

The bar-graph given below shows the amount (in Rs) to be paid as one way toll charge by the different types of vehicles at the Dankuni Toll Plaza on National Highway 6, on the outskirts of Kolkata:



The pie-chart given below shows the percentage break-up of the different types of vehicles that crossed the same Toll Plaza on the day of Durga Puja on 3rd October, 2022 :

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Answer the following questions with the aid of the data given above :

Q 25 (TITA)

If the toll amount collected from Heavy Vehicles at the Dankuni Toll Plaza was Rs 5,46,000 on 3rd October 2022, what was the total toll amount (in Rs) collected from Cars and Light Commercial Vehicles (LCV) on the same day ?

Q 26 Which of the following is the correct order for the amount money collected through toll charges at the Dankuni Toll Plaza, from the different types of vehicles, on the 3rd October 2022 ?

- A) Light Commercial Vehicles > Cars > Bus
- B) Bus > Light Commercial Vehicles > Cars
- C) Light Commercial Vehicles > Bus > Cars
- D) Cars > Light Commercial Vehicles > Bus

Q 27 (TITA)

On the 3rd October 2022, the amount collected from 4/5 – axle Trucks at the Dankuni Toll Plaza, was what percent more (rounded to the nearest integer) than the amount collected from Light Commercial Vehicles ?

Q 28 (TITA)

At the end of 3rd October 2022, the Dankuni Toll Plaza staff found that the average collection per vehicle that came from Cars and Light Commercial Vehicle (LCV) was Rs 126. Footage of CCTV cameras installed at the Toll Plaza exits revealed that the Light Commercial Vehicles (LCV) that had passed on that day was 20% more than the number of Cars. On that day, if 1800 Light Commercial Vehicles (LCV) passed through the Toll Plaza, then how many Cars that had passed through Dankuni Toll Plaza on the 3rd October 2022, without paying any toll amount ?

Directions for questions from 29 to 34 :

At the Happily Tippy Bar, the chief bar-tender, after a lot of experimentation found out that Vodka, White Rum, Gin and Tequila if mixed in different concentrations can create four very exciting cocktails which he named as the Teqnical, the Hard Haddock, the Fiery Ginie and the Russian Heat. The respective percentage alcohol concentrations of the cocktails are provided in the chart below.

He priced them at Rs 160, Rs 400, Rs 320 and Rs 240 per single peg respectively. On specific orders from customers, he was ready to mix two or more drinks in the ratio as fancied by the customer.

Alcohol				
Cocktail	Vodka	White Rum	Gin	Tequila
TEQNICAL	18	32	8	42
HARD HADDOCK	8	42	32	18
FIERY GINIE	9	27	37	27
RUSSIAN HEAT	42	13	37	8

Q 29 (TITA)

What would be the least cost (in Rs) of a peg of a drink which contains at least 30% of Vodka at the Happily Tippy Bar ?

Q 30 (TITA)

If a drink which contains at least 20% of each of Vodka, White Rum, Gin and Tequila is to be prepared, what would be the minimum price per peg (rounded to the nearest rupee) of it at the Happily Tippy Bar ?

Q 31 A customer at the Happily Tippy Bar asks for a peg of a drink with a single portion each of Teqnical, Fiery Ginie and Russian Heat, and a double portion of Hard Haddock. What will be the minimum integral ratio of the percentage contents of Vodka, White Rum, Gin and Tequila in that drink ?

- A) 112 : 121 : 105 : 110
- B) 85 : 156 : 146 : 113
- C) 35 : 32 : 41 : 31
- D) 105 : 121 : 98 : 108

Q 32 (TITA)

If the most economical drink which contains 25% of Gin is to be prepared at the Happily Tippy Bar, then what will be the concentration of White Rum (in percentage, rounded to the nearest integral value) in a peg of that drink ?

Q 33 If not more than two pegs of each cocktail is available, what can be the maximum percentage of White Rum in a drink obtained by mixing two or more cocktails at the Happily Tippy Bar, if the cost per peg of the resulting drink should be at most Rs 280 ?

- A) 25%
- B) 27.5%
- C) 35%
- D) 37%

Q 34 On the 31st March of a particular year, the management of Happily Topsy Bar wanted to finish off their inventory as much as possible, as the remnant of the inventory would be destroyed. On checking they found that 14.7 liters of Vodka purchased @ Rs 300 per liter, 76.8 liters of White Rum purchased @ Rs 550 per liter, 58.6 liters of Gin purchased @ Rs 500 per liter and 33 liters of Tequila purchased @ Rs 400 per liter were there as inventory. Assuming that there would be no mixing of cocktails to be served to any customer on that day, and that the maximum possible inventory got exhausted, what could be the maximum profit that could be made (in lakhs of Rs rounded to the first decimal place) on the sales of cocktails made from the inventory on 31st March at Happily Topsy Bar, neglecting all other expenses ? (One peg = 60ml)

- A) 12.2
- B) 11.3
- C) 9.4
- D) 8.5

Directions for questions from 35 to 40:

The Enforcement Directorate (ED) of the Government of India had for a long time been keeping watch over the Education Minister of West Bengal in Kolkata regarding a scam of recruitment of Staff Selection Commission candidates.

The Director of ED, Mr Sanjay Kr Mishra (IRS), with the help of his department sleuths, had observed a very interesting trend in the activity of the Education Minister :

Once every day of a week, except Sunday, the personal assistant of the Education Minister took delivery of sealed envelopes of money from the minister personally at his office to deliver to the minister's lady-friend at her residence. It was also known from a secret source that for two fixed days of a week he delivered a certain number of envelopes less than the previous day, and for three fixed days a week, he delivered the same number of envelopes (as mentioned in the previous line) more than the previous day. However, it was not possible to get information as to what those days were. This practice continued for exactly twenty-seven consecutive days from the first Monday of delivery. From high-definition telescopic photographs of the envelopes, it was surely concluded that each envelope held a hundred crisp two thousand rupee notes. It was also known from the secret source that every week the greatest and least number of envelopes that the personal assistant delivered was eighty and twenty respectively.

Mr Mishra took the help of a professional data interpreter to analyze the collected data and to provide the ED Department with an idea of the details and enormity of the scam. What would be the answers found out by the data-interpreter to the following questions asked to him by Mr Mishra ?

Q 35 What could be the lowest possible quantum of the total delivery of money from the Education Minister's office to the residence of his lady-friend, by the personal assistant of the minister ?

- A) Rs 5.40 crores
- B) Rs 14.75 crores
- C) Rs 21.60 crores
- D) Rs 24.00 crores

Q 36 What could be the highest possible quantum of the total delivery of money from the Education Minister's office to the residence of his lady-friend, by the personal assistant of the minister ?

- A) Rs 24.00 crores

- B) Rs 26.40 crores
- C) Rs 30.00 crores
- D) Rs 32.75 crores

Q 37 What could be the average daily delivery of money in the six days from the Education Minister's office to the residence of his lady-friend, by the personal assistant of the minister, if on Monday and Saturday the lowest and highest number respectively of envelopes were delivered ?

- A) Rs 6.60 crores
- B) Rs 6.00 crores
- C) Rs 5.40 crores
- D) Rs 1.00 crore

Q 38 If eighty lakhs of rupees were delivered from the Education Minister's office to the residence of his lady-friend, by the personal assistant of the minister on a Wednesday, what could be the amount of money that could be delivered on Saturday ?

- A) Rs 1.20 crores
- B) Rs 1.40 crores
- C) Rs 1.45 crores
- D) Rs 1.50 crores

Q 39 If the highest amount that could be delivered from the Education Minister's office to the residence of his lady-friend, by the personal assistant of the minister, was delivered twice within Monday and Saturday, with Monday and Tuesday not being the days with the lowest delivery, what was the amount of money that was delivered on Thursday ?

- A) Rs 1.20 crores
- B) Rs 1.00 crores
- C) Rs 0.40 crores
- D) Cannot be determined

Q 40 If all the probable scenarios of deliveries from the Education Minister's office to the residence of his lady-friend, by the personal assistant of the minister, were to be considered, what could be the average amount of money that was delivered on Fridays ?

- A) Rs 1.10 crores
- B) Rs 2.50 crores
- C) Rs 4.50 crores
- D) Rs 5.40 crores

Directions for questions from 41 to 44 :

In a group of 300 families in a colony of Dharavi, each family likes at least one dish among Pao Bhaji, Vada Pao and Misal Pao. 160 families like Pao Bhaji and 140 families like Vada Pao.

Q 41 If the number of families who like exactly one dish is 180, then what is the maximum possible number of families who like Misal Pao ?

- A) 240
- B) 180

- C) 120
- D) 60

Q 42 If the number of families who like Misal Pao is 180, then what is the maximum possible number of families who like only Pao Bhaji ?

- A) 180
- B) 120
- C) 60
- D) 30

Q 43 If the number of families who like all the three dishes is 80, then what is the minimum possible number of families who like only Misal Pao ?

- A) 120
- B) 100
- C) 80
- D) 60

Q 44 If the number of families who like Misal Pao is 200 and the maximum possible number of families like only Vada Pao, what can be the maximum possible number of families who like both Pao Bhaji and Misal Pao, but not Vada Pao ?

- A) 80
- B) 100
- C) 120
- D) 160

Section - 3 - Quantitative Aptitude

Q45. On selling 4 pens at 5% loss and 6 pens at 15% gain, Krishna gains Rs. 70. If he sells the 8 pens at 5% gain and 2 pens at 10% loss, by what value his gain is changed?

(a) Increases by Rs 20	(b) Decreases by Rs 20
(c) Increases by Rs 50	(d) Decreases by Rs 50

Q46. In a circle two equal chords AB and CD are intersecting at point E, then the quadrilateral formed is

- (a) a parallelogram (b) a rhombus (c) a trapezium (d) a rectangle

Q47. (TITA)

A chemist mixes two liquids A and B in the ratio 3: 4. One litre of liquid A weighs 1 kg and one litre of liquid B weighs 900 gm. What is the difference between the weight of liquids in 3.5 litres of the mixture [in gms]?

Q48. If $(2.333)^{1/(x+y)} = (233.3)^{1/(x-y)} = 100$, then value of y is

- (a) $-1/4$ (b) 4 (c) $-1/2$ (d) -2

Q49. (TITA)

How many words containing exactly 2 vowels and 3 consonants can be made from a given set of 5 vowels and 10 consonants such that exactly 3 letters are same in each word?

Q50. (TITA)

A person invested a total amount of Rs 20 lakh. A part of it is given to his friend at 8% annual interest and the remaining is invested in 3 different schemes in the ratio of 1: 3: 4 at annual interest rate of 4%, 3%, and 2% respectively. If interest received from his friend and rest of the three schemes is same in 3 years. What amount [in lakh] is given to his friend?

Q51. Corners are cut off from a square of 10 cm to produce a regular octagon P.

Then, the area of the largest rectangle formed inside the octagon using vertices of it is (in sq cm)

- (a) $50(2 - \sqrt{2})$ (b) $100(2 - \sqrt{2})$
(c) $200(2 - \sqrt{2})$ (d) $300(2 - \sqrt{2})$

Q52. The income of Amrita is 15% less than that of Vineeta and 15% more than that of Kalpana. If Kalpana got an increment of 10% and Vineeta's income goes down by 5% in recession. Percentage by which Vineeta's income would exceed Kalpana's is nearest to

- (a) 32 (b) 16 (c) 20 (d) 22

Q53. 'Come & Get Fresh' purchases y liters of fruit juice from the 'Fruits n Fruits' for a total price of $\$ 6y^2$ and sells the entire y liters at a total price of $\$ 10 \times (7 + 8y/5)$. Find the minimum value of y so that the 'Come & Get Fresh' makes do not make any loss.

- (a) \$ 50 (b) \$ 5 (c) \$ 15 (d) \$ $7/3$

Q54. (TITA)

For the given pair (x, y) of positive integers, such that $(-x + 3y/2) = 7$ and $x < 2^{10}$, how many integer values of y satisfy the given conditions?

Q55. The sum of the squares of the distinct roots of $|x^2 - x - 12| = 2x - 2$ is

- (a) 54 (b) 56 (c) 40 (d) 36

Q56. Let $f(x) = \min(2x + 1, 3 - 4[x])$, where x is any real number and $[x]$ is greatest integer function less than equal to x . Value of $f(x)$ at $x = 6.4$ is:

- (a) -11 (b) -21 (c) 16 (d) 43

Q57. (TITA)

Sum of all values of x satisfying $\log_{10}(x^2 - 3x + 21) = (2 - \log_{10} 4)$ is:

Q58 (TITA)

If the work done by $(x + 4)$ boys in $(x - 3)$ days is to the work done by $(x + 4)$ women in $(x + 6)$ days is in the ratio 3: 2 if a boy is twice as efficient as a woman, then the number of women is

Q59. In a race of 270m, if B is standing 30 meters ahead of A, then A wins the race by 10 seconds. Alternatively, if A gives B a start of 60 meters the race ends in a dead heat. How long does A take to run 270m?

- (a) 100 sec (b) 80 sec (c) 90 sec (d) 70 sec

Q60. One card is picked from the deck of cards which turned out to be a number card. What is the probability of it being a multiple of 3 but not the multiple of 2?

- (a) $1/3$ (b) $2/13$ (c) $2/9$ (d) $3/13$

Q61. (TITA)

A solid cuboid of dimension (28 cm x 10 cm x 1 cm) is melted into 5 identical hollow cubes of thickness 1 cm. what is the total volume of 5 cubes so formed [in cubic cm]?

Q62. (TITA)

If $(7n - 4) + (7n - 7) + (7n - 10) + \dots + (7n - 49) = 2600$, then find the number of factors of n^2 which are perfect squares?

Q63. For the given quadratic equation $x^2 - (c^2)x + 3(2c - 1) = 0$ sum of the roots as one third of their product. Square of the difference between their roots can be

- (a) 5 (b) -11 (c) 2 (d) 11

Q64. (TITA)

The area of the region satisfying the inequalities $2|x| - y \leq 2$, $y \geq 1$, and $y \leq 2$ is

Q65. In CAT 2022 there were 62 questions. Each correct answer was rewarded by 3 marks and each wrong answer was penalized by 1 mark. 10 questions are there without penalty on being wrong. If all questions were attempted by a candidate. how many different sets of correct and wrong answer is a score of 50 possible?

- (a) 3 (b) 10 (c) 0 (d) cannot be determined

Q66. If $2x^3y + 3y^3x = 7x^2y^2$, Sum of all the possible values of x/y is

- (a) 1 (b) $3/2$ (c) 3 (d) $7/2$

Answer Key - Mock Test 12

Section - Verbal Ability & Reading Comprehension

1- B, 2-C, 3-C, 4-C, 5-C, 6-D, 7-C, 8-D, 9-C, 10-C, 11-D, 12-A, 13-B, 14-D, 15-D, 16-C, 17-C, 18-B, 19-C, 20-B, 21-A, 22-3214, 23-3241, 24-4132

Section - Data Interpretation & Logical Reasoning

25 -196560, 26-C, 27-279, 28-300, 29-200, 30-193, 31-B, 32-20, 33-D, 34-B, 35-C, 36-B, 37-D, 38-A, 39-C, 40-A, 41-A, 42-B, 43-C, 44-D

Section - Quantitative Aptitude

45- D, 46-C, 47-300, 48-C, 49-12000, 50-5,6, 51-B, 52-B, 53-B, 54-341, 55-D, 56-B, 57-3, 58-10. 59-C, 60-C, 61-40, 62-4, 63-B, 64-3.5, 65-A, 66-D

Solutions - Mock Test 12

Section - Verbal Ability & Reading Comprehension

1. B

Laissez-faire is a French term meaning "to let people do as they please." Applied to parenting, the term refers to a permissive style in which parents avoid providing guidance and discipline, make no demands for maturity, and impose few controls on their child's behavior.

Now refer to the lines: So parents matter — a point made clear by decades of research showing that a major part of the academic advantage held by children from affluent families comes from the "concerted cultivation of children" as compared to the more laissez-faire style of parenting common in working-class families.

From the above, we can see that the author has made a comparison here between the two styles of parenting: concerted vs. laissez-faire.

Concerted means jointly arranged or carried out; coordinated.

We have already seen that laissez-faire implies freedom.

Keeping this in mind, we can see that option B is the best answer here.

2. C

Refer to the lines: So parents matter — a point made clear by decades of research showing that a major part of the **academic advantage** held by children from affluent families comes from the "concerted cultivation of children" as compared to the more laissez-faire style of parenting common in working-class families. But not just any talk. Although well-known research by psychologists Betty Hart and Todd Risley has shown that professional parents talk more to their children than less-affluent parents — a lot more, resulting in a 30 million "word gap" by the time children reach age three — more recent research is refining our sense of exactly what kinds of talk at home foster children's success at school. Now the implication of the above lines is that students from affluent families do better than the ones from working-class families (why else the comparison).

3. C

I can be ruled out from the lines: But this research also reveals something else: that parents, of all backgrounds, don't need to buy expensive educational toys or digital devices for their kids in order to give them an edge.

II can be derived from the lines: A study published earlier this month by researchers at North Carolina State University, Brigham Young University and the University of California-Irvine, for example, finds that parental involvement — checking homework, attending school meetings and events, discussing school activities at home — has a more powerful influence on students' academic performance than anything about the school the students attend.

III can be derived from the lines: What they need to do with their children is much simpler: talk.

4. C

Remember, you need to identify an assumption for the research results arrived at by Kevin Beaver.

In this case, the conclusion is: In their study, published in the journal *Developmental Psychology*, the scientists found that young people who possessed particular versions of three genes were more likely to finish high school and go on to college than those who carried other forms of the genes.

The evidence is: The genes in question — DAT1, DRD2 and DRD4 — are involved in regulating the action of dopamine in the brain, and have been linked in other studies to levels of motivation, attention and intelligence.

This is a typical critical reasoning case, where A and B are present together and it is believed that A caused B. For this to happen, we assume there is no C which caused B to happen.

This assumption pattern is followed by option C in the given case.

5. C

In the given case, paragraph points out that the given research result is not always correct and provides a case where it may not be applicable: Moreover, environment matters, even in the context of genes: Docherty's research finds that children with the "risk" gene variants were especially likely to do poorly in math when they lived in chaotic homes and had negative, punitive parents. More generally, Florida's Beaver notes, research indicates that genetic factors account for about half of the variance in educational achievement.

Caveat means a warning or proviso of specific stipulations, conditions, or limitations.

This helps us identify option C as the correct answer.

6. D

In this case, the last paragraph of the passage is very important. The author clearly states that educational performance is not only related to genes and we should not simply assume this.

Keep this in mind, option C is clearly possible as a title.

Options A and B also post a question here and do not imply a definitive stance.

Inextricable means impossible to disentangle or separate. In the given context, this is an extreme word that does not fit. This makes option D run contrary to the sentiment implied in the passage.

Remember, we need to find the "except" answer.

7. C

This is an easy question. The author of the passage clearly states that genes are important (though up to a limit) and then also states the importance of parental involvement in the last paragraph.

8. D

In the given case, you need to evaluate every option carefully to arrive at the answer.

Option A: This option actually states the opposite. The option means that the author does not believe that there are high chances for the demise of traditional news media.

Option B: This is opposite of what is given.

Option C: This is an option that might bug you but then you have to keep in mind that the author is highlighting how the industry has changed.

Option D: This option highlights the main concern of the author, wherein he highlights how the media has changed.

9. C

Statements I and III can be derived from the lines: The financial decimation of the print-newspaper business, fuelled partly by the rise of the Internet and the decline of revenue sources like classified ads (and publicly held newspaper companies pushing for profits), means there are fewer and fewer reporters out there even trying to be objective.

Statement II finds no mention in the passage. Refer to the lines: I talked to the students last week about the critical but dying art of real journalism, and how sites like Facebook and Twitter can easily—sometimes virally—spread fringe viewpoints or outright falsehoods.

The passage mentions that the art of real journalism is dying but it does not say there is a loss of interest in it. If anything, the passage implies there are no takers for it and that is what is causing its demise. Overall, this statement is hard to justify from the given context.

10. D

In order to arrive at the answer, you need to know the meaning of a couple of terms:

Cutting corners: to do something in the easiest, cheapest, or fastest way. Cutting corners has a double implication of cutting down on quality as well as time.

Short change: cheat (someone) by giving insufficient money as change. This means to cheat or deceive.

We can clearly see in the given context that option D is the best fit. Remember, the primary reference in the passage is to time and there is a subtle implication to quality: Then-managing editor (now News Corp. executive) Robert Thomson alienated large corners of the staff when he told reporters that there were too many stories that had “the gestation of a llama”—11 months, to be exact.

We cannot pick an option related explicitly to quality in this case; we need one that implies that time spent on articles was shortened. Remember, the question is about the statement attributed to Robert Thomson; you need to keep this in mind while answering the question and not focus on the last paragraph of the passage alone.

11. D

The question that you need to ask yourself here is - what is the author of the passage doing in this case? The author of the passage is explaining the work of Gray, how he thinks, and the reaction of some individuals to it. There is some element of personal commentary involved in the process but primarily the author of the passage is delivering this content to us.

His intent and purpose here are to deliver/highlight/explain Gray's work and how he thinks. This sentiment only finds reflection in option D.

Option A is incorrect as Gray's work/thinking, in general, are under the scanner and not his assumptions. Option B is ruled out as the author does not rebuke anything.

Option C is ruled out as there is just a mention of the predicament Gray faces, but this is not the primary topic of the passage.

12. A

Swiftian means:

1. Of or relating to Jonathan Swift.

2. Like Swift's writings in tone or outlook; often, specific., sardonic, caustic, pessimistic, etc.

Refer to the lines: Unfortunately, despite his Swiftian pretensions, Gray's intent is not comic; he is deadly – in every sense – serious.

The possible answer could be comic but then there is no sentiment implied here which refers to Gray's approach as frivolous. Hence, the only other option that fits is option A: this goes with the general description of Gray's work.

13. B

The answer to this question can be found in the last lines of the passage: That the range of writings contained in *Gray's Anatomy* reveal is a thinker with a consistent target: human hubris; that is, the delusional belief held by humans that we are progressing towards a society in which reason, in all its universality, prevails. Or in the words of *Straw Dogs*, the 'post-Christian faith that humans can make a world better than any in which they have so far lived'.

'Hubris' means arrogance. This helps us identify option B as the correct answer.

None of the other options targets the sentiment given above and each introduces an error.

Option A wrongly talks about the plight of mankind, something not mentioned in the passage.

Option C wrongly talks about human bias and human impact on the planet; these are things not mentioned in the passage.

Option D talks about human prowess as the ultimate saviour; this is another sentiment not expressed in the passage.

14. D

The author of the passage actually explains the need for the use of imagination in writing as well as English teaching. This can be identified in the last paragraph of the passage, where he uses the example of the oriental man to show the need for creative thinking and the use of imagination in teaching and writing and how one should go about it. So, our clear choice is option D.

15. D

Let's understand the meaning of each tone first of all:

- Euphemistic means substitution of mild, indirect or vague expression for one thought to be offensive, harsh or blunt
- Exuberant means full of energy, excitement, and cheerfulness.
- Empirical is verifiable by observation or experience rather than theory
- Expounding: to present and explain (a theory or idea) in detail.

Now, look at the passage, what is the author doing? He is explaining the role of imagination in writing as well as sharing his own experience, and such an approach is clearly explanatory in nature which matches the meaning of option D perfectly.

16. C

Statement I is an incorrect one and finds no reference in the passage.

Statement II can be inferred from the line: 'This tells me something about my respect for oriental wisdom'

Statement III can be inferred from the lines: 'I realized that there is a certain kind of understanding to be learned from this type of experience of being suspicious but going on anyway.'

17. C

The last paragraph clearly explains that meeting the Oriental man and undertaking the activity he had asked, the author realised that it takes imagination for a person to produce the most lively and effective writing possible and that teachers of English should also use creativity and imagination.

18. B

The paragraph talks about non-violence and how people worry about co-option and compromise. Further, the paragraph mentions that war is nihilistic and non-violence continues to hold out promise. All these are best captured in option B, which is the correct choice.

19. C

Option A is not mentioned in the passage: there is no mention of mobile platforms and co-relation with expectations for real-time news.

Option B is ruled out as Facebook does not find a mention in the paragraph.

Option D is ruled out as there is no mention of click-bait activities in the paragraph.

Option C is the easy to identify correct answer in this case; it highlights the primary topic of the paragraph.

20. B

The paragraph focuses on the complexity and implications of the issue; this has been correctly covered in option B. Option B highlights the neutral and descriptive stance taken by the author of the paragraph. Option A mentions a point that finds no reference in the paragraph.

Option C is another option that provides an opinion/a judgement on the given issue. Remember, the paragraph is only about the Supreme Court deliberating what needs to be done; at no point of time is any course of action suggested by the author of the passage.

Option D again makes the mistake of pointing to a particular opinion/belief: there is no clear cut outline/belief provided in the passage; conclusions need to be arrived at (as per the information given in the passage). In fact, the paragraph states that this is a tough problem and at no point does the author say the law shows a clear path; the Supreme Court actually needs to figure out a path.

21. A

We can see that Mr. Grayling has been dropping in names to avert the blame that he is bound to face.

Option A perfectly fits in as Mr. Grayling has got another name to drop in. The idea of dropping in names was earlier found in the last line of the passage.

Option B, C and D are irrelevant as there are no supporting premises.

Option B and D speak about the minister and his ministry. We are unaware of its role and the things happening there. Hence we avoid these two.

Option C speaks about the loss caused to the industry. We are completely unaware of the financial transactions as per the information given in the passage. Hence we are free to avoid option C too.

22. 3214

Statement 3 is the generic opening sentence here.

Statement 2 then describes the city in detail and statement 1 takes the sentiment forward.

Statement 1 introduces the topic of students.

Statement 4 talks about one such student.

23. 3241

The opening sentence is statement 3.

One easy to identify pair in the question: 32

Statement 4 fits in with statement 2 as it provides a description for the crowd.

Thus, we have our order: 3241

24. 4132

Statement 4 is the generic opening sentence

Then we have two pairs: 41 and 13.

Statement 3 then provides an example for India and statement 2 provides specific details for the same.

Thus, we have our order: 4132

Section - Data Interpretation & Logical Reasoning

25. 196560

Let the total number of vehicles that passed Dankuni Toll Plaza on the 3rd October 2022 be x

The number of Heavy Vehicles was 25% of the total vehicles.

Also the toll rate per Heavy Vehicle = Rs 455

So, $x \cdot (25/100) \cdot 455 = 546000$

or, $x = (546000 \cdot 4) / 455$

or, $x = 4800$

Hence, the total number of vehicles that passed Dankuni Toll Plaza on the given date = 4800

The number of Cars was 15% of the total vehicles, that is, $4800 \cdot (15/100) = 720$

The number of LCVs was 18% of the total vehicles, that is, $4800 \cdot (18/100) = 864$

The toll amount collected from Cars = $720 \cdot 105 = \text{Rs } 75,600$

The toll amount collected from LCVs = $864 \cdot 140 = \text{Rs } 1,20,960$

Hence, the total toll amount collected from Cars and Light Commercial Vehicles (LCV) at the Dankuni Toll Plaza on the 3rd October 2022 = $(75,600 + 1,20,960) = \text{Rs } 1,96,560$

26. C

Let the total number of vehicles that crossed Dankuni Toll Plaza on the 3rd October 2022 be $100x$ units.

Hence,

Toll amount collected from Cars = $100x \cdot (15/100) \cdot 105 = \text{Rs } 1575x$

Toll amount collected from Light Commercial Vehicles (LCV) = $100x \cdot (18/100) \cdot 140 = \text{Rs } 2520x$

Toll amount collected from Buses = $100x \cdot (10/100) \cdot 196 = \text{Rs } 1960x$

Hence, the correct order for the amount money collected through toll charges at the Dankuni Toll Plaza, from the three different types of vehicles on the 3rd October 2022 : Light Commercial Vehicles > Bus > Cars

27. 279

Let $100x$ units be the total number of vehicles that crossed Dankuni Toll Plaza on the 3rd October 2022.

Toll amount collected from 4/5 – axle Trucks = $100x \cdot (21/100) \cdot 455 = \text{Rs } 9555x$

Toll amount collected from Light Commercial Vehicles (LCV) = $100x \cdot (18/100) \cdot 140 = \text{Rs } 2520x$

The amount of percentage more = $(9555x - 2520x) * 100 / 2520x = 279.17\%$

Hence, on the 3rd October 2022, the amount collected from 4/5 – axle Trucks at the Dankuni Toll Plaza, was 279% more than the amount collected from Light Commercial Vehicles

28. 300

Let the number of Cars that paid the toll charges at Dankuni Toll Plaza on the 3rd October 2022 be x .

Number of Light Commercial Vehicles (LCV) that paid the toll charges at Dankuni Toll Plaza on the same date = 1800

Average collection per vehicle from Cars and Light Commercial Vehicle (LCV) = Rs 126

So, total amount collected from Cars and LCVs = Rs $(x+1800)*126$

But,

The toll amount collected from x Cars = Rs $x*105$

The toll amount collected from 1800 LCVs = Rs $1800*140$

Hence,

$$(x+1800)*126 = x*105 + 1800*140$$

$$\text{or, } 126x + 126*1800 = 105x + 140*1800$$

$$\text{or, } 21x = 14*1800$$

$$\text{or, } x = 1200$$

Thus, the number of Cars that paid the toll charges at Dankuni Toll Plaza on the 13th October 2021 = 1200

The Light Commercial Vehicles (LCV) that had passed on that day through Dankuni Toll Plaza was 20% more than the number of Cars

So, total number of Cars that had passed through Dankuni Toll Plaza = $1800*(100/120) = 1500$

Hence, number of Cars that had passed through Dankuni Toll Plaza on the 3rd October 2022, without paying any toll amount

$$= 1500 - 1200$$

$$= 300$$

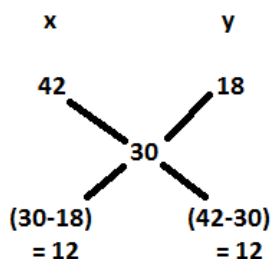
29. 200

Except for Russian Heat, no other cocktail has more than 30% Vodka. So Russian Heat has to be one of the choices of cocktail.

Now the cost must also be minimum possible.

So the only other choice will be Teqnical, as it costs the least at Rs 160 per peg and also has the second highest content of Vodka.

Applying alligation,



We find that to have at least 30% content of Vodka, the ratio of Russian Heat and Teqnical must be 12 : 12, that is 1 : 1

So cost = $(1 \times 240 + 1 \times 160) / 2 = \text{Rs } 200$.

Hence the least cost of a drink which contains at least 30% of Vodka is Rs 200

30. 193

Minimum price is a criterion.

So Teqnical will be the first choice.

It also has White Rum and Tequila at least 20% each.

Only shortfall is Vodka at 18% and Gin at 8%.

The highest Vodka content is by Russian Heat at 42%.

All other cocktails have Vodka less than 20%, and hence if combined with Teqnical would give Vodka content less than 20%.

The highest Gin content is by Fiery Ginie and Russian Heat at 37%.

But Fiery Ginie costs more than Russian Heat. So here too, the choice left is Russian Heat.

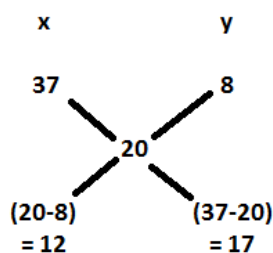
So we will mix Teqnical with Russian Heat to get the desired effect of the least expensive drink with at least 20% of each of Vodka, White Rum, Gin and Tequila.

Now regarding the individual percentages in Teqnical with Russian Heat, we observe that it is as below, with the target being to achieve at least 20% by using minimum quantity of Russian Heat :

Alcohol \ Cocktail	Vodka	White Rum	Gin	Tequila
TEQNICAL	18	32	8	42
RUSSIAN HEAT	42	13	37	8

Since the largest difference in the percentages is in Gin, if we close that gap, it is automatically going to close the gap in Vodka too.

Using alligation,



We find that the ratio of Russian Heat and Teqnical must be 12 : 17 to have 20% content of Gin.
So cost of the drink = $(12 \times 240 + 17 \times 160) / 29 = \text{Rs } 193$.

Hence, if a drink which contains at least 20% of each of Vodka, White Rum, Gin and Tequila is to be prepared, the minimum price per peg of it at the Happily Topsy Bar must be Rs 193.

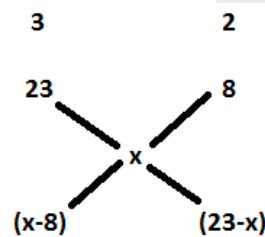
31. B

On mixing one unit each of Teqnical, Fiery Ginie and Russian Heat, the resultant percentage quantities are as follows :

Vodka : $(18+9+42)/3 = 69/3 = 23\%$,
White Rum : $(32+27+13)/3 = 72/3 = 24\%$,
Gin : $(8+37+37)/3 = 82/3 = 27.33\%$, and
Tequila : $(42+27+8)/3 = 77/3 = 25.67\%$

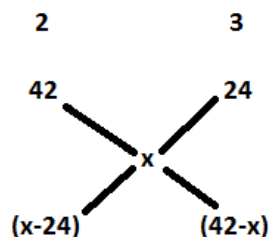
On mixing two units of Hard Haddock with three units of the mixture, the resultant percentage quantities are :

Vodka :



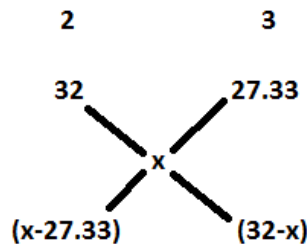
$$\begin{aligned} (x-8)/(23-x) &= 3/2 \\ \text{or, } 2x - 16 &= 69 - 3x \\ \text{or, } 5x &= 85 \\ \text{or, } x &= 17\%, \end{aligned}$$

White Rum :



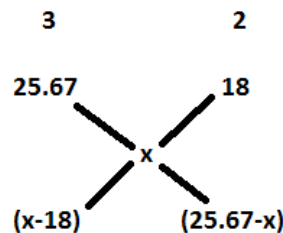
$$\begin{aligned} (x-24)/(42-x) &= 2/3 \\ \text{or, } 3x - 72 &= 84 - 2x \\ \text{or, } 5x &= 156 \\ \text{or, } x &= 31.2\%, \end{aligned}$$

Gin :



$$\begin{aligned} (x-27.33)/(32-x) &= 2/3 \\ \text{or, } 3x - 82 &= 64 - 2x \\ \text{or, } 5x &= 146 \\ \text{or, } x &= 29.2\%, \text{ and} \end{aligned}$$

Tequila :



$$\begin{aligned} (x-18)/(25.67-x) &= 3/2 \\ \text{or, } 2x - 36 &= 77 - 3x \\ \text{or, } 5x &= 113 \\ \text{or, } x &= 22.6\% \end{aligned}$$

Hence, the minimum integral ratio of the percentage contents of Vodka, White Rum, Gin and Tequila in that drink ordered by the customer at Happily Topsy Bar is

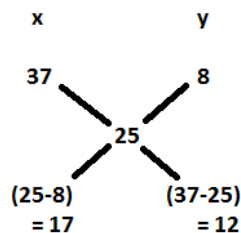
$$= 17 : 31.2 : 29.2 : 22.6$$

$$= 85 : 156 : 146 : 113$$

32. 20

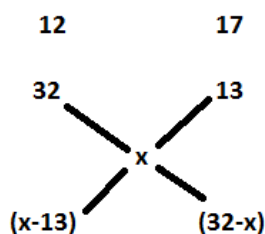
For the most economical drink which contains 25% of Gin to be prepared, a mix of Teqnical and Russian Heat is the first choice considering their economy, and as both have concentrations of Gin less than and exceeding 25% respectively.

Using alligation,



We find that the ratio of Russian Heat and Teqnical must be 17 : 12 to have 25% content of Gin.

Hence concentration of White rum in the drink :



$$\begin{aligned}(x-13)/(32-x) &= 12/17 \\ \text{or, } 17x - 221 &= 384 - 12x \\ \text{or, } 30x &= 605 \\ \text{or, } x &= 20.17\%\end{aligned}$$

Hence, if the most economical drink which contains 25% of Gin is to be prepared at the Happily Tipsy Bar, the concentration of White Rum (rounded to the nearest integral value) in that drink is 20%

33. D

The first priority is to mix two cocktails to stay below the Rs 280 per peg cost cap.

Teqnical is a perfect first choice considering the second highest content of White Rum and the lowest cost per peg.

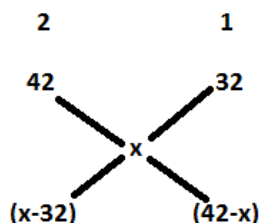
Also since we require maximum concentration of White Rum, and the highest is present in Hard Haddock, so even though Hard Haddock is the most expensive cocktail, it becomes the next choice.

Selecting any other cocktail other than Hard Haddock would bring the concentration of White Rum down than what it is in Teqnical.

That is also precisely the reason why we would not mix any third cocktail.

Now, the ratio of mixing the two cocktails (Hard Haddock and Teqnical) cannot be anything else other than a) 2 : 1, or b) 1 : 2, or c) 2 : 2 = 1 : 1 respectively, as only two pegs of each cocktail is available.

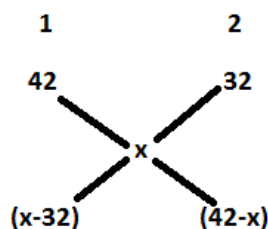
a) Ratio of 2 : 1 :



$$\begin{aligned}(x-32)/(42-x) &= 2/1 \\ \text{or, } x - 32 &= 84 - 2x \\ \text{or, } 3x &= 116 \\ \text{or, } x &= 38.67\% \text{ (where } x \text{ is the final concentration of White Rum).}\end{aligned}$$

Cost per peg = $(400 \times 2 + 160 \times 1)/3$ = Rs 320 per peg, which is > Rs 280 per peg.
Hence it is not the desired ratio.

b) Ratio of 1 : 2 :



$$(x-32)/(42-x) = 1/2$$

$$\text{or, } 2x - 64 = 42 - x$$

$$\text{or, } 3x = 106$$

$$\text{or, } x = 35.33\% \text{ (where } x \text{ is the final concentration of White Rum).}$$

Cost per peg = $(400 \times 1 + 160 \times 2)/3 = \text{Rs } 240$ per peg, which is $< \text{Rs } 280$ per peg.

Hence this may be the desired ratio.

c) Ratio of 2 : 2 = 1 : 1 :

$$x = (42+32)/2 = 37\% \text{ (where } x \text{ is the final concentration of White Rum).}$$

Cost per peg = $(400 + 160)/2 = \text{Rs } 280$ per peg, which is permissible.

Hence this also may be the desired ratio.

However we get the highest concentration of White Rum as 37% fulfilling the criterion of price being $\leq \text{Rs } 280$ per peg when the ratio of Hard Haddock and Teqnical is 1 : 1

34. B

Inventory and cost of inventory on 31st March of a particular year at Happily Topsy Bar :

Vodka : 14.7 liters (14700 ml) @ Rs 300/lit, that is Rs $(14.7 \times 300) = \text{Rs } 4410$,

White Rum : 76.8 liters (76800 ml) @ Rs 550/lit, that is Rs $(76.8 \times 550) = \text{Rs } 42240$,

Gin : 58.6 liters (58600 ml) @ Rs 500/lit, that is Rs $(58.6 \times 500) = \text{Rs } 29300$,

Tequila : 33 liters (33000 ml) @ Rs 400/lit, that is Rs $(33 \times 400) = \text{Rs } 13200$.

Total cost of inventory = Rs $(4410+42240+29300+13200) = \text{Rs } 89,150$

Since the target is to make maximum profit, hence the cocktail costing the highest, that is Hard Haddock, has to be targeted first, especially because we can also see on inspection that the distribution of the inventory is in approximate sync to the concentration of Vodka, White Rum Gin and Tequila in Hard Haddock.

Quantity present per peg (60 ml) of Hard Haddock :

Vodka : $(8 \times 60)/100 = 4.8$ ml

White Rum : $(42 \times 60)/100 = 25.2$ ml

Gin : $(32 \times 60)/100 = 19.2$ ml, and

Tequila : $(18 \times 60)/100 = 10.8$ ml

Quotient of $14700/4.8 = 3062$

Quotient of $76800/25.2 = 3047$

Quotient of $58600/19.2 = 3052$

Quotient of $33000/10.8 = 3055$

The minimum quotient will ensure the number of pegs of Hard Haddock that can be served to the customers on 31st March at Happily Topsy Bar, that is 3047 pegs.

Quantity left after serving 3047 pegs of Hard Haddock :

Vodka : $14700 - (4.8 \times 3047) = (14700 - 14625.6) = 74.4 \text{ ml}$

White Rum : $76800 - (25.2 \times 3047) = (76800 - 76784.4) = 15.6 \text{ ml}$

Gin : $58600 - (19.2 \times 3047) = (58600 - 58502.4) = 97.6 \text{ ml}$, and

Tequila : $33000 - (10.8 \times 3047) = (33000 - 32907.6) = 92.4 \text{ ml}$.

White Rum content left is the minimum, and so we should target the cocktail that uses minimum concentration of White Rum, that is Russian Heat.

Quantity present per peg (60 ml) of Russian Heat :

Vodka : $(42 \times 60)/100 = 25.8 \text{ ml}$

White Rum : $(13 \times 60)/100 = 7.8 \text{ ml}$

Gin : $(37 \times 60)/100 = 22.2 \text{ ml}$, and

Tequila : $(8 \times 60)/100 = 4.8 \text{ ml}$

Quotient of $74.4/25.8 = 2$

Quotient of $15.6/7.8 = 2$

Quotient of $97.6/22.2 = 4$

Quotient of $92.4/4.8 = 19$

The minimum quotient will ensure the number of pegs of Russian Heat that can be served to the customers on 31st March at Happily Topsy Bar, that is 2 pegs.

Quantity left after serving 2 pegs of Russian Heat :

Vodka : $74.4 - (25.8 \times 2) = (74.4 - 51.6) = 22.8 \text{ ml}$

White Rum : $15.6 - (7.8 \times 2) = (15.6 - 15.6) = 0$

Gin : $97.6 - (22.2 \times 2) = (97.6 - 44.4) = 53.2 \text{ ml}$, and

Tequila : $92.4 - (4.8 \times 2) = (92.4 - 9.6) = 82.8 \text{ ml}$.

The above quantity got destroyed.

Hence income from serving 3047 pegs of Hard Haddock and 2 pegs of Russian Heat

= Rs $(3047 \times 400 + 2 \times 240)$

= Rs $(1218800 + 480)$

= Rs 12,19,280

Hence profit made on 31st March at the Happily Topsy Bar on the sales of cocktails made from the inventory, neglecting all other expenses

= Rs $(1219280 - 89150)$

= Rs 11,30,130,

that is Rs 11.3 lakhs

35. C

The deliveries of sealed envelopes of money from the Education Minister's office to the residence of his lady-friend, by the personal assistant of the minister, were done from Monday to Saturday.

The data interpreter assumed that the number of envelopes delivered on Monday to be E.

Since it was known by Mr Sanjay Kr Mishra (IRS) from a secret source that for two fixed days of a week the delivery was a certain number of envelopes less than the previous day, and for three fixed days a week the delivery was the same number of envelopes more than the previous day, he understood that the number of different permutations of those $2+3 = 5$ days from Tuesday to Saturday would be ${}^5C_2$, that is 10 ways.

He also assumed that the number of envelopes less or more than the previous day be x .

Hence he tabulated the 10 probable ways in which the permutation could take place and the vis-à-vis total delivery of the week as given below. The yellow shade indicated an increase and the blue a decrease in the number of envelopes :

Case s	Count of Envelopes delivered						
	Mon	Tues	Wed	Thurs	Frid	Sat	Total in 6 days
1	E	$(E - x)$	$(E - x - x) = (E - 2x)$	$(E - 2x + x) = (E - x)$	$(E - x + x) = E$	$(E + x)$	$(6E - 3x)$
2	E	$(E - x)$	$(E - x + x) = E$	$(E - x)$	$(E - x + x) = E$	$(E + x)$	$(6E - x)$
3	E	$(E - x)$	$(E - x + x) = E$	$(E + x)$	$(E + x - x) = E$	$(E + x)$	$(6E + x)$
4	E	$(E - x)$	$(E - x + x) = E$	$(E + x)$	$(E + x + x) = (E + 2x)$	$(E + 2x - x) = (E + x)$	$(6E + 3x)$
5	E	$(E + x)$	$(E + x - x) = E$	$(E - x)$	$(E - x + x) = E$	$(E + x)$	$(6E + x)$
6	E	$(E + x)$	$(E + x - x) = E$	$(E + x)$	$(E + x - x) = E$	$(E + x)$	$(6E + 3x)$
7	E	$(E + x)$	$(E + x - x) = E$	$(E + x)$	$(E + x + x) = (E + 2x)$	$(E + 2x - x) = (E + x)$	$(6E + 5x)$
8	E	$(E + x)$	$(E + x + x) = (E + 2x)$	$(E + 2x - x) = (E + x)$	$(E + x - x) = E$	$(E + x)$	$(6E + 5x)$
9	E	$(E + x)$	$(E + x + x) = (E + 2x)$	$(E + 2x - x) = (E + x)$	$(E + x + x) = (E + 2x)$	$(E + 2x - x) = (E + x)$	$(6E + 7x)$
10	E	$(E + x)$	$(E + x + x) = (E + 2x)$	$(E + 2x + x) = (E + 3x)$	$(E + 3x - x) = (E + 2x)$	$(E + 2x - x) = (E + x)$	$(6E + 9x)$

From the secret source, it was also known that every week the greatest and least number of envelopes that were delivered was eighty and twenty respectively. Identifying them in each case (greatest number in green and least number in pink), he got :

Case s	Count of Envelopes delivered						
	Mon	Tues	Wed	Thurs	Frid	Sat	Total in 6 days
1	E	$(E - x)$	$(E - x - x) = (E - 2x)$	$(E - 2x + x) = (E - x)$	$(E - x + x) = E$	$(E + x)$	$(6E - 3x)$
			20			80	
2	E	$(E - x)$	$(E - x + x) = E$	$(E - x)$	$(E - x + x) = E$	$(E + x)$	$(6E - x)$
		20		20		80	
3	E	$(E - x)$	$(E - x + x) = E$	$(E + x)$	$(E + x - x) = E$	$(E + x)$	$(6E + x)$
		20		80		80	
4	E	$(E - x)$	$(E - x + x) = E$	$(E + x)$	$(E + x + x) = (E + 2x)$	$(E + 2x - x) = (E + x)$	$(6E + 3x)$
		20			80		
5	E	$(E + x)$	$(E + x - x) = E$	$(E - x)$	$(E - x + x) = E$	$(E + x)$	$(6E + x)$
		80		20		80	
6	E	$(E + x)$	$(E + x - x) = E$	$(E + x)$	$(E + x - x) = E$	$(E + x)$	$(6E + 3x)$
	20	80	20	80	20	80	
7	E	$(E + x)$	$(E + x - x) = E$	$(E + x)$	$(E + x + x) = (E + 2x)$	$(E + 2x - x) = (E + x)$	$(6E + 5x)$
	20		20		80		
8	E	$(E + x)$	$(E + x + x) = (E + 2x)$	$(E + 2x - x) = (E + x)$	$(E + x - x) = E$	$(E + x)$	$(6E + 5x)$
	20		80		20		
9	E	$(E + x)$	$(E + x + x) = (E + 2x)$	$(E + 2x - x) = (E + x)$	$(E + x + x) = (E + 2x)$	$(E + 2x - x) = (E + x)$	$(6E + 7x)$
	20		80		80		
10	E	$(E + x)$	$(E + x + x) = (E + 2x)$	$(E + 2x + x) = (E + 3x)$	$(E + 3x - x) = (E + 2x)$	$(E + 2x - x) = (E + x)$	$(6E + 9x)$
	20			80			

Now, as a result of the above the data interpreter could deduce the following :

Case 1 : $E + x = 80$ and $E - 2x = 20$. Solving, he got $x = 20$ and $E = 60$

Case 2 : $E + x = 80$ and $E - x = 20$. Solving, he got $x = 30$ and $E = 50$

Case 3 : $E + x = 80$ and $E - x = 20$. Solving, he got $x = 30$ and $E = 50$

Case 4 : $E + 2x = 80$ and $E - x = 20$. Solving, he got $x = 20$ and $E = 40$

Case 5 : $E + x = 80$ and $E - x = 20$. Solving, he got $x = 30$ and $E = 50$

Case 6 : $E + x = 80$ and $E = 20$. Solving, he got $x = 60$ and E was already 20

Case 7 : $E + 2x = 80$ and $E = 20$. Solving, he got $x = 30$ and E was already 20

Case 8 : $E + 2x = 80$ and $E = 20$. Solving, he got $x = 30$ and E was already 20

Case 9 : $E + 2x = 80$ and $E = 20$. Solving, he got $x = 30$ and E was already 20

Case 10 : $E + 3x = 80$ and $E = 20$. Solving, he got $x = 20$ and E was already 20

Hence, he could exactly find out the individual number of envelopes that were delivered from the Education Minister's office to the residence of his lady-friend by the personal assistant of the minister, for each day of each of the 10 probable cases. Also the total number of envelopes delivered in a week of each of the 10 probable cases. They were as below :

Case s	Count of Envelopes delivered						
	Mon	Tues	Wed	Thurs	Frid	Sat	Total in 6 days
1	E	$(E - x)$	$(E - x - x) = (E - 2x)$	$(E - 2x + x) = (E - x)$	$(E - x + x) = E$	$(E + x)$	$(6E - 3x)$
	60	40	20	40	60	80	300
2	E	$(E - x)$	$(E - x + x) = E$	$(E - x)$	$(E - x + x) = E$	$(E + x)$	$(6E - x)$
	50	20	50	20	50	80	270
3	E	$(E - x)$	$(E - x + x) = E$	$(E + x)$	$(E + x - x) = E$	$(E + x)$	$(6E + x)$
	50	20	50	80	50	80	330
4	E	$(E - x)$	$(E - x + x) = E$	$(E + x)$	$(E + x + x) = (E + 2x)$	$(E + 2x - x) = (E + x)$	$(6E + 3x)$
	40	20	40	60	80	60	300
5	E	$(E + x)$	$(E + x - x) = E$	$(E - x)$	$(E - x + x) = E$	$(E + x)$	$(6E + x)$
	50	80	50	20	50	80	330
6	E	$(E + x)$	$(E + x - x) = E$	$(E + x)$	$(E + x - x) = E$	$(E + x)$	$(6E + 3x)$
	20	80	20	80	20	80	300
7	E	$(E + x)$	$(E + x - x) = E$	$(E + x)$	$(E + x + x) = (E + 2x)$	$(E + 2x - x) = (E + x)$	$(6E + 5x)$
	20	50	20	50	80	50	270
8	E	$(E + x)$	$(E + x + x) = (E + 2x)$	$(E + 2x - x) = (E + x)$	$(E + x - x) = E$	$(E + x)$	$(6E + 5x)$
	20	50	80	50	20	50	270
9	E	$(E + x)$	$(E + x + x) = (E + 2x)$	$(E + 2x - x) = (E + x)$	$(E + x + x) = (E + 2x)$	$(E + 2x - x) = (E + x)$	$(6E + 7x)$
	20	50	80	50	80	50	330
10	E	$(E + x)$	$(E + x + x) = (E + 2x)$	$(E + 2x + x) = (E + 3x)$	$(E + 3x - x) = (E + 2x)$	$(E + 2x - x) = (E + x)$	$(6E + 9x)$
	20	40	60	80	60	40	300

From the deductions made by the data interpreter, it could be seen that in Case 2, Case 7 and Case 8, the total number of envelopes delivered from the Education Minister's office to the residence of his lady-friend, by the personal assistant of the minister was 270 each, which was the lowest number among all the ten cases.

From photographs of the envelopes, it was known that each envelope held hundred two thousand rupee notes, that is each envelope contained $(100 \times 2000) = \text{Rs } 2,00,000$.

Hence, 270 envelopes would contain $200000 \times 270 = \text{Rs } 5,40,00,000$, that is, Rs 5.40 crores

This practice had continued for exactly twenty-seven consecutive days from the first Monday of delivery, that is for four Monday to Saturday time spans.

Hence, the lowest possible quantum of the total delivery of money from the Education Minister's office to the residence of his lady-friend, by the personal assistant of the minister, could be $4 \times 5.40 = \text{Rs } 21.60$ crores

36. B

The data-interpreter had already deducted that :

Case s	Count of Envelopes delivered						Total in 6 days
	Mon	Tues	Wed	Thurs	Frid	Sat	
1	E	$(E - x)$	$(E - x - x) = (E - 2x)$	$(E - 2x + x) = (E - x)$	$(E - x + x) = E$	$(E + x)$	$(6E - 3x)$
	60	40	20	40	60	80	300
2	E	$(E - x)$	$(E - x + x) = E$	$(E - x)$	$(E - x + x) = E$	$(E + x)$	$(6E - x)$
	50	20	50	20	50	80	270
3	E	$(E - x)$	$(E - x + x) = E$	$(E + x)$	$(E + x - x) = E$	$(E + x)$	$(6E + x)$
	50	20	50	80	50	80	330
4	E	$(E - x)$	$(E - x + x) = E$	$(E + x)$	$(E + x + x) = (E + 2x)$	$(E + 2x - x) = (E + x)$	$(6E + 3x)$
	40	20	40	60	80	60	300
5	E	$(E + x)$	$(E + x - x) = E$	$(E - x)$	$(E - x + x) = E$	$(E + x)$	$(6E + x)$
	50	80	50	20	50	80	330
6	E	$(E + x)$	$(E + x - x) = E$	$(E + x)$	$(E + x - x) = E$	$(E + x)$	$(6E + 3x)$
	20	80	20	80	20	80	300
7	E	$(E + x)$	$(E + x - x) = E$	$(E + x)$	$(E + x + x) = (E + 2x)$	$(E + 2x - x) = (E + x)$	$(6E + 5x)$
	20	50	20	50	80	50	270
8	E	$(E + x)$	$(E + x + x) = (E + 2x)$	$(E + 2x - x) = (E + x)$	$(E + x - x) = E$	$(E + x)$	$(6E + 5x)$
	20	50	80	50	20	50	270
9	E	$(E + x)$	$(E + x + x) = (E + 2x)$	$(E + 2x - x) = (E + x)$	$(E + x + x) = (E + 2x)$	$(E + 2x - x) = (E + x)$	$(6E + 7x)$
	20	50	80	50	80	50	330
10	E	$(E + x)$	$(E + x + x) = (E + 2x)$	$(E + 2x + x) = (E + 3x)$	$(E + 3x - x) = (E + 2x)$	$(E + 2x - x) = (E + x)$	$(6E + 9x)$
	20	40	60	80	60	40	300

From the deductions made by the data interpreter, it could be seen that in Case 3, Case 5 and Case 9, the total number of envelopes delivered from the Education Minister's office to the residence of his lady-friend, by the personal assistant of the minister was 330 each, which was the highest number among all the ten cases.

From photographs of the envelopes, it was known that each envelope held hundred two thousand rupee notes, that is each envelope contained $(100 \times 2000) = \text{Rs } 2,00,000$.

Hence, 330 envelopes would contain $200000 \times 330 = \text{Rs } 6,60,00,000$, that is, Rs 6.60 crores

This practice had continued for exactly twenty-seven consecutive days from the first Monday of delivery, that is for four Monday to Saturday time spans.

Hence, the highest possible quantum of the total delivery of money from the Education Minister's office to the residence of his lady-friend, by the personal assistant of the minister, could be $4 \times 6.60 = \text{Rs } 26.40$ crores

37. D

The data-interpreter had already deducted that :

Case s	Count of Envelopes delivered						
	Mon	Tues	Wed	Thurs	Frid	Sat	Total in 6 days
1	E	$(E - x)$	$(E - x - x) = (E - 2x)$	$(E - 2x + x) = (E - x)$	$(E - x + x) = E$	$(E + x)$	$(6E - 3x)$
	60	40	20	40	60	80	300
2	E	$(E - x)$	$(E - x + x) = E$	$(E - x)$	$(E - x + x) = E$	$(E + x)$	$(6E - x)$
	50	20	50	20	50	80	270
3	E	$(E - x)$	$(E - x + x) = E$	$(E + x)$	$(E + x - x) = E$	$(E + x)$	$(6E + x)$
	50	20	50	80	50	80	330
4	E	$(E - x)$	$(E - x + x) = E$	$(E + x)$	$(E + x + x) = (E + 2x)$	$(E + 2x - x) = (E + x)$	$(6E + 3x)$
	40	20	40	60	80	60	300
5	E	$(E + x)$	$(E + x - x) = E$	$(E - x)$	$(E - x + x) = E$	$(E + x)$	$(6E + x)$
	50	80	50	20	50	80	330
6	E	$(E + x)$	$(E + x - x) = E$	$(E + x)$	$(E + x - x) = E$	$(E + x)$	$(6E + 3x)$
	20	80	20	80	20	80	300
7	E	$(E + x)$	$(E + x - x) = E$	$(E + x)$	$(E + x + x) = (E + 2x)$	$(E + 2x - x) = (E + x)$	$(6E + 5x)$
	20	50	20	50	80	50	270
8	E	$(E + x)$	$(E + x + x) = (E + 2x)$	$(E + 2x - x) = (E + x)$	$(E + x - x) = E$	$(E + x)$	$(6E + 5x)$
	20	50	80	50	20	50	270
9	E	$(E + x)$	$(E + x + x) = (E + 2x)$	$(E + 2x - x) = (E + x)$	$(E + x + x) = (E + 2x)$	$(E + 2x - x) = (E + x)$	$(6E + 7x)$
	20	50	80	50	80	50	330

10	E	$(E + x)$	$(E + x + x) = (E + 2x)$	$(E + 2x + x) = (E + 3x)$	$(E + 3x - x) = (E + 2x)$	$(E + 2x - x) = (E + x)$	$(6E + 9x)$
	20	40	60	80	60	40	300

It is only in Case 6 of the deductions by the data interpreter that on Monday and Saturday the lowest and highest number respectively of envelopes were delivered from the Education Minister's office to the residence of his lady-friend, by the personal assistant of the minister.

In Case 6, the total number of envelopes delivered in the six days from Monday to Saturday was 300. Hence, average envelopes delivered per day in the six days = $300/6 = 50$ envelopes

From photographs of the envelopes, it was known that each envelope held hundred two thousand rupee notes, that is each envelope contained $(100 \times 2000) = \text{Rs } 2,00,000$.

So, 50 envelopes would contain $200000 \times 50 = \text{Rs } 1,00,00,000$, that is, Rs 1.00 crore

Hence, the average daily delivery of money in the six days from the Education Minister's office to the residence of his lady-friend, by the personal assistant of the minister, if on Monday and Saturday the lowest and highest number respectively of envelopes were delivered = 1.00 crore

38. A

The data-interpreter had already deducted that :

Case s	Count of Envelopes delivered						Total in 6 days
	Mon	Tues	Wed	Thurs	Frid	Sat	
1	E	$(E - x)$	$(E - x - x) = (E - 2x)$	$(E - 2x + x) = (E - x)$	$(E - x + x) = E$	$(E + x)$	$(6E - 3x)$
	60	40	20	40	60	80	300
2	E	$(E - x)$	$(E - x + x) = E$	$(E - x)$	$(E - x + x) = E$	$(E + x)$	$(6E - x)$
	50	20	50	20	50	80	270
3	E	$(E - x)$	$(E - x + x) = E$	$(E + x)$	$(E + x - x) = E$	$(E + x)$	$(6E + x)$
	50	20	50	80	50	80	330
4	E	$(E - x)$	$(E - x + x) = E$	$(E + x)$	$(E + x + x) = (E + 2x)$	$(E + 2x - x) = (E + x)$	$(6E + 3x)$
	40	20	40	60	80	60	300
5	E	$(E + x)$	$(E + x - x) = E$	$(E - x)$	$(E - x + x) = E$	$(E + x)$	$(6E + x)$
	50	80	50	20	50	80	330
6	E	$(E + x)$	$(E + x - x) = E$	$(E + x)$	$(E + x - x) = E$	$(E + x)$	$(6E + 3x)$
	20	80	20	80	20	80	300
7	E	$(E + x)$	$(E + x - x) = E$	$(E + x)$	$(E + x + x) = (E + 2x)$	$(E + 2x - x) = (E + x)$	$(6E + 5x)$
	20	50	20	50	80	50	270

8	E	$(E + x)$	$(E + x + x) = (E + 2x)$	$(E + 2x - x) = (E + x)$	$(E + x - x) = E$	$(E + x)$	$(6E + 5x)$
	20	50	80	50	20	50	270
9	E	$(E + x)$	$(E + x + x) = (E + 2x)$	$(E + 2x - x) = (E + x)$	$(E + x + x) = (E + 2x)$	$(E + 2x - x) = (E + x)$	$(6E + 7x)$
	20	50	80	50	80	50	330
10	E	$(E + x)$	$(E + x + x) = (E + 2x)$	$(E + 2x + x) = (E + 3x)$	$(E + 3x - x) = (E + 2x)$	$(E + 2x - x) = (E + x)$	$(6E + 9x)$
	20	40	60	80	60	40	300

From photographs of the envelopes, it was known that each envelope held hundred two thousand rupee notes, that is each envelope contained $(100 \times 2000) = \text{Rs } 2,00,000$, that is Rs 2.00 lakhs

Hence a delivery of Rs 80.00 lakhs on a Wednesday implies that $80/2 = 40$ envelopes were delivered from the Education Minister's office to the residence of his lady-friend, by the personal assistant of the minister, on a Wednesday.

It is only in Case 4 of the deductions by the data interpreter that 40 envelopes were delivered.

In Case 4, as per the deductions by the data interpreter, 60 envelopes were delivered on Saturday.

60 envelopes would contain $200000 \times 60 = \text{Rs } 1,20,00,000$, that is, Rs 1.20 crores

Hence, If rupees eighty lakhs were delivered from the Education Minister's office to the residence of his lady-friend, by the personal assistant of the minister on a Wednesday, the amount of money that could be delivered on Saturday = Rs 1.20 crores

39. C

The data-interpreter had already deducted that :

Case s	Count of Envelopes delivered						
	Mon	Tues	Wed	Thurs	Frid	Sat	Total in 6 days
1	E	$(E - x)$	$(E - x - x) = (E - 2x)$	$(E - 2x + x) = (E - x)$	$(E - x + x) = E$	$(E + x)$	$(6E - 3x)$
	60	40	20	40	60	80	300
2	E	$(E - x)$	$(E - x + x) = E$	$(E - x)$	$(E - x + x) = E$	$(E + x)$	$(6E - x)$
	50	20	50	20	50	80	270
3	E	$(E - x)$	$(E - x + x) = E$	$(E + x)$	$(E + x - x) = E$	$(E + x)$	$(6E + x)$
	50	20	50	80	50	80	330
4	E	$(E - x)$	$(E - x + x) = E$	$(E + x)$	$(E + x + x) = (E + 2x)$	$(E + 2x - x) = (E + x)$	$(6E + 3x)$
	40	20	40	60	80	60	300
5	E	$(E + x)$	$(E + x - x) = E$	$(E - x)$	$(E - x + x) = E$	$(E + x)$	$(6E + x)$
	50	80	50	20	50	80	330

6	E	$(E + x)$	$(E + x - x) = E$	$(E + x)$	$(E + x - x) = E$	$(E + x)$	$(6E + 3x)$
	20	80	20	80	20	80	300
7	E	$(E + x)$	$(E + x - x) = E$	$(E + x)$	$(E + x + x) = (E + 2x)$	$(E + 2x - x) = (E + x)$	$(6E + 5x)$
	20	50	20	50	80	50	270
8	E	$(E + x)$	$(E + x + x) = (E + 2x)$	$(E + 2x - x) = (E + x)$	$(E + x - x) = E$	$(E + x)$	$(6E + 5x)$
	20	50	80	50	20	50	270
9	E	$(E + x)$	$(E + x + x) = (E + 2x)$	$(E + 2x - x) = (E + x)$	$(E + x + x) = (E + 2x)$	$(E + 2x - x) = (E + x)$	$(6E + 7x)$
	20	50	80	50	80	50	330
10	E	$(E + x)$	$(E + x + x) = (E + 2x)$	$(E + 2x + x) = (E + 3x)$	$(E + 3x - x) = (E + 2x)$	$(E + 2x - x) = (E + x)$	$(6E + 9x)$
	20	40	60	80	60	40	300

From the deductions made by the data interpreter, it could be seen that the highest amount that could be delivered, that is money in 80 envelopes, was delivered twice within Monday and Saturday in Case 3, Case 5 and Case 9.

It could also be seen that within the above three cases, Monday and Tuesday not being the days with the lowest amount that could be delivered, that is money in 20 envelopes, was Case 5 only.

In Case 5, as per the deductions by the data interpreter, 20 envelopes were delivered on Thursday.

From photographs of the envelopes, it was known that each envelope held hundred two thousand rupee notes, that is each envelope contained $(100 \times 2000) = \text{Rs } 2,00,000$.

So, 20 envelopes would contain $200000 \times 20 = \text{Rs } 40,00,000$, that is, Rs 0.40 crores

Hence, if the highest amount that could be delivered from the Education Minister's office to the residence of his lady-friend, by the personal assistant of the minister, was delivered twice within Monday and Saturday, with Monday and Tuesday not being the days with the lowest delivery, the amount of money that was delivered on Thursday = Rs 0.40 crores

40. A

The data-interpreter had already deducted that :

Case s	Count of Envelopes delivered						Total in 6 days
	Mon	Tues	Wed	Thurs	Frid	Sat	
1	E	$(E - x)$	$(E - x - x) = (E - 2x)$	$(E - 2x + x) = (E - x)$	$(E - x + x) = E$	$(E + x)$	$(6E - 3x)$
	60	40	20	40	60	80	300
2	E	$(E - x)$	$(E - x + x) = E$	$(E - x)$	$(E - x + x) = E$	$(E + x)$	$(6E - x)$
	50	20	50	20	50	80	270
3	E	$(E - x)$	$(E - x + x) = E$	$(E + x)$	$(E + x - x) = E$	$(E + x)$	$(6E + x)$

	50	20	50	80	50	80	330
4	E	$(E - x)$	$(E - x + x) = E$	$(E + x)$	$(E + x + x) = (E + 2x)$	$(E + 2x - x) = (E + x)$	$(6E + 3x)$
	40	20	40	60	80	60	300
5	E	$(E + x)$	$(E + x - x) = E$	$(E - x)$	$(E - x + x) = E$	$(E + x)$	$(6E + x)$
	50	80	50	20	50	80	330
6	E	$(E + x)$	$(E + x - x) = E$	$(E + x)$	$(E + x - x) = E$	$(E + x)$	$(6E + 3x)$
	20	80	20	80	20	80	300
7	E	$(E + x)$	$(E + x - x) = E$	$(E + x)$	$(E + x + x) = (E + 2x)$	$(E + 2x - x) = (E + x)$	$(6E + 5x)$
	20	50	20	50	80	50	270
8	E	$(E + x)$	$(E + x + x) = (E + 2x)$	$(E + 2x - x) = (E + x)$	$(E + x - x) = E$	$(E + x)$	$(6E + 5x)$
	20	50	80	50	20	50	270
9	E	$(E + x)$	$(E + x + x) = (E + 2x)$	$(E + 2x - x) = (E + x)$	$(E + x + x) = (E + 2x)$	$(E + 2x - x) = (E + x)$	$(6E + 7x)$
	20	50	80	50	80	50	330
10	E	$(E + x)$	$(E + x + x) = (E + 2x)$	$(E + 2x + x) = (E + 3x)$	$(E + 3x - x) = (E + 2x)$	$(E + 2x - x) = (E + x)$	$(6E + 9x)$
	20	40	60	80	60	40	300

From the deductions made by the data interpreter, it could be seen that there are ten probable scenarios as tabulated by him.

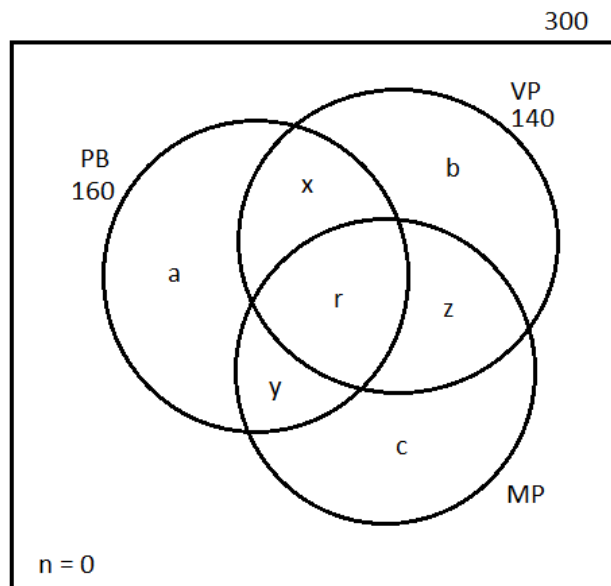
The total number of envelopes that could be delivered on Fridays, if all the ten probable scenarios of deliveries from the Education Minister's office to the residence of his lady-friend, by the personal assistant of the minister, were to be considered
 $= (60+50+50+80+50+20+80+20+80+60)$
 $= 550$

So, the average number of envelopes that could be delivered on Fridays, if all the ten probable scenarios of deliveries were to be considered $= 550/10 = 55$

From photographs of the envelopes, it was known that each envelope held hundred two thousand rupee notes, that is each envelope contained $(100 \times 2000) = \text{Rs } 2,00,000$.
 So, 55 envelopes would contain $200000 \times 55 = \text{Rs } 1,10,00,000$, that is, Rs 1.10 crores

Hence, the average amount of money that could be delivered on Fridays, if all the probable scenarios of deliveries from the Education Minister's office to the residence of his lady-friend, by the personal assistant of the minister, were to be considered $= \text{Rs } 1.10$ crores

41. A



Let PB, VP and MP in the Venn diagram stand for families who like Pao Bhaji, Vada Pao and Misal Pao respectively.

Since each family likes at least one dish among Pao Bhaji, Vada Pao and Misal Pao, therefore $n = 0$

It is given that :

$$(1) \dots a + (x + y) + r = 160$$

$$(2) \dots b + (x + z) + r = 140$$

$$(3) \dots (a + b + c) + (x + y + z) + r = 300$$

$$(4) \dots (a + b + c) = 180 \quad [a, b \text{ and } c \text{ are families who like exactly one dish}]$$

Subtracting (4) from (3), we get

$$(5) \dots (x + y + z) + r = 300 - 180 = 120$$

From (5), maximum possible value of r , that is $r_{\text{Max}} = 120$

Hence minimum possible value of $(x + y + z)$, that is $(x + y + z)_{\text{Min}} = 120 - 120 = 0$

Since x , y and z have to be whole numbers, and $(x + y + z)_{\text{Min}} = 0$ when r is maximum,

Hence $x_{\text{Min}} = y_{\text{Min}} = z_{\text{Min}} = 0$ when r is maximum.

Therefore, $a_{\text{Min}} = 160 - (0 + 120 + 0) = 40$ [from (1)]

and $b_{\text{Min}} = 140 - (0 + 120 + 0) = 20$ [from (2)]

$$(6) \dots \text{Hence, minimum value of } (a + b) + x = (40 + 20) + 0 = 60$$

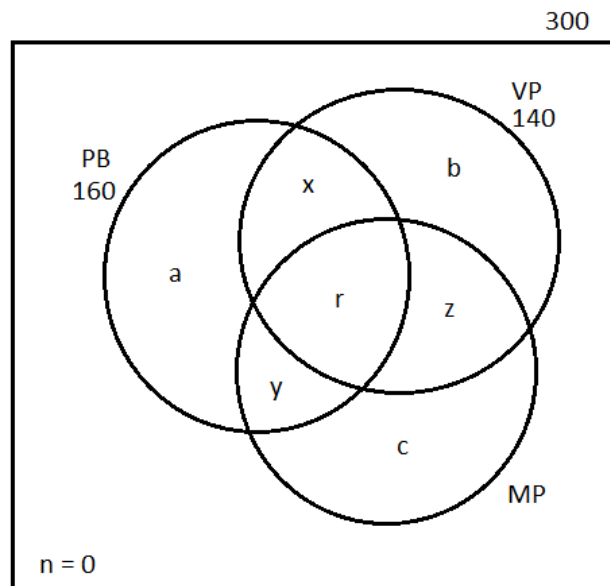
Hence, the maximum possible number of families who like Misal Pao

= maximum value of $c + (y + z) + r$

$$= 300 - 60 \quad [\text{Subtracting (6) from (3)}]$$

$$= 240$$

42. B



Let PB, VP and MP in the Venn diagram stand for families who like Pao Bhaji, Vada Pao and Misal Pao respectively.

Since each family likes at least one dish among Pao Bhaji, Vada Pao and Misal Pao, therefore $n = 0$

It is given that :

- (1) ... $a + (x + y) + r = 160$
- (2) ... $b + (x + z) + r = 140$
- (3) ... $(a + b + c) + (x + y + z) + r = 300$
- (4) ... $c + (y + z) + r = 180$

Subtracting (4) from (3), we get

$$(5) \dots (a + b) + x = 300 - 180 = 120$$

To maximize the value of a (which is what has been asked from us), we need to minimize the value of both b and x .

b_{Min} can be 0

x_{Min} can also be 0

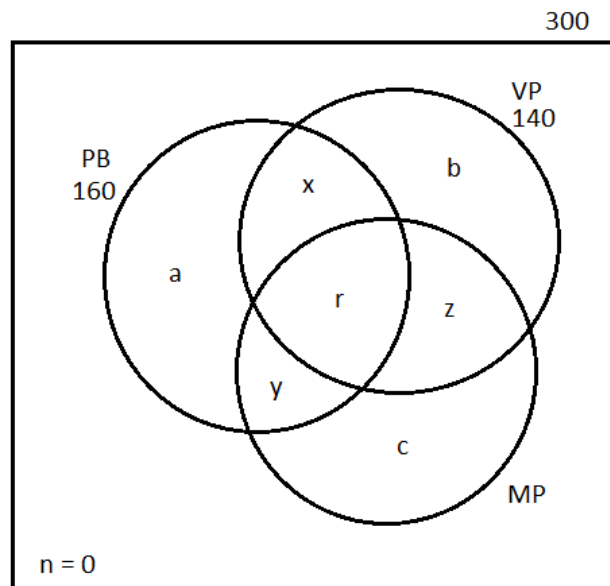
Hence, the maximum possible number of families who like only Pao Bhaji

= maximum possible value of a

= $120 - (0 + 0)$ [Subtracting $(b_{\text{Min}} + x_{\text{Min}})$ from (5)]

= 120

43. C



Let PB, VP and MP in the Venn diagram stand for families who like Pao Bhaji, Vada Pao and Misal Pao respectively.

Since each family likes at least one dish among Pao Bhaji, Vada Pao and Misal Pao, therefore $n = 0$

It is given that :

- (1) ... $a + (x + y) + r = 160$
- (2) ... $b + (x + z) + r = 140$
- (3) ... $(a + b + c) + (x + y + z) + r = 300$
- (4) ... $r = 80$

Substituting the value of r in (4) in equations (1), (2) and (3), we get

- (5) ... $a + (x + y) = 80$
- (6) ... $b + (x + z) = 60$
- (7) ... $(a + b + c) + (x + y + z) = 220$

Equation (7) says :

$$(a + b + c) + (x + y + z) = 220$$

$$\text{or, } \{a + (x + y)\} + \{b + z\} + c = 220$$

$$\text{or, } 80 + (60 - x) + c = 220 \quad [\text{Substituting values from (5) and (6)}]$$

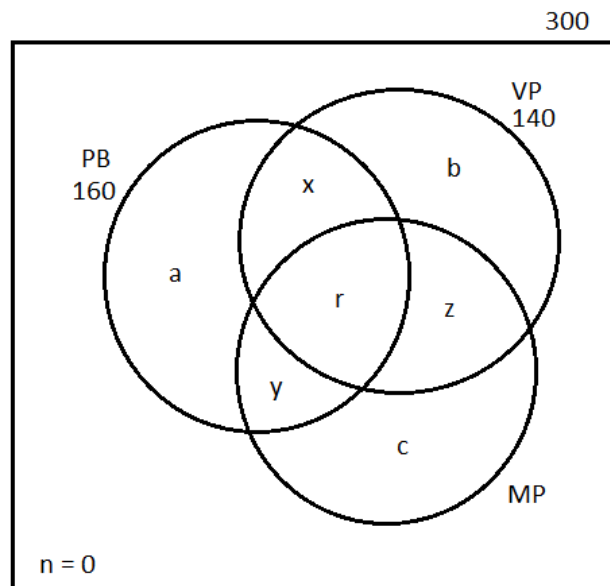
$$\text{or, } c = 80 + x \quad \dots (8)$$

x_{Min} can be 0,

which implies that the minimum value of c can be $(80 + 0) = 80$.

Hence, the minimum possible number of families who like only Misal Pao = 80

44. D



Let PB, VP and MP in the Venn diagram stand for families who like Pao Bhaji, Vada Pao and Misal Pao respectively.

Since each family likes at least one dish among Pao Bhaji, Vada Pao and Misal Pao, therefore $n = 0$

It is given that :

- (1) ... $a + (x + y) + r = 160$
- (2) ... $b + (x + z) + r = 140$
- (3) ... $(a + b + c) + (x + y + z) + r = 300$
- (4) ... $c + (y + z) + r = 200$
- (5) ... b has the maximum possible value

Subtracting (4) from (3), we get

$$(6) \dots (a + b) + x = 300 - 200 = 100$$

Since the value of b in (6) is maximum,

Hence the value of a and x must be minimum in this case.

a_{Min} can be 0

x_{Min} can also be 0

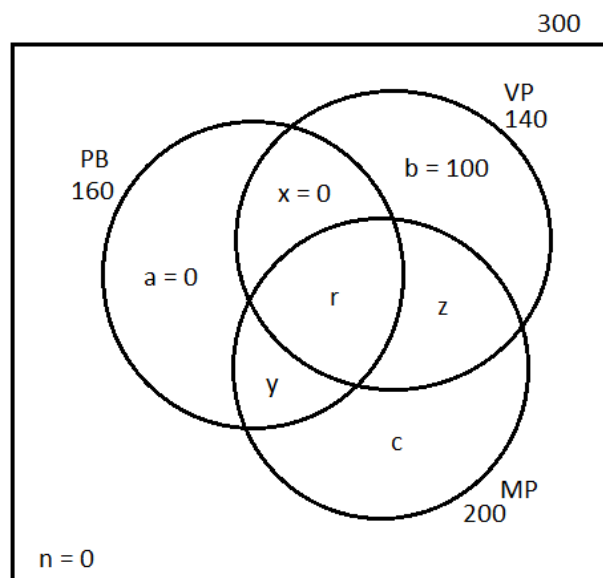
Hence, the maximum possible number of families who like only Vada Pao

= maximum possible value of b

$$= 100 - (0 + 0) \quad [\text{Subtracting } (a_{\text{Min}} + x_{\text{Min}}) \text{ from (6)}]$$

$$= 100$$

As per the given criteria, the present scenario is as given below :



Hence,

$$(7) \dots z + r = 140 - (100 + 0) = 40 \text{ [From (2)]}$$

and

$$(8) \dots y + r = 160 - (0 + 0) = 160 \text{ [From (1)]}$$

For y to be maximum (which is what has been asked from us), r has to be the minimum.

r_{Min} can be considered to be 0

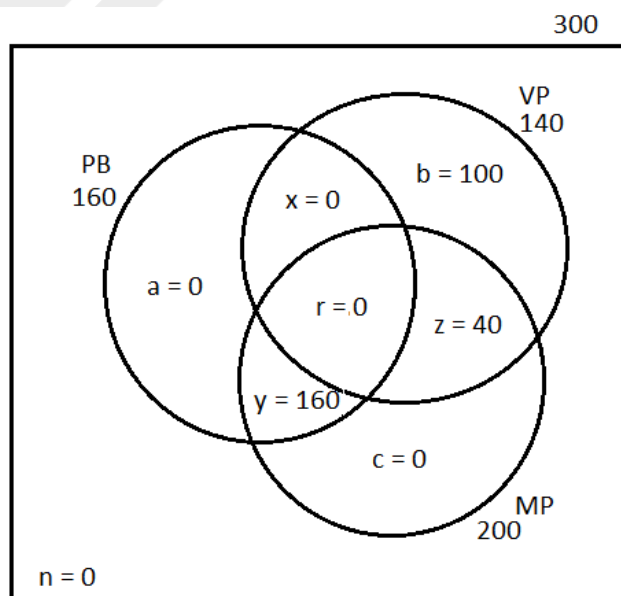
$$\text{Hence, maximum value of } z \text{ can be } 40 - 0 = 40 \text{ [From (7)]}$$

and

$$\text{maximum value of } y \text{ can be } 160 - 0 = 160 \text{ [From (8)]}$$

and

$$\text{value of } c \text{ has to be } 200 - (160 + 40 + 0) = 0 \text{ [From (4)]}$$



Hence, the maximum possible number of families who like both Pao Bhaji and Misal Pao, but not Vada Pao = 160

Section - Quantitative Aptitude

45. D

Let cost of 1 pen = $10x$

Cost of 10 pens = $100x$

ATQ

$SP - CP = 70$

$\Rightarrow [40x - 2x + 60x + 9x] - 100x = 70$

$\Rightarrow 7x = 70$

$\Rightarrow x = 10$

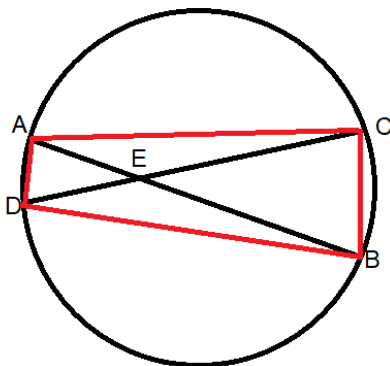
Cost of 1 pen = Rs 100

New SP = $800 + 40 + 200 - 20 = \text{Rs } 1020$

New Profit = Rs $(1020 - 1000) = \text{Rs } 20$

So, there will be a decrease of Rs 50 in profit.

46. C



$\angle DAE = \angle ECB$ (angles made by same arc BD)

$\angle AED = \angle BEC$

So, $\triangle AED \sim \triangle CEB$

So, $\frac{AE}{BE} = \frac{DE}{CE}$

Since the chords are of equal lengths; So, $AE = BE$

And hence $\angle EAD = \angle EDA$ (angles opposite to equal sides are equal)

Therefore; $\angle ECB = \angle EDA$ which are alternate interior angles

So, AD is parallel to BC.

Hence ABCD is a trapezium.

47. 300

Since, the liquids are mixed in the ratio of 3: 4, quantity of liquid A in the mixture = 1.5 litres and that of liquid B is 2 litres.

Weight of 1.5 litres of liquid A = 1500 gms

Weight of 2 litres of liquid B = 1800 gms

Difference = 300 gms

48. C

$(2.333)^{1/(x+y)} = 10^2$

$$\text{So, } 2333/1000 = 10^{2(x+y)}$$

$$\Rightarrow 2333 = 10^{2(x+y) + 3}$$

Similarly,

$$2333 = 10^{2(x-y) + 1}$$

Therefore, from above equations

$$2(x+y) + 3 = 2(x-y) + 1$$

$$\Rightarrow 4y = -2$$

$$\Rightarrow y = -1/2$$

49. 12000

Three cases are possible:

Case 1: The fixed letters are 2 vowels and 1 consonant i.e. ${}^5C_2 \times {}^{10}C_1$ ways = 100 ways

Remaining 2 letters must be selected from 9 consonants i.e. ${}^9C_2$ ways = 36 ways

Total ways $100 \times 36 = 3600$ ways

Case 2: The fixed letters are 1 vowel and 2 consonants i.e. ${}^5C_1 \times {}^{10}C_2$ ways = 225 ways

Remaining 2 letters must be selected such that 1 from remaining 4 vowels and 1 from 8 consonants i.e. ${}^4C_1 \times {}^8C_1$ ways = 32 ways

Total ways $225 \times 32 = 7200$ ways

Case 3: The fixed letters are 3 consonants i.e. ${}^{10}C_3$ ways = 120 ways

Remaining 2 letters must be selected such that 2 from remaining 5 vowels i.e. ${}^5C_2$ ways = 10 ways

Total ways $120 \times 10 = 1200$ ways

Total words formed = $7200 + 3600 + 1200 = 12000$

50. 5.6

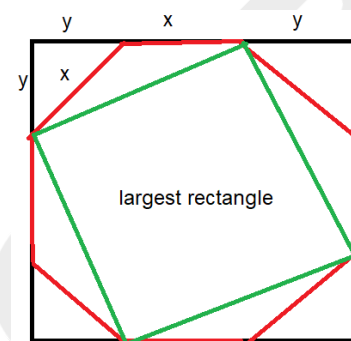
Let Rs x lakh is given to his friend and remaining $(20-x)$ lakhs are invested in the ratio of 1: 3: 4.

So, ATQ

$$8x/100 = (1/8)(20-x)(4/100) + (3/8)(20-x)(3/100) + (4/8)(20-x)(2/100)$$

On solving $x = 5.6$ lakhs

51. B



Clearly $y + y + x = 10$

Also, $y^2 + y^2 = x^2$

On solving, these two equations, we get $x = 10\sqrt{2} - 10$ and $y = 10 - 5\sqrt{2}$

$$\begin{aligned} \text{Area of largest rectangle} &= \text{Area of square} - 4 \left(\frac{1}{2} \right) y (x+y) \\ &= 100 - 4 \left(\frac{1}{2} \right) (10 - 5\sqrt{2}) 5\sqrt{2} = 100 (2 - \sqrt{2}) \end{aligned}$$

52. B

Let Aneeta's Income = Rs x

Vineeta's Income = Rs y

Kalpna's Income = Rs z

ATQ

$$x = 0.85y \text{ i.e. } y = x/0.85$$

$$x = 1.15z \text{ i.e. } z = x/1.15$$

$$\text{New Income of Vineeta} = 0.95y = 0.95(x/0.85) = 1.12x$$

$$\text{New Income of Kalpna} = 1.1z = 1.1(x/1.15) = 0.96x$$

$$\text{Percentage by which Vineeta's income would exceed Kalpna's} = (0.16x/0.96x) \times 100 = 16.66\%$$

53. B

$$\text{Profit} = 10(7 + 8y/5) - 6y^2$$

To find the minimum profit

$$10(7 + 8y/5) - 6y^2 \geq 0$$

$$\text{Or, } 70 + 16y - 6y^2 \geq 0$$

$$\text{Or, } 6y^2 - 16y - 70 \leq 0$$

On solving, we get

$$\text{Or, } y \geq 5 \text{ or } y \leq -7/3$$

So, minimum value of y is 5.

54. 341

$$3y/2 = 7 + x$$

Or, $y = (14 + 2x)/3$; for y to be integer $(14 + 2x)$ should be divisible by 3

$$x = 2; y = 6$$

$$x = 5; y = 8$$

$$x = 8; y = 10$$

$$x = 11; y = 12 \text{ and so on...}$$

So, clearly there is an AP in x with first term be 2 and common difference 3.

n^{th} term in x must be less than or equal to 2^{10} i.e. 1024.

$$\text{Therefore, } 2 + (n-1)3 \leq 1024$$

$$\Rightarrow n \leq (1022/3) + 1$$

Therefore, n must be 341.

Hence there can be 341 solutions.

55. D

$$|x^2 - x - 12| = 2x - 2$$

1st case:

$$x^2 - x - 12 = 2x - 2$$

$$\Rightarrow x^2 - 3x - 10 = 0$$

$$\Rightarrow (x - 5)(x + 2) = 0$$

$x = 5$ or $x = -2$ but $x = -2$ is not a valid solution since does not satisfy the given equation.

2nd case:

$$x^2 - x - 12 = -2x + 2$$

$$\Rightarrow x^2 + x - 14 = 0$$

$\Rightarrow x = [-1 + \sqrt{57}]/2$ or $[-1 - \sqrt{57}]/2$ but $x = [-1 - \sqrt{57}]/2$ is not a valid solution since does not satisfy the given equation.

So, sum of the squares of distinct roots $= 5^2 + \{[-1 + \sqrt{57}]/2\}^2 = 36$

56. B

$f(x) = \min (2 \cdot 6.4 + 1, 3 - 4 \cdot [6.4])$ at $x = 7.5$

$f(x) = \min (13.8, -21)$ at $x = 6.4$

Answer is -21.

57. 3

$\log_{10}(x^2 - 3x + 21) = (2 - \log_{10} 4)$

$\Rightarrow \log_{10}(x^2 - 3x + 21) = (\log_{10} 100 - \log_{10} 4)$

$\Rightarrow \log_{10}(x^2 - 3x + 21) = (\log_{10} 100/4)$

$\Rightarrow \log_{10}(x^2 - 3x + 21) = (\log_{10} 25)$

$\Rightarrow x^2 - 3x + 21 = 25$

$\Rightarrow x^2 - 3x - 4 = 0$

$\Rightarrow (x - 4)(x + 1) = 0$

$\Rightarrow x = 4$ or -1

58. 10

According to question:

$$\frac{2(x+4)(x-3)}{(x+4)(x+6)} = \frac{3}{2}$$

$$\Rightarrow \frac{2(x-3)}{(x+6)} = \frac{3}{2}$$

$\Rightarrow x = 6$

Number of women = 10

59. C

A gives B a start of 30 meters and still wins the race by 10 seconds.

Alternatively, if A gives B a start of 60 metres, then the race ends in a dead heat.

Therefore, the additional 30 meters start given to B compensates for the 10 seconds.

i.e., B runs 30 meters in 10 seconds.

Hence, B will take 90 seconds to run 270 metres.

We know that A gives B a start of 60 metres. A will complete 270m in the time in which B completes 210 m i.e. 70 seconds.

60. C

Total Outcome = 36 (all number cards 9 from each suit)

Possible outcomes = multiple of 3 but not the multiple of 2 = 8 (3 and 9 from each suit)

Probability = $8/36 = 2/9$

61. 40

Let the inner dimension of cube be x , then outer dimension will be $(x + 4)$ since thickness is of 1 cm.

Volume of cuboid = 5(Volume of hollow cube)

$$28 \times 10 \times 1 = 5[(x+2)^3 - x^3] = 5(x+2-x)((x+2)^2 + x^2 + x(x+2))$$

On simplification, we get

$$28 = 3x^2 + 6x + 4$$

$$\Rightarrow 3x^2 + 6x - 24 = 0$$

$$\text{So, } x = 2 \text{ cm}$$

$$\text{Volume of 1 cube} = 2^3 = 8 \text{ cubic cm}$$

$$\text{Volume of 5 cubes} = 40 \text{ cubic cm}$$

62. 4

$$\text{This is an AP with number of terms} = \frac{7n-49-(7n-4)}{7n-7-(7n-4)} + 1 = 16$$

Number of terms = 16 and common difference = -3

$$\text{So, } S_{16} = 16/2 [7n - 4 + 7n - 49] = 8 [14n - 53] = 2600$$

$$n = 27$$

$$n^2 = 729$$

$$\text{Prime factorization of } 729 = 3^6$$

Perfect square factors in 3^6 are $3^0, 3^2, 3^4, 3^6$

So, there are 4 perfect square factors in 729.

63. B

$$\text{Sum of roots} = c^2 \quad (\text{Using sum of roots} = -b/a)$$

$$\text{Product of roots} = 2(2c - 1)$$

According to question

$$c^2 = 1/3 (3(2c + 1)) = 2c - 1$$

$$\Rightarrow c^2 - 2c + 1 = 0$$

$$\Rightarrow (c - 1)^2 = 0$$

$$\Rightarrow c = 1$$

If α and β are roots of the equation,

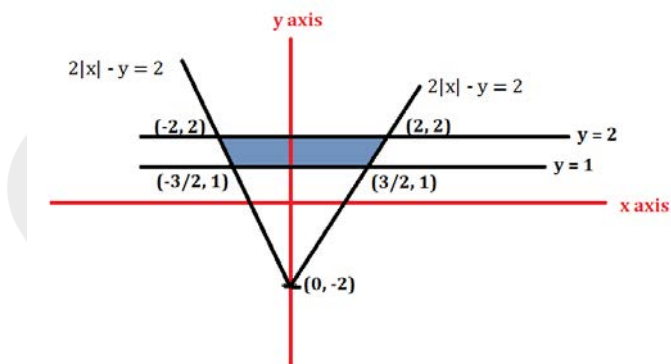
$$\alpha + \beta = c^2 = 1$$

$$\alpha\beta = 3(2c - 1) = 3$$

$$\text{So, } (\alpha - \beta)^2 = (\alpha + \beta)^2 - 4\alpha\beta = -11$$

64. 3.5

Plot the graph as shown



The shaded region is the required area (Trapezium of height 1 and parallel sides being 3 and 4)

$$\text{Area} = \text{Area of Trapezium} = \frac{1}{2} [3 + 4] \times 1 = 3.5 \text{ sq unit.}$$

65. A

Let correct questions are x (from questions with penalty on being wrong), wrong questions are y (from questions with penalty on being wrong), and z out of 10 questions (without penalty) are correct.

$$\text{So, } x + y + 10 = 62 \Rightarrow x + y = 52$$

$$\text{and } 3x - y + 3z = 50 \text{ (according to question)}$$

from above equations; $4x + 3z = 102$

$$x = (102 - 3z)/4$$

z can be either 2, 6 or 10 for x to be integer.

So, x can have 3 values possible and therefore, there can be only three pairs in x and y for given conditions.

66. D

$$2x^3y + 3y^3x = 7x^2y^2$$

Divide above equation by x^2y^2 .

$$2(x/y) + 3(y/x) = 7$$

$$\text{Let } a = x/y$$

$$\text{So, } 2a + 3/a = 7$$

$$\Rightarrow 2a^2 - 7a + 3 = 0$$

$$\Rightarrow a = 3 \text{ or } a = 1/2$$

$$\text{Sum} = 3 + 1/2 = 7/2$$

CAREERS360

MOCK TEST – 13

Section - 1 - Verbal Ability & Reading Comprehension

Directions for Questions 1 to 5: Read the passage given below and answer the questions that follow.

Passage-1

Why are women paid less than men? Why were there riots in some English cities in 2000 but not in London? What is the significance of bloggers?

One of the strange features of our times is that well-educated people can get by with very little idea of how to answer questions like these. Over the last few decades, we have witnessed great progress in the public's level of scientific understanding, thanks to many brilliant expositors. In history, too, some of the most original minds are also first rate communicators. Much of economics has permeated into common sense, particularly of decision-makers around the world. But sociology has faded from view. Its heyday a generation ago feels like another era. As a result, many people rely on very simple interpretive frameworks to make sense of what they see around them or on the evening news. So conflicts between Muslims and Christians are attributed to culture or history. Gender pay gaps are seen as the result of misogyny. The internet is ascribed with magical powers to turn the tables on multinational corporations or governments.

Some of the reasons for sociology's retreat from public awareness lie in the discipline itself, which took a turn towards abstract theory in the 1970s and away from observation, description and detailed historical analysis. Some of the reasons lie in the shape of professional careers which enabled sociologists to progress without having to do primary observation.

Charles Tilly is probably the outstanding contemporary exponent of an engaged but theoretically rigorous sociology. It is a symptom of sociology's relative detachment that he remains largely unknown outside academic circles in Britain, even though he is by some margin the most fertile thinker in the American social sciences, covering topics as diverse as the rise of the state in 18th-century Europe to racial inequality, political violence to the conditions for democracy in central Asia. In some ways he is old fashioned—he offers explanations and shows how some things cause other things to happen. His accounts contain real people, history and drama, and have lessons for how change might be achieved more successfully.

Like all the best sociologists, his work starts with close observation. A good example is pay inequality, which Tilly investigated along with many other kinds of inequality in his book *Durable Inequality*. Economists have found it hard to explain why gender pay gaps are so persistent, since in a properly functioning labour market, employers should have incentives to reward women as much as men for their skills. Tilly points out that close observation of how pay and jobs work in the real world soon shows that the most important determinant of pay is the jobs that people take. Pay differences between the sexes within the same jobs are now small (although a combination of men's greater pushiness and some lingering discrimination means they have not entirely disappeared). "Since compensation varies systematically by job more than it varies by gender within jobs, the big question we have to ask is not,

‘How come individual bosses discriminate against women?’ but, ‘What is the process by which women stream into some occupations and men into others?’” he says.

Q1. It can be inferred from the passage that Charles Tilly is functioning like (assuming the descriptions in the passage for these fields to be accurate):

- A. a scientist
- B. an economist
- C. a historian
- D. none of the above

Q2. When the author says that sociology has faded from view, he actually means:

- A. our actions are devoid of purpose now and hence, they do not demand the close scrutiny that they deserved earlier.
- B. the general levels of social conflict, biases such as gender, and so on are on the rise in society and these escape our understanding.
- C. despite the ever presence of social conflicts and issues, the study of the development and functioning of human society has lost its presence in our current discourse.
- D. the fact that women are subject to gender bias, conflicts exist between Muslims and Christians, and there are issues with the internet, and yet we do not discuss them reflects our apathy.

Q3. When the author says that sociology turned towards abstract theory, he implies:

- A. how sociology moved away from its core objectives
- B. how the shift in sociological methods leads to its alienation
- C. how sociology undertook a re-invention, which ended in its detriment
- D. how the basic objectives of sociology were changed

Q4. According to Charles Tilly, the pay inequality issue is actually:

- A. enhanced by the fact that people approach the subject incorrectly
- B. caused by a lack of understanding of the issue
- C. a derivative of larger gender issues prevailing in society
- D. dependent on underlying factors which might escape scrutiny.

Q5. Charles Tilly’s accounts can possibly have lessons for achieving change more successfully because:

- A. he adheres to the core principles and objectives of sociology
- B. by using examples, he is able to show how others are wrong
- C. by avoiding abstraction, and using causation and real-world examples, his lessons are pragmatic.
- D. by virtue of his fertile way of thinking, he is able to achieve results which are great

Direction for questions 6 to 9: Answer the questions on the basis of the information provided in the passage.

Passage-2

Language in humans has evolved culturally rather than genetically, according to a study by the University College London and US researchers. By modeling the ways in which genes for language might have evolved alongside language itself, the study showed that genetic adaptation to language would be highly unlikely, as cultural conventions change much more rapidly than genes. Thus, the biological machinery upon which human language is built appears to predate the emergence of language. According to a phenomenon known as the Baldwin effect, characteristics that are learned or developed over a lifespan may become gradually encoded in the genome over many generations, because organisms with a stronger predisposition to acquire a trait have a selective advantage. Over generations, the amount of environmental exposure required to develop the trait decreases, and eventually no environmental exposure may be needed - the trait is genetically encoded.

An example of the Baldwin effect is the development of calluses on the keels and sterna of ostriches. The calluses may initially have developed in response to abrasion where the keel and sterna touch the ground during sitting. Natural selection then favored individuals that could develop calluses more rapidly, until callus development became triggered within the embryo and could occur without environmental stimulation. The PNAS paper explored circumstances under which a similar evolutionary mechanism could genetically assimilate properties of language - a theory that has been widely favoured by those arguing for the existence of 'language genes'. The study modeled ways in which genes encoding language-specific properties could have coevolved with language itself. The key finding was that genes for language could have coevolved only in a highly stable linguistic environment; a rapidly changing linguistic environment would not provide a stable target for natural selection. Thus, a biological endowment could not coevolve with properties of language that began as learned cultural conventions, because cultural conventions change much more rapidly than genes. The authors conclude that it is unlikely that humans possess a genetic 'language module' which has evolved by natural selection. The genetic basis of human language appears to primarily predate the emergence of language.

The conclusion is reinforced by the observation that had such adaptation occurred in the human lineage, these processes would have operated independently on modern human populations as they spread throughout Africa and the rest of the world over the last 100,000 years. If this were so, genetic populations should have coevolved with their own language groups, leading to divergent and mutually incompatible language modules. Linguists have found no evidence of this, however; for example, native Australasian populations have been largely isolated for 50,000 years but learn European languages readily.

Professor Nick Chater, UCL Cognitive, Perceptual and Brain Sciences, says: "Language is uniquely human. But does this uniqueness stem from biology or culture? This question is central to our understanding of what it is to be human, and has fundamental implications for the relationship between genes and culture. Our paper uncovers a paradox at the heart of theories about the evolutionary origin and genetic basis of human language - although we appear to have a genetic predisposition towards language, human language has evolved far more quickly than our genes could keep up with, suggesting that language is shaped and driven by culture rather than biology.

Q6. Essentially, the Baldwin effect implies that:

- A. inherit their parents' acquired characteristics
- B. reject their parents' acquired characteristics
- C. improve their parents' acquired characteristics
- D. alter their parents' acquired characteristics

Q7. Identify the most suitable implication derived from the passage.

- A. Language development predates genetic evolution.
- B. Language development is not shackled by genetic endowments.
- C. Language development is co-dependent on genes and culture.
- D. Language development: culture leads genes

Q8. Which, out of the following, are possibly examples of Baldwin effect?

I. As proto-Europeans and Asians moved northward out of Africa, they experienced less sunlight and colder temperature, new environmental forces that exerted selective pressure on the migrants. Exactly why reduced sunlight should be a potent selective force is still debated, but it has become clear that humans have experienced positive selection at numerous genes to finely tune the amount of skin pigment they produce, depending on the amount of sunlight exposure.

II. The ability to digest lactose, a sugar found in milk, usually disappears before adulthood in mammals, and the same is true in most human populations. However, for some people, including a large fraction of individuals of European descent, the ability to break down lactose persists because of a mutation in the lactase gene (LCT).

III. Modern medicine can artificially control a pathogen preventing any genetic immunity against the pathogen from being selected for. Here learned behaviour that improves fitness prevents genetic adaptation.

- A. I & II
- B. II & III
- C. Only I
- D. Only II

Q9. According to the information given in the passage, which one of the following would originate before the emergence of language?

- A. cultural conventions
- B. language genomes
- C. primates that evolved into humans
- D. gene based evolved language modules

Directions for Questions 10 to 13: Read the passage given below and answer the questions that follow.

Passage-3

These days, many of us would rather not be living in the present, a time of persistent crisis, political uncertainty and fear. Not that the future looks better, shadowed by technological advances that threaten widespread unemployment and by the perils of catastrophic climate change. No wonder some are tempted by the comforts of a nostalgically imagined past. Inspiring as it seems on first inspection, the self-help slogan “live in the present” slips rapidly out of focus. What would living in the present mean? To live each day as if it were your last, without a thought for the future, is simply bad advice, a recipe for recklessness. The idea that one can make oneself invulnerable to what happens by detaching from everything but the present is an irresponsible delusion.

Despite this, there is an interpretation of living in the present, inspired by Aristotle, that can help us to confront the present crisis and the perpetual crises of struggle and failure in life. There is an insight in

the self-help slogan that philosophy can redeem. The beginning of wisdom here is to think about what we are doing. We engage in all sorts of activities: reading an article in the newspaper, reflecting on life, attending a protest, preparing a report, listening to music, driving home, making dinner, spending time with family or friends. Though all these activities take time, there is a crucial difference in how they relate to the present moment.

Using terminology from linguistics, we can distinguish activities of two fundamental kinds. Telic activities — from “telos,” the Greek word for purpose — aim at terminal states, by which they are completed. Think of reading this article or driving home from work. Once you arrive at the goal, you are finished: The point of the activity has been achieved. You can do it again, but only by way of repetition. Not all activities are like this. Some activities are atelic: They do not aim at terminal states. However much you reflect on life or spend time with your family, you cannot complete these activities. Though you will eventually stop doing them, they do not aim at a point at which there is no more of them to do.

Aristotle made the same distinction, contrasting two kinds of action or praxis: kinesis and energeia. Kinetic actions are telic and therefore incomplete. As Aristotle wrote in his “Metaphysics”: “If you are learning, you have not at the same time learned.” When you care about telic activities, projects such as writing a report, getting married or making dinner, satisfaction is always in the future or the past. It is yet to be achieved and then it is gone. Telic activities are exhaustible; in fact, they aim at their own exhaustion. They thus exhibit a peculiar self-subversion. In valuing and so pursuing these activities, we aim to complete them, and so to expel them from our lives.

Atelic activities, by contrast, do not by nature come to an end and are not incomplete. In defining such activities, we could emphasize their inexhaustibility, the fact that they do not aim at terminal states. But we could also emphasize what Aristotle does: They are fully realized in the present. “At the same time, one is seeing and has seen, is understanding and has understood, is thinking and has thought.” There is nothing you need to do in order to perform an atelic activity except what you are doing right now. If what you care about is reflecting on your life or spending time with family or friends, and that is what you are doing, you are not on the way to achieving your end: You are already there.

Q10. What does the author mean by 'self-subversion'?

- A. enhancing one's own self
- B. destroying one's own self
- C. tiring one's own self
- D. mitigating one's own self

Q11. The author of the passage showcases a mild preference for:

- I. Telic activities
- II. Atelic activities
- III. Kinetic actions
- IV. Energeia actions

- A. I & III
- B. II & IV
- C. I & IV
- D. II & III

Q12. According to the author of the passage:

- I. The thought 'living in the present' does not necessarily represent cogent thinking.
- II. The future does seem to pose some significant problems for mankind.

III. The idea that one will be able to completely detach from everything but the present and ensure that nothing affects oneself is essentially an erroneous belief.

- A. I & II
- B. II & III
- C. I & III
- D. All of the above

Q13. Match the following actions with their respective activity type:

I	Telic Activities	A	Building a fortune 500 company
		B	To be in love
II	Atelic Activities	C	To care for your sibling
		D	To provide for your sibling

- A. I-A, II-D, II-B, II-C
- B. I-A, I-D, II-B, II-C
- C. I-B, I-C, II-A, II-D
- D. I-C, I-A, II-B, II-D

Directions for Questions 14 to 17: Read the passage given below and answer the questions that follow.

Passage-4

In terms of my interests that was an important piece for me to write because it was really trying to engage with those questions of loss and also drawing on psychoanalytic tools of enquiry. I suppose now my own method or way of thinking doesn't abandon those types of questions, but I'm more interested in how the artwork itself does that. That the artwork itself is a kind of theoretical proposition, and you can think about those sorts of questions without necessarily drawing on that kind of apparatus any more than in a socio-historical or formalist way. In this show what's been important for me is that I've been working on Hesse for a long time, and these objects have always been there, have always been incredibly intriguing, but you don't actually know what they are. In most art history you think you know what the object of your enquiry is, but what are these things? A lot of them are between preparatory stuff, and finished work – very much in limbo. Some of it might be debris of the studio or spare parts. To me they throw down the gauntlet, and say, 'let's get back to first principles', how do you even describe these things? So in a way the impulse behind the exhibition is to lay out these works to say – these are precarious works.

This is because of the materials that they use and that's very important - part of their visceral effect – that's why they're bodily, why they're precarious. But their conceptual status is as precarious. What we make of them and how small things like this can have a big visceral effect, to me, says a lot about what art is and what art does to us. Why is it that these small things have that kind of effect? That's why I wanted to do this exhibition, and it's my way of writing a book about Hesse – through these really raw experimental works, not simply to fetishise them or say 'here are a whole lot of new Hesses', but on the contrary, to think about what the object of art is. Here we have an artist taking real risks with the object of art.

They've always been called 'Test Pieces' and I find that problematic. This is much more the language of industry. It's much more minimalist – test pieces, prototypes, all that kind of language – when they are

so organic and textural and so on. But in the end maybe if they test anything out, they test our capacity to see them as art objects. That is a big shift in my own way of thinking, not just about Hesse's work but a range of contemporary artist's work. I've written a lot recently about Gabriel Orozco's working tables, for example. I see this work through the lens of contemporary artists, and the reason that I really wanted this show at the Fruitmarket, is that it is a public space that shows contemporary art. Rather than have it in a big museum, where it is going to look like we are adding to the oeuvre of the canonical artist – we wanted that confrontation with the contemporary.

Q14. According to the author of the passage:

- A. Hesse's art pieces are precarious as these are very delicate and hence, dangerous to deal with.
- B. Hesse's art pieces are precarious as these are open to far too many interpretations.
- C. Hesse's art pieces are precarious as these are incomplete.
- D. Hesse's art pieces are precarious as these are tough to describe.

Q15. All, out of the following can be identified as possible objectives of the author of the passage, except:

- A. to use the show to understand better the artworks of Hesse.
- B. to understand the true nature of Hesse's artwork.
- C. to explore art beyond the straitjacket descriptions of the industry.
- D. to understand what makes contemporary artwork popular.

Q16. The main subject around which the exhibition of the author revolves is:

- A. Modern artwork
- B. Unfinished artwork
- C. Professional art pieces
- D. Test art pieces

Q17. According to the information given in the passage:

- I. Some of the artworks in the show mentioned are ones that were never really taken to their point of culmination.
- II. Some of the artworks in the show challenge the author in terms of their meaning and significance (what they stand for).
- III. The exhibition is a way for the author to delve deeper into Hesse and understand his work.

- A. All of the above
- B. II & III
- C. I & III
- D. I & II

Directions for the Question: Identify the apt summary for the given paragraph. Enter the option number you deem as the correct answer.

Q18. Several serials like Game of Thrones and House of Cards have had their share of cult following. Several Mondays have been ruined because people have binge watched the entire season of a serial. They spent long weekends and vacation days getting bleary eyed doing this. They told their office they were too sick to come to work just so that they could complete some more episodes. There are sites

that let you calculate exactly how much time it will take to watch the full series of your favorite show. So what leads to this fanatical behavior?

Psychologists will explain this as the Goal Gradient effect. We start to hurry up and put in more effort as we get closer to the finishing line. While doing push ups, try counting backwards 10... 9... 8... instead of the usual 1... 2... 3... and see how it affects your motivation. Rats run faster as they approach a food reward. Humans increase effort as they approach rewards such as gift certificates or goals such as visual finish lines. Research from Wharton tells us that when it comes to consuming online content, we tend to follow the same principle. People like to consume the entire content of a subject if it is available.

- A. Basic human boredom, creating a vacuum, pushes one to consume more and more online content.
- B. The psychological motivation impacting consumption of content pushes people to binge watch TV series.
- C. TV series which are binge-watched essentially exploit basic human psychology and push their watchers into consuming the content in one go.
- D. The vagaries of the Goal Gradient effect have human beings at their mercy.

Directions for the Question: Identify the apt summary for the given paragraph. Enter the option number you deem as the correct answer.

Q19. The prevalence of corruption at all levels of society is widely acknowledged and self-evident. Statistics are readily available, but for illustrative purposes they are hardly necessary: one need only open one's eyes to see the widespread effects of the moral gaps in public policy and working life. Among certain parts of society, there is a growing realisation that these issues will never be resolved through policy alone. 'Top-down' change must be accompanied by 'bottom-up' initiatives that consist of working closely with people at the level of their communities. Such grassroots work is demonstrably most impactful when it takes the form of building the capacities of individuals, so that they are empowered to lead positive change in accordance with the specific, contextual needs of their own localities. Over time, this kind of work enables real progress at the ground level, which ultimately pervades through to all levels of society – resulting in sustainable, meaningful development.

- A. Real change cannot be brought about by dictatorships and authoritarian rule.
- B. Meaningful change can be achieved if all echelons of society understand their role and contribute.
- C. Sustainable change can be brought about by placing environmental and cultural development at the highest level of the pecking order.
- D. Development of society needs to be brought about in a manner which does not ruffle too many feathers and which keeps the morality of the overall society in mind.

Directions for the Question: The question below has a paragraph given with one sentence missing in at the end. From among the answer choices given, select the sentence that can fill the blank to form a coherent paragraph.

Q20. At least 33 people, including three children, have been killed and nearly 300 injured in the most violent eruption of Guatemala's Fuego volcano in more than four decades, officials said. Fuego, whose name means "fire", spewed an 8km (five-mile) stream of lava and belched a thick plume of black smoke and ash that rained onto the capital and other regions. Dozens of communities on the southern slopes of Fuego were buried in a searing mix of mud, ash and rocks as the explosions continued for

over 16 hours. Fresh lava flows hampered search and rescue efforts on Monday, forcing emergency services to withdraw from the area. Hundreds of people remain unaccounted for.

(_____)

- a. Speaking on Monday, the head of Guatemala's disaster agency said 33 people had died, and the death toll was expected to rise further.
- b. Proper measures to avert the disastrous effect of volcanic eruptions should be brought into action by the government of the state in order to reduce the number of victims.
- c. Guatemala is a home for tourists from all over the world as tourism is one of its major income.
- d. This has been an issue discussed all over the world by the media and hence the entire world is praying for the people there.

Directions for the Question: The question below has a paragraph given with one sentence missing in at the end. From among the answer choices given, select the sentence that can fill the blank to form a coherent paragraph.

Q21. As per iOS 12, Apple's improved the Siri watch face, a promising feature which launched last year but failed to live up to its lofty aims of offering only the necessary information on your watch. Siri shortcuts will now show up there, and so will information from third-party apps. If you lift your watch to speak into it, you no longer need to say Hey Siri to start Siri. Apple Watch apps can now push interactive notifications, letting you do things like rate a carshare driver, or alter a restaurant booking.

(_____)

- a. To sum up, iOS 12 is a rockstar among the new operating systems hitting the market in mid - 2018.
- b. But we should look into the stability of iOS 12 as iOS 11 lacked stability.
- c. I personally believe that Siri shortcuts are unused by most of the users, opening up the fact that the users should ask the company to give them what they want instead of adding things that they feel like.
- d. The Apple Watch can now display web views-not to browse the net, but so that you can at least scan links texted to you.

Directions for questions 22: In the following question, rearrange the five sentences in order to form a meaningful paragraph.

TITA

Q22.

1. The renminbi is slowly emerging as a potential reserve currency due to China's persistent and substantial current account surpluses.
2. It seems plausible that China will continue to experience surpluses in the intermediate term. In conjunction with China's pivotal role in world trade and its growing share of world income, this may help to establish the renminbi as a reserve currency (one of them).
3. This process is bedevilled by a "renminbi shortage" abroad, which may be alleviated through increasing freedom of outward capital flows from China and an increasing role for China as a site of international financial transactions
4. The renminbi has already started to emerge as a currency of settlement for a portion of China's international trade.

Directions for questions 23: In the following question, rearrange the five sentences in order to form a meaningful paragraph.

TITA

Q23.

1. In the other life, we live in sanity survival mode. We have days spent locking ourselves inside and weekends traveling away from site.
2. I have come to realize that being a Peace Corps Volunteer is almost like living a double life.
3. Ultimately, the two lives meet somewhere in the middle, occasionally one blending into the other.
4. In one life we live in work mode, dutifully doing what we can to fulfill the Peace Corps' 3 goals and be a positive influence in our working community.

Directions for questions 24: In the following question, rearrange the five sentences in order to form a meaningful paragraph.

TITA

Q24.

1. Because of this indifferent attitude, most of the programs have not seen success in the country as the main objective of such programs have not been fulfilled by ignoring the main aims of such programs
2. The main issue has been the lack of awareness among the rural masses of the country about the various welfare programs of the government though the government has sanctioned money year after year in such projects
3. India is home to the most number of TB cases in the world as per the statistics published by the World Health Organization though the government program to eradicate this diseases has been there for long
4. The government has time and again allotted money to this program without taking stock of the ground level situation and there has been no accountability on the part of the employees as well

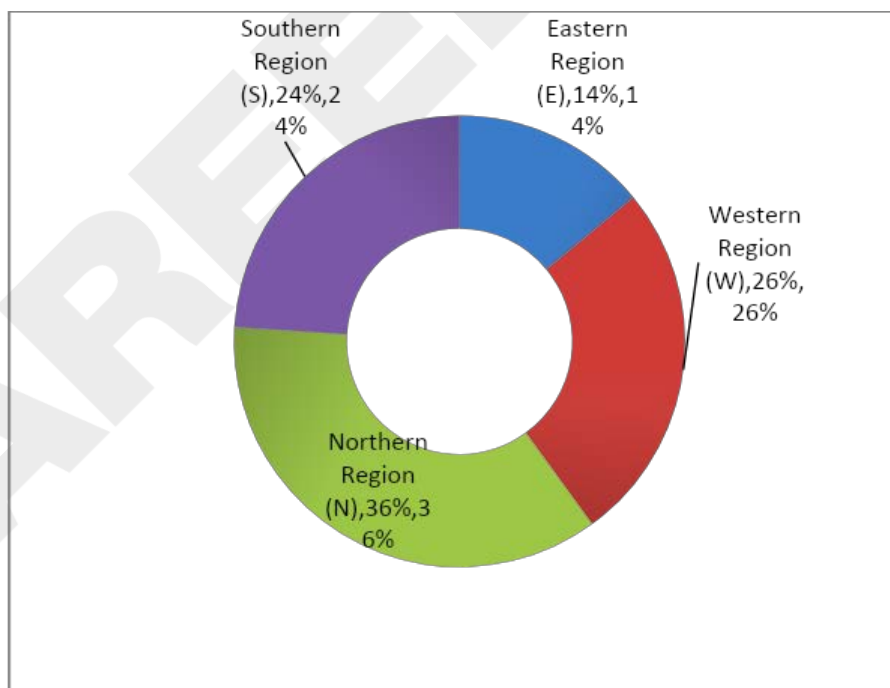
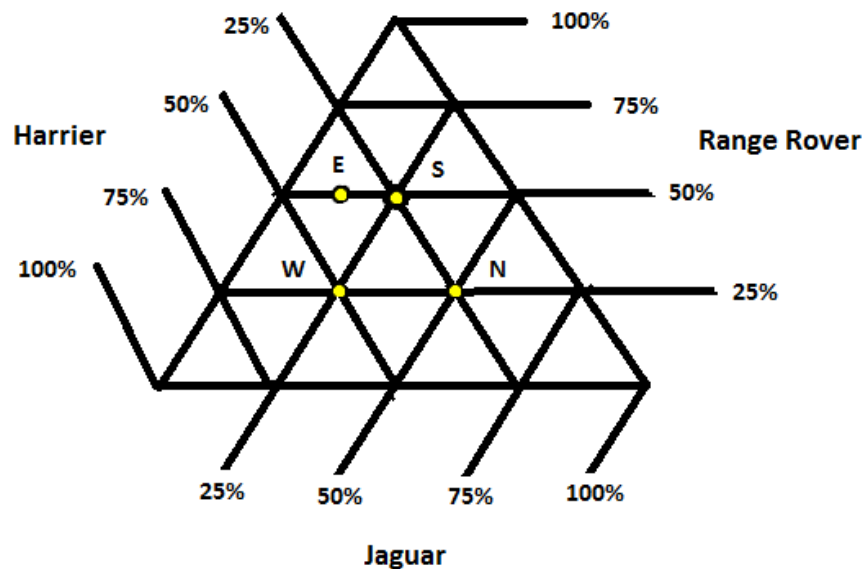
Section - 2 - Data Interpretation and Logical Reasoning

Directions for questions from 25 to 28 :

Mr N Chandrasekharan, the Chairman of Tata Motors and Jaguar Land Rover, wanted an in-depth statistical report of the distribution of the cumulative one lakh units car sales in the first financial quarter

of 2022, of the three models of the Harrier, the Range Rover and the Jaguar, across the four regions of India, namely the East, West, North and South.

The CEOs of the two companies submitted the following triangular chart and circular chart. The triangular chart depicted the percentage split up of the sales of the one lakh cars in the first financial quarter of 2022 by models in the four regions, while the circular chart depicted the percentage split up of the sales of the one lakh cars in the first financial quarter of 2022 by regions.



Question Type: MCQ

Level of Question: Level 3

Expected time to Solve: 360 secs

Topic: Data Interpretation

Chapter: Triangular Graphs

Creator: Sanjay Kr Datta

Q 25 In the first financial quarter of 2022, in which region did Range Rovers sell the maximum ?

- A) Eastern Region
- B) Western Region
- C) Northern Region
- D) Southern Region

Q 26 (TITA)

In the first financial quarter of 2022, what was the total number of Harriers that got sold in the four regions of India ?

Q 27 (TITA)

In the first financial quarter of 2022, how many Jaguars got sold in the Eastern and Northern regions put together ?

Q 28 (TITA)

In the first financial quarter of 2022, by what percent is the sale of Range Rovers more than that of Jaguars in the Eastern region ?

Directions for questions from 29 to 33 :

In the March 2022 Russian-Ukraine confrontation, a large number of Russian GRU field intelligence operatives were operating in Ukraine territory.

But after a few months, made suspicious by a few not so normal intelligence leaks at the field level, the head of GRU, Admiral Igor Kostyukov, got suspicious. He decided to form a committee of four members out of the eight elite and loyal Spetsnaz commandos of the rank of Colonel in the GRU – A to H. Out of them, apart from being ruthless operatives, Colonel B and Colonel C had an excellent cover for themselves, being the star players in the Russian men's ice-hockey team which in February 2022 won silver at the Winter Olympics in Beijing. The Admiral wanted the committee members to infiltrate the Ukrainian intelligence network as upper class family-men, and hence made it clear that the committee so formed should have two male and two female Spetsnaz Colonels.

He appointed his five GRU Directorate Heads to suggest their choice for the members of the committee out of the eight Colonels.

The report of suggestions placed at Admiral Kostyukov's table within a day was as follows :

GRU Directorate 1 Head	B	C	G	H
GRU Directorate 2 Head	A	D	E	H
GRU Directorate 3 Head	C	E	F	G
GRU Directorate 4 Head	B	D	E	G
GRU Directorate 5 Head	A	F	G	H

It was also noted that in all the suggestions made above there was exactly one married couple present, except the suggestions of the GRU Directorate 5 Head, where there was none.

Q 29 Which of the following must be a married couple ?

- A) D and H
- B) B and G
- C) C and E
- D) None of the above

Q 30 Who among the following Colonels is definitely not married ?

- A) A
- B) C
- C) E
- D) H

Q 31 Who among the following can never be a married couple ?

- A) B and H
- B) F and G
- C) C and H
- D) All of the above

Q 32 If along with the GRU Directorate 5 Head, the suggestions of the Directorate 3 Head also had no married couple, then who definitely could not have been a couple ?

- A) B and H
- B) C and H
- C) F and E
- D) None of the above

Q 33 If among the eight Spetsnaz Colonels, Colonel F is married, with whom is Colonel E married to?

- A) C
- B) F
- C) B
- D) E is unmarried

Q 34 If along with the GRU Directorate 5 Head, the suggestions of the Directorate 2 Head also had no married couple, then who among the following was definitely not married ?

- A) G
- B) A
- C) E
- D) D

Directions for questions from 35 to 40:

In a fictitious situation, renowned boxing promoter Mr Don King convinced eight of the world's all time great heavyweight and middleweight boxers spanning four decades, to have a friendly round-robin competition from Christmas Eve of 2022 to New Years Day 2023, at Madison Square Garden in New York.

Mr Sugar Ray Robinson of USA, Mr Rocky Marciano of USA, Mr Iron Mike Tyson of USA, Mr Manny Pacquiao of Philippines, Mr Big George Foreman of USA, Mr Robert Duran of Panama, Mr Joe Frazier of USA and Mr Muhammad Ali of USA were the competitors.

- According to the rules of the competition, every boxer was to fight all the others exactly once.
- There would be no fixed number of rounds, and the fights would go on till one fighter loses on points, gets knocked out or concedes defeat.
- The winner of every fight would win one million USD as prize money, while the loser would get nothing as prize money.
- At the start of the competition all the eight boxers were bestowed world ranking numbers from world number one to world number eight, depending upon their performance and popularity in their prime.
- Mr Rocky Marciano, who was the most senior of them all, was unanimously bestowed the rank of world number three.
- However, contrary to general expectations, Mr Sugar Ray Robinson was not accounted among the top five rankers in the world.
- Also at the end of the competition, it was found that by sheer co-incidence, all the boxers had won one million USD less than the world ranking number they were bestowed with.

The following incomplete table shows the results of some of the fights :

Boxers	Mr Iron Mike Tyson	Mr Robert Duran	Mr Rocky Marciano	Mr Manny Pacquiao	Mr Sugar Ray Robinson	Mr Big George Foreman	Mr Muhammad Ali	Mr Joe Frazier
Mr Iron Mike Tyson	X			Won	Won			
Mr Robert Duran		X				Won		
Mr Rocky Marciano			X					Won
Mr Manny Pacquiao		Won		X				
Mr Sugar Ray Robinson			Won		X			
Mr Big George Foreman						X		
Mr Muhammad Ali	Won				Won		X	
Mr Joe Frazier						Won		X

This chart is read as, for example, Mr Iron Mike Tyson won against Mr Manny Pacquiao and Mr Sugar Ray Robinson.

Q 35 Who won the maximum amount of prize money in the friendly boxing competition ?

- A) Mr Muhammad Ali
- B) Mr Iron Mike Tyson
- C) Mr Big George Foreman
- D) Mr Robert Duran

Q 36 Who was bestowed the rank of world number one at the beginning of the friendly competition?

- A) Mr Sugar Ray Robinson
- B) Mr Big George Foreman
- C) Mr Manny Pacquiao
- D) Mr Joe Frazier

Q 37 (TITA)

How much prize money (in million USD) did Mr Iron Mike Tyson win in the friendly competition ?

Q 38 (TITA)

How many fights did Mr Robert Duran win in the friendly competition ?

Q 39 (TITA)

What was the total prize money (in million USD) distributed among the winners of the fights in the friendly competition ?

Q 40 At the end of the friendly competition the eight boxers participating were re-ranked based on their prize money earned, such that the boxer with the highest amount of prize money would be world number one, the boxer with the second highest amount of prize money would be world number two, and so on. For whom was the new rank the same as the prize money earned (in million USD) ?

- A) Mr Rocky Marciano
- B) Mr Muhammad Ali
- C) Mr Manny Pacquiao
- D) Mr Sugar Ray Robinson

Directions for questions from 41 to 44 :

In this fictitious tale, the two legendary mathematicians and astronomers Aryabhatta and Varahamihira met at a dinner party hosted by King Chandragupta Vikramaditya at his palace in Pataliputra.

Aryabhatta, the senior and more moody among the two, being slightly inebriated with the excellent 'somras' served by the king, and in a very good mood, suddenly said to Varahamihira -- 'If distinct alphabets of the english language stand for distinct digits, then SATURN plus URANUS will be equal to JUPITER'!!

Though initially puzzled by this sudden statement from Aryabhatta, Varahamihira quickly regained composure and solved the challenge thrown by Aryabhatta.

Q 41 What would the 'SUN' be represented by as per the thought process of Aryabhatta ?

- A) 957
- B) 864
- C) 764

D) 569

Q 42 In sync with the thought process of Aryabhata, what would be the summation of the letters of 'PARASITE' ?

- A) 24
- B) 36
- C) 42
- D) 58

Q 43 According to the thought process of Aryabhata, if $(J\alpha)^2 = \beta\gamma J$, where $J\alpha$ is a two digit number and $\beta\gamma J$ a three digit number respectively, and α , β and γ stand for any three of the distinct alphabets used by Aryabhata (except J), then what would be the crypto form used to express the value of $\alpha*\beta*\gamma$?

- A) RAN
- B) PUT
- C) JRE
- D) TIP

Q 44 In sync with the thought process of Aryabhata, what would be the crypto form of the result of the following on simplification :

$[{(RINSE + JEANS - RISE)*UP}/JUP + EAT + NUT*SPIN - ARTIST]$

- A) JUNIPER
- B) NIEJTRRS
- C) EPAAIJJS
- D) RAPTRUA

Section - 3 - Quantitative Aptitude

Q45.(TITA)

If p becomes $(10p - 1000)$ in the beginning of next year. If Rs 1000 invested in the beginning of 2017, then it will become in the beginning of 2020 is

Q46. (TITA)

Let x and y be positive real numbers such that $\log_4 (2x - y) - \log_4 x = 3$, and $\log_2 y - \log_2 x^2 = 1 - \log_2 4$. Then $x + y$ equals

Q47. Two trains travel the same distance starting at 9:00 am and 11:00 am, respectively, on the same day in the same direction. They reach at a common point at the same time. If the first train travelled for at least 8 hours, then maximum by what percentage speed of the second train could exceed that of the first train is

- (a) 30 (b) 25 (c) 20 (d) 33.33

Q48. Rajesh and Geeta are among 12 students of a class. Rajesh is aged 26 years. The average age of the 11 students other than Geeta is 16 years. Difference of the average age of all the 12 students and the average age of 11 students other than Rajesh is between 0 and 1. If the ages of all the students is an integer value, then the age of Geeta can be

- (a) 28 (b) 37 (c) 40 (d) 20

Q49. (TITA)

In a race between A, B and C; A beats B by 20 metres and the C by 56 metres. If the B beats C by 37 metres, what was the length, in metres, of the track?

Q50. In the entrance exam of JEE, m students appeared. 56% of the students are girls and the rest are boys. There are 7200 more girls than boys. If 6% of the students, including 1600 boys, cleared the entrance exam, the percentage of the girls who failed to clear the entrance is

- (a) 6 (b) 84 (c) 94 (d) 16

Q51. The wheels of a tandem bicycle have two different sized wheels A and B have radii 28 cm and 36 cm, respectively. In a distance of p metres, A required m revolutions more than that required by B. How will p and m be related?

- (a) $18\pi m$ (b) $m\pi$ (c) $198m$ (d) $99m/125$

Q52. Seven men and Five Robots can finish a job in double the time as taken by five men and twelve robots to finish the same job. If one robot can finish the half of the job in 30 days, then how many men can finish the job in 30 days?

- (a) 18 (b) 16 (c) 9 (d) 12

Q53. Adam was born in year 1974. What would the year have been instead of 1974 if base 8 were used (for counting) instead of decimal system?

- (a) 3666 (b) 1022 (c) 2082 (d) 1192

Q54. (TITA)

In how many ways 6 cards out of a pack of 52 cards be selected so that at-least 2 black cards and at-least 2 red cards are there?

Q55. $f(x) = 3x^2$; $g(x) = 5x$; and $h(x) = 2/x^3$. The ratio of $h(x)$ to $h[f(x)/g(x)]$ is

- (a) 3: 5 (b) 5: 3 (c) 27: 125 (d) 125: 27

Q56. The price of sugarcane has gone up by 25%, labour cost has also increased from 15% of the cost of sugarcane to 20% of the cost of sugarcane. By how much percentage should there be a reduction in the usage of sugarcane so as to keep expenditure same?

- (a) 23.33% (b) 26.66% (c) 28% (d) 25%

Q57. If the roots of equation $x^2 + ax + b = 0$ differ by 4, then which of the following is true?

- (a) $a^2b^2 = 4(1 + b)$ (b) $4a + b = 1$ (c) $b^2 = 4 + a$ (d) $a^2 = 4(b + 4)$

Q58. (TITA)

For the given pair (x, y) of positive integers, such that $7x - 3y = 2$ and $x < 12$ and $y > 4$, how many integer values of y satisfy the given conditions?

Q59. (TITA)

The value of base of a triangle for which Area is minimum if the relation between perpendicular distance from the vertex and the base is $p = 7b^2 - 84$ is _____ (where b represents base and p represents perpendicular distance)

Q60. There are 2 rooms in a guest house. Room 1 contains 5 red colored towels and 4 green colored towels. Room 2 contains 6 red colored towels and 3 green colored towels. If one towels is selected from the rooms then find the probability that it is a red one?

- (a) $11/9$ (b) $11/18$ (c) $2/9$ (d) $11/13$

Q61. (TITA)

In an office, there is one director, one associate director and some executives. The average age of the members of the office is 30, the director's age is 50 years, and the average age of the associate director and executives is 20. Executives in the office are _____

Q62. How many isosceles triangles (having integral length) are possible if sum of two of its sides is 10?

- A. 11 B. 14 C. 15 D. 23

Q63. (TITA)

Ashutosh, Bijay and Chaman invest some amount of money in fixed deposits having respective annual interest rates in the ratio 6: 5: 6. What is difference between investment of Ashutosh and Chaman, if Bijay's interest income exceeds Ashutosh's by Rs 2400 and exceeds Chaman's by Rs 3600 after one year [in Rs]?

Q64. Square root of the product of two positive numbers is 60. If the ratio of the sum of the numbers and difference of the numbers is 25: 7, then square of their difference is

- (a) 1225 (b) 2025 (c) 6400 (d) 35

Q65. If m and n are integers such that m and n are co-primes. It is given that $(\sqrt{6})^{2p} 4^{3mq} = 2^{2p} 3^{nq}$. How many pairs of solutions of m and n can exist?

- (a) 0 (b) 2 (c) 1 (d) Infinite

Q66. Manoj scores 30% in an examination and failed by m marks. He got his marks reviewed, even though his marks increased by 50%, he fails by n marks. In the same exam, Sunil has also appeared. Sunil gets 20% more marks than post-review marks of Manoj, he got just passing marks. $(m - n)$ is what percent of Maximum marks?

- (a) 9 (b) 5 (c) 15 (d) 20

CAREERS360

Answer Key - Mock Test 13

Section - Verbal Ability & Reading Comprehension

1-D, 2-C, 3-B, 4-D, 5-C, 6-A, 7-B, 8-A, 9-C, 10-B, 11-B, 12-D, 13-B, 14-D, 15-D, 16-D, 17-A, 18-B, 19-B, 20-A, 21-D, 22-1243, 23-2413, 24-3412

Section - Data Interpretation & Logical Reasoning

25-D, 26-33250, 27-19750, 28-300, 29-D, 30-A, 31-B, 32-C, 33-B, 34-B, 35-A, 36-B, 37-6, 38-3, 39-28, 40-C, 41-A, 42-B, 43-C, 44-D

Section - Quantitative Aptitude

45-889000, 46-7564, 47-D, 48-C, 49-740, 50-C, 51-D, 52-C, 53-A, 54-733200, 55-C, 56-A, 57-D, 58-2, 59-B, 60-1, 61-B, 63-200, 64-A, 65-C, 66-C

Solutions - Mock Test 13

Section - Verbal Ability & Reading Comprehension

1. D

The first thing you need to do here is understand how these different professions are described:

Scientist: Over the last few decades, we have witnessed great progress in the public's level of scientific understanding, thanks to many brilliant expositors.

Historian: In history, too, some of the most original minds are also first rate communicators.

Economist: Much of economics has permeated into common sense, particularly of decision-makers around the world.

Each of these professions has a common element: the person engaged in them has been able to communicate his views to the wider world.

But in the case of Charles Tilly, this does not happen. In fact, he is symptomatic of the wider problems sociology has faced. Refer to the lines: Charles Tilly is probably the outstanding contemporary exponent of an engaged but theoretically rigorous sociology. It is a symptom of sociology's relative detachment that he remains largely unknown outside academic circles in Britain....

Thus, the correct answer here is option D.

2. C

Sociology refers to: the study of the development, structure, and functioning of human society.

When the author says that sociology has faded from our view, he is referring to the fact that it is no longer present in our daily discourse and discussions, unlike other subjects which have gained recognition and are understood more widely. The author is highlighting the absence of sociology essentially. This sentiment is highlighted by option C.

Option A talks about human actions rather than why sociology has gone missing.

Option B talks about the issues of society rather than the state of sociology.

Option D makes the mistake of attributing the current state of sociology to human apathy; this is not a sentiment mentioned in the passage.

3. B

Refer to the lines: Some of the reasons for sociology's retreat from public awareness lie in the discipline itself, which took a turn towards abstract theory in the 1970s and away from observation, description and detailed historical analysis.

Here, we can see that the above abstract refers to the changes in sociology and how these were responsible for its retreat from public awareness. This sentiment of alienation is highlighted by option B. Each of the options A, C, and D make the same mistake: they attack sociology or its core, without highlighting the impact and the fact that sociological tools/methods/nature of analysis changed rather than the core objectives.

4. D

Refer to the lines: Economists have found it hard to explain why gender pay gaps are so persistent, since in a properly functioning labour market, employers should have incentives to reward women as much as men for their skills.. "Since compensation varies systematically by job more than it varies by gender within jobs, the big question we have to ask is not, 'How come individual bosses discriminate against women?' but, 'What is the process by which women stream into some occupations and men into others?'" he says.

The above lines refer to the fact that we are looking at the wrong thing when it comes to gender inequality. Economists are actually looking at it incorrectly and Charles Tilly points out the correct framework for it.

Option A is incorrect as pay inequality cannot be enhanced by the fact that people don't study it correctly.

Option B is ruled out on similar grounds as lack of understanding of the issue is not its cause.

Option C is incorrect as the topic of larger issues finds no mention in the passage.

5. C

Refer to the lines: Some of the reasons for the retreat of sociology from public awareness lie in the discipline itself, which took a turn towards abstract theory in the 1970s and away from observation, description and detailed historical analysis In some ways he is old fashioned—he offers explanations and shows how some things cause other things to happen. His accounts contain real people, history and drama, and have lessons for how change might be achieved more successfully.

What do these lines imply in the context of the passage?

Charles Tilly's way of analysis is actually old-fashioned (and hence, moves away from abstraction) and is based on real world examples and cause and effect relationships. This is what makes his lessons effective. And this sentiment is highlighted by option C.

Options A and B are irrelevant in the given case and find no mention in the passage.

Option D simply picks up lines from the passage but these do not answer the given question.

6. A

Refer to the lines: According to a phenomenon known as the Baldwin effect, characteristics that are learned or developed over a lifespan may become gradually encoded in the genome over many generations, because organisms with a stronger predisposition to acquire a trait have a selective advantage. Over generations, the amount of environmental exposure required to develop the trait decreases, and eventually no environmental exposure may be needed - the trait is genetically encoded. What is the Baldwin effect in simple terms?

The Baldwin effect describes the effect of learned behavior on evolution. It basically says that an organism's ability to learn new behaviours (e.g. to acclimatise to a new stressor) will affect its reproductive success and will therefore have an effect on the genetic makeup of its species through

natural selection. Thus, in short, what is happening is that organisms are getting the acquired traits of their parents genetically: natural selection in genes.

Thus, option A is the correct answer here.

7. B

In this case, you need to identify the primary argument of the author of the passage.

The author of the passage says: The authors conclude that it is unlikely that humans possess a genetic 'language module' which has evolved by natural selection. The genetic basis of human language appears to primarily predate the emergence of language.

This highlights option B.

Option A finds no mention in the passage.

Option C goes against the above extract.

Option D is ruled out as there is no competition implied between culture and genes.

8. A

What is the Baldwin effect in simple terms?

The Baldwin effect describes the effect of learned behavior on evolution. It basically says that an organism's ability to learn new behaviours (e.g. to acclimatise to a new stressor) will affect its reproductive success and will therefore have an effect on the genetic makeup of its species through natural selection. Thus, in short, what is happening is that organisms are getting the acquired traits of their parents genetically: natural selection in genes.

Thus, we need to select options which reflect NATURAL SELECTION IN GENES.

I & II do that for us and hence, are valid examples here.

9. C

The answer to this question can be found from the lines: Thus, the biological machinery upon which human language is built appears to predate the emergence of language.

Remember, we need to pick an option that highlights what existed before the emergence of language.

Option A: Cultural conventions were created with the coming in of languages; they did not exist before the emergence of languages.

Option B is incorrect. Refer to the lines: According to a phenomenon known as the Baldwin effect, characteristics that are learned or developed over a lifespan may become gradually encoded in the genome over many generations, because organisms with a stronger predisposition to acquire a trait have a selective advantage.... Thus, a biological endowment could not coevolve with properties of language that began as learned cultural conventions, because cultural conventions change much more rapidly than genes.

This is the central gist of the paragraph: that language genomes do not keep pace with the speed of language development. Hence, this cannot be the answer as well.

Option D is denied by the author of the passage: The authors conclude that it is unlikely that humans possess a genetic 'language module' which has evolved by natural selection.

10. B

Meanings of Subversion:

1. Destroying someone's (or some group's) honesty or loyalty; undermining moral integrity
2. The act of subverting; as overthrowing or destroying a legally constituted government

Keeping the above in mind, we can see that option B is the best answer here.

Option D comes close but it is not correct. Mitigating means: Make less severe or harsh.

This clearly is different from the sentiment implied in the given case.

11. B

Refer to the lines: Aristotle made the same distinction, contrasting two kinds of actions or praxis: kinesis and energeia. Kinetic actions are telic and therefore incomplete...Atelic activities, by contrast, do not by nature come to an end and are not incomplete. In defining such activities, we could emphasize their inexhaustibility, the fact that they do not aim at terminal states

Now, the first thing is forming the two groups. From the above, we know telic and kinetic refer to the same and therefore, the other two form another connected set.

Also, the above lines indicate that the author is highlighting an issue with telic activities and on the other hand, is highlighting the virtues of atelic activities. Keeping this in mind, option B is the best answer. Remember, we just need to identify a mild preference here; there is no strong opinion of approval or disapproval expressed by the author of the passage.

12. D

Each of the statements can be derived from the first paragraph of the passage.

Statement I can be derived from the lines: No wonder some are tempted by the comforts of a nostalgically imagined past. Inspiring as it seems on first inspection, the self-help slogan "live in the present" slips rapidly out of focus. What would living in the present mean? To live each day as if it were your last, without a thought for the future, is simply bad advice, a recipe for recklessness.

Statement II can be derived from the lines: Not that the future looks better, shadowed by technological advances that threaten widespread unemployment and by the perils of catastrophic climate change.

Statement III can be derived from the lines: The idea that one can make oneself invulnerable to what happens by detaching from everything but the present is an irresponsible delusion.

13. B

Refer to this: When you care about telic activities, projects such as writing a report, getting married or making dinner, satisfaction is always in the future or the past. It is yet to be achieved and then it is gone. A and D represent such activities. These are actions that can be completed. Remember, to provide for means to provide resources (this is an action that can be completed, though it will need to be repeated).

Refer to this: Atelic activities, by contrast, do not by nature come to an end and are not incomplete. In defining such activities, we could emphasize their inexhaustibility, the fact that they do not aim at terminal states.

B and C represent such activities.

14. D

Refer to the lines: A lot of them are between preparatory stuff, and finished work – very much in limbo. Some of it might be debris of the studio or spare parts. To me they throw down the gauntlet, and say, 'let's get back to first principles', how do you even describe these things? So in a way the impulse behind the exhibition is to lay out these works to say – these are precarious works.

Why does the author use the word 'precarious' here?

Precarious has the following meanings:

1. not securely held or in position; dangerously likely to fall or collapse.
2. dependent on chance; uncertain.

In this case, the author is clearly not referring to the delicate/dangerous nature of the art pieces; that makes no sense.

Here, the challenge for the author is to make sense of Hesse's work and that is what he is trying to do. This exhibition is a method for him to understand the meaning and significance of these works as that is something which is tough to establish.

Which is the option that comes closest to this sentiment? Option D is the one which implicitly co-relates the difficulty in establishing the meaning of these items.

15. D

Option A can be derived from the lines: In this show what's been important for me is that I've been working on Hesse for a long time, and these objects have always been there, have always been incredibly intriguing, but you don't actually know what they are. In most art history you think you know what the object of your enquiry is, but what are these things?

Option B can be derived from the lines: That's why I wanted to do this exhibition, and it's my way of writing a book about Hesse – through these really raw experimental works, not simply to fetishise them or say 'here are a whole lot of new Hesses', but on the contrary, to think about what the object of art is. Here we have an artist taking real risks with the object of art.

Option C can be derived from the lines: They've always been called 'Test Pieces' and I find that problematic. This is much more the language of industry. It's much more minimalist – test pieces, prototypes, all that kind of language – when they are so organic and textural and so on.

Option D is the odd one out here as it moves outside the scope of the passage.

The author is not dealing with the popularity of contemporary artwork in the passage but the significance of test pieces.

16. D

This is an easy question.

The exhibition of the author is about test pieces.

Refer to the lines: A lot of them are between preparatory stuff, and finished work – very much in limbo. Some of it might be debris of the studio or spare parts. To me they throw down the gauntlet, and say, 'let's get back to first principles', how do you even describe these things? So in a way the impulse behind the exhibition is to lay out these works to say – these are precarious works.... They've always been called 'Test Pieces' and I find that problematic. This is much more the language of industry.

'Test pieces' is the primary subject in the given case.

17. A

Statement I can be derived from the lines: A lot of them are between preparatory stuff, and finished work – very much in limbo.

'Limbo' means an uncertain period of awaiting a decision or resolution; an intermediate state or condition.

Statement II can be derived from the lines: To me they throw down the gauntlet, and say, 'let's get back to first principles', how do you even describe these things? So in a way the impulse behind the exhibition is to lay out these works to say – these are precarious works.

To throw down the gauntlet means to issue a challenge.

Statement III can be derived from the lines: That's why I wanted to do this exhibition, and it's my way of writing a book about Hesse – through these really raw experimental works, not simply to fetishise them or say 'here are a whole lot of new Hesses', but on the contrary, to think about what the object of art is. Here we have an artist taking real risks with the object of art.

18. B

Option A has no connection with the given passage.

Option D is incorrect as well. Vagaries means 'An unexpected and inexplicable change in something (in a situation or a person's behaviour, etc.)' and this sentiment clearly does not fit with the given context.

This leaves us with two options, B and C. In this case, option B is the best answer as it gels well with the content of the paragraph. It does not violate what is stated in the passage and co-relates with the given passage directly.

Remember, option C is something that is possibly targeted by TV series but this sentiment does not find mention in the passage given to us here. So, we cannot reach such a conclusion in the given context.

19. B

Option A: There is no mention of dictatorships and authoritarian rule.

Option C: There is no mention of environmental and cultural development.

Option D: The second part of the option (which keeps the morality of the overall society in mind) is correct but the first part does not find any mention in the passage. Ruffle feathers means to annoy, irritate, or upset someone. This sentiment is not mentioned in the passage.

Option B is the generic option that gels well with the overall sentiment of the author of the passage.

20. A

The passage is based on a new report as we can see. Hence we should be focusing on the newline sequence. We notice that the passage ends before mentioning the number of casualties. Hence we can understand that we have to find something related to it. It is obvious that such a natural calamity would lead to the death of many.

Hence we can conclude A as the answer. Moreover, option A is reported from the person who works in the impacted zone.

Option B is a suggestion of what can be done in the future. Hence this will come only at the end of the news report.

Option C is a description (attribute) of the affected state. This is irrelevant in the passage.

Option D is something that comes after the statement in option A as the news report proceeds. Hence, D cannot be the answer.

The question below has a paragraph given with one sentence missing at the end. From among the answer choices given, select the sentence that can fill the blank to form a coherent paragraph.

21. D

The passage is a plain description of the new features of the OS. Hence we can understand the next sentence would be about another feature.

Option A could have been the answer if there were no other features mentioned in the other options.

Option B is a criticism of the OS. This is not the time to criticise the OS because it speaks about the positive attributes of the same.

Option C is where you can notice that a narrative style stating the author's viewpoint is written there.

Option D is highlighting another feature and hence it can be the answer.

22. 1243

Statement 1 is the opening sentence in this case. Statement 2 connects with it directly as it refers to the surplus mentioned in statement 1. Statement 4 then introduces the topic of international trade and statement 3 takes this forward.

23.2413

This is an easy question, with statement 2 being the opening sentence in this case. This statement is perfectly extended by 41, which go on to explain what dual life in the Peace Corps is like.

24. 3412

The passage wants to bring forth the problem of Tuberculosis plaguing our country even when the government had sanctioned money for the projects. It aims at disclosing why such steps from the government haven't worked. Statement 3 can be a perfect introductory statement for the passage. Statement 4 tries to show how the government had taken steps in this regard but failed due to not considering the ground level situation. Further statement 1 focuses on how the program would have been a success if the government had understood the situation properly. Finally, statement 2 gives the main reason why the government's step has failed. Hence, the proper sequence of sentences is 3-4-1-2

Section - Data Interpretation & Logical Reasoning**25. D**

From the triangular chart we can conclude the following model wise distribution of sales in the four regions in the first financial quarter of 2022 :

	Harrier	Range Rover	Jaguar
Eastern Region	37.50%	50%	12.50%
Western Region	50%	25%	25%
Northern Region	25%	25%	50%
Southern Region	25%	50%	25%

From the circular chart we can conclude the following region wise distribution of the total sales of one lakh cars in the first financial quarter of 2022 :

Eastern Region	$(14 \times 1 \text{ lakh})/100$ = 14000
Western Region	$(26 \times 1 \text{ lakh})/100$ = 26000
Northern Region	$(36 \times 1 \text{ lakh})/100$ = 36000
Southern Region	$(24 \times 1 \text{ lakh})/100$ = 24000

Combining the above sets of data, we can conclude the sales of each model at each region, as follows below :

	Harrier	Range Rover	Jaguar	Total number of cars
Eastern Region	37.50%	50%	12.50%	(14*1 lakh)/100 = 14000
	$(37.5*14000)/100 = 5250$	$(50*14000)/100 = 7000$	$(12.5*14000)/100 = 1750$	
Western Region	50%	25%	25%	(26*1 lakh)/100 = 26000
	$(50*26000)/100 = 13000$	$(25*26000)/100 = 6500$	$(25*26000)/100 = 6500$	
Northern Region	25%	25%	50%	(36*1 lakh)/100 = 36000
	$(25*36000)/100 = 9000$	$(25*36000)/100 = 9000$	$(50*36000)/100 = 18000$	
Southern Region	25%	50%	25%	(24*1 lakh)/100 = 24000
	$(25*24000)/100 = 6000$	$(50*24000)/100 = 12000$	$(25*24000)/100 = 6000$	
Total number of cars	33250	34500	32250	100000

Hence, from the above, we can say that in the first financial quarter of 2022, Range Rover sold the maximum of 12000 units in the Southern region.

26. 33250

We already know that the sales of each model at each region is as below :

	Harrier	Range Rover	Jaguar	Total number of cars
Eastern Region	37.50%	50%	12.50%	(14*1 lakh)/100 = 14000
	$(37.5*14000)/100 = 5250$	$(50*14000)/100 = 7000$	$(12.5*14000)/100 = 1750$	
Western Region	50%	25%	25%	(26*1 lakh)/100 = 26000
	$(50*26000)/100 = 13000$	$(25*26000)/100 = 6500$	$(25*26000)/100 = 6500$	
Northern Region	25%	25%	50%	(36*1 lakh)/100 = 36000
	$(25*36000)/100 = 9000$	$(25*36000)/100 = 9000$	$(50*36000)/100 = 18000$	
Southern Region	25%	50%	25%	(24*1 lakh)/100 = 24000
	$(25*24000)/100 = 6000$	$(50*24000)/100 = 12000$	$(25*24000)/100 = 6000$	
Total number of cars	33250	34500	32250	100000

Hence in the first financial quarter of 2022, the total number of Harriers that got sold in the four regions of India was 33250 units

27. 19750

We already know that the sales of each model at each region is as below :

	Harrier	Range Rover	Jaguar	Total number of cars
Eastern Region	37.50%	50%	12.50%	$(14 \times 1 \text{ lakh})/100 = 14000$
	$(37.5 \times 14000)/100 = 5250$	$(50 \times 14000)/100 = 7000$	$(12.5 \times 14000)/100 = 1750$	
Western Region	50%	25%	25%	$(26 \times 1 \text{ lakh})/100 = 26000$
	$(50 \times 26000)/100 = 13000$	$(25 \times 26000)/100 = 6500$	$(25 \times 26000)/100 = 6500$	
Northern Region	25%	25%	50%	$(36 \times 1 \text{ lakh})/100 = 36000$
	$(25 \times 36000)/100 = 9000$	$(25 \times 36000)/100 = 9000$	$(50 \times 36000)/100 = 18000$	
Southern Region	25%	50%	25%	$(24 \times 1 \text{ lakh})/100 = 24000$
	$(25 \times 24000)/100 = 6000$	$(50 \times 24000)/100 = 12000$	$(25 \times 24000)/100 = 6000$	
Total number of cars	33250	34500	32250	100000

Number of Jaguars that got sold in the Eastern region In the first financial quarter of 2022 = 1750 units

Number of Jaguars that got sold in the Northern region In the first financial quarter of 2022 = 18000 units

Hence, in the first financial quarter of 2022, the number of Jaguars that got sold in the Eastern and Northern regions put together

$$= 1750 + 18000 = 19750$$

28. 300%

We already know that the sales of each model at each region is as below :

	Harrier	Range Rover	Jaguar	Total number of cars
Eastern Region	37.50%	50%	12.50%	$(14 \times 1 \text{ lakh})/100 = 14000$
	$(37.5 \times 14000)/100 = 5250$	$(50 \times 14000)/100 = 7000$	$(12.5 \times 14000)/100 = 1750$	
Western Region	50%	25%	25%	$(26 \times 1 \text{ lakh})/100 = 26000$
	$(50 \times 26000)/100 = 13000$	$(25 \times 26000)/100 = 6500$	$(25 \times 26000)/100 = 6500$	
Northern Region	25%	25%	50%	$(36 \times 1 \text{ lakh})/100 = 36000$
	$(25 \times 36000)/100 = 9000$	$(25 \times 36000)/100 = 9000$	$(50 \times 36000)/100 = 18000$	
Southern Region	25%	50%	25%	$(24 \times 1 \text{ lakh})/100 = 24000$
	$(25 \times 24000)/100 = 6000$	$(50 \times 24000)/100 = 12000$	$(25 \times 24000)/100 = 6000$	

Total number of cars	33250	34500	32250	100000

In the first financial quarter of 2022, the sale of Range Rovers in the Eastern region = 7000

In the first financial quarter of 2022, the sale of Jaguars in the Eastern region = 1750

Hence, the percentage by which the sale of Range Rovers was more than that of Jaguars in the Eastern region

$$= (7000 - 1750) * 100 / 1750$$

$$= 300\%$$

29. D

Let us first determine the genders and the couples of the Spetsnaz Colonels :

We know B and C are male, as they are players in the men's ice hockey team of Russia. Hence G and H must be female as per Dir 1 Head's suggestion, as there are two men and two women in each suggestion of the committee. Hence:

GRU Directorate 1 Head	B	C	G	H
GRU Directorate 2 Head	A	D	E	H
GRU Directorate 3 Head	C	E	F	G
GRU Directorate 4 Head	B	D	E	G
GRU Directorate 5 Head	A	F	G	H

Now, A and F must be male as per Dir 5 Head's suggestion. Hence E must be a female as per Dir 3 Head's suggestion. Hence we can conclude D must be a male as per Dir 4 Head's suggestion. Finally as per Dir 2 Head's suggestion, A must be a male too. Hence:

GRU Directorate 1 Head	B	C	G	H
GRU Directorate 2 Head	A	D	E	H
GRU Directorate 3 Head	C	E	F	G
GRU Directorate 4 Head	B	D	E	G
GRU Directorate 5 Head	A	F	G	H

Now from the Dir 1 Head's suggestion, let us assume that B and G are married, and hence is the couple. From this assumption, the following four cases of probable couples in each suggestion can be concluded:

GRU Directorate 1 Head	B	C	G	H
GRU Directorate 2 Head	A	D	E	H
GRU Directorate 3 Head	C	E	F	G
GRU Directorate 4 Head	B	D	E	G
GRU Directorate 5 Head	A	F	G	H

BG	BG	BG	BG
AH	DH	AH	DH
CE	CE	FE	FE
BG	BG	BG	BG
AH		AH	

But AH cannot be a couple as there is no couple in the suggestion of Dir 5 Head. Hence only 2nd and 4th cases are possible. Hence:

GRU Directorate 1 Head	B	C	G	H
GRU Directorate 2 Head	A	D	E	H
GRU Directorate 3 Head	C	E	F	G
GRU Directorate 4 Head	B	D	E	G
GRU Directorate 5 Head	A	F	G	H

No	Yes	No	Yes
BG	BG	BG	BG
AH	DH	AH	DH
CE	CE	FE	FE
BG	BG	BG	BG
AH		AH	

Likewise, let us assume that B and H are married, and hence is the couple. From this assumption, the following four cases of probable couples in each suggestion can be concluded:

GRU Directorate 1 Head	B	C	G	H
GRU Directorate 2 Head	A	D	E	H
GRU Directorate 3 Head	C	E	F	G
GRU Directorate 4 Head	B	D	E	G
GRU Directorate 5 Head	A	F	G	H

BH	BH	BH	BH
AE	AE	DE	AE
FG		FG	FG
DG	DG	DE	
FG		FG	FG

But FG cannot be a couple in the suggestion of Dir 5 Head, and all other four suggestions must have a couple. So no case is possible. Hence:

GRU Directorate 1 Head	B	C	G	H
GRU Directorate 2 Head	A	D	E	H
GRU Directorate 3 Head	C	E	F	G
GRU Directorate 4 Head	B	D	E	G
GRU Directorate 5 Head	A	F	G	H

No	No	No	No
BH	BH	BH	BH
AE	AE	DE	AE
FG		FG	FG
DG	DG	DE	
FG		FG	FG

Now from the Dir 1 Head's suggestion, let us assume that C and G are married, and hence are the couple. From this assumption, the following three cases of probable couples in each suggestion can be concluded:

GRU Directorate 1 Head	B	C	G	H
GRU Directorate 2 Head	A	D	E	H
GRU Directorate 3 Head	C	E	F	G
GRU Directorate 4 Head	B	D	E	G
GRU Directorate 5 Head	A	F	G	H

CG	CG	CG
AH	DH	DE
CG	CG	CG
BE	BE	DE
AH		

But AH cannot be a couple as there is no couple in the suggestion of Dir 5 Head. Hence only 2nd and 3rd cases are possible. Hence:

GRU Directorate 1 Head	B	C	G	H
GRU Directorate 2 Head	A	D	E	H
GRU Directorate 3 Head	C	E	F	G
GRU Directorate 4 Head	B	D	E	G
GRU Directorate 5 Head	A	F	G	H

No	Yes	Yes
CG	CG	CG
AH	DH	DE
CG	CG	CG
BE	BE	DE
AH		

Likewise, let us assume that C and H are married, and hence is the couple. From this assumption, the following two cases of probable couples in each suggestion can be concluded:

GRU Directorate 1 Head	B	C	G	H
GRU Directorate 2 Head	A	D	E	H
GRU Directorate 3 Head	C	E	F	G
GRU Directorate 4 Head	B	D	E	G
GRU Directorate 5 Head	A	F	G	H

CH	CH
AE	DE
FG	FG
DG	DE
FG	FG

But FG cannot be a couple in the suggestion of Dir 5 Head, and all other four suggestions must have a couple. So no case is possible. Hence:

GRU Directorate 1 Head	B	C	G	H
GRU Directorate 2 Head	A	D	E	H
GRU Directorate 3 Head	C	E	F	G
GRU Directorate 4 Head	B	D	E	G
GRU Directorate 5 Head	A	F	G	H

No	No
CH	CH
AE	DE
FG	FG
DG	DE
FG	FG

As observed above, only the second and fourth sub-case of the case where B and G are married or the second and third sub-case of the case where C and G are married will hold.

By observation, we can say that there is no couple who is mandatory in all the different cases possible.

Hence the answer is 'None of the above'

30. A

As observed in the observations made in Question Number 1, only the second and fourth sub-case of the case where B and G are married, or the second and third sub-case of the case where C and G are married will hold.

By observation we can say that in none of the different cases possible Colonel A is found to be married

Hence, the answer is Colonel A

31. B

As observed in the observations made in Question Number 1, only the second and fourth sub-case of the case where B and G are married or the second and third sub-case of the case where C and G are married will hold.

By observation of all the different cases possible we can say that in all the four cases, Colonel F and Colonel G are definitely not married

Hence Colonel F and G can never be a married couple

32. C

If along with the GRU Dir 5 Head, the suggestions of the Dir 3 Head also had no married couple, the following cases can be observed :

GRU Directorate 1 Head	B	C	G	H
GRU Directorate 2 Head	A	D	E	H
GRU Directorate 3 Head	C	E	F	G
GRU Directorate 4 Head	B	D	E	G
GRU Directorate 5 Head	A	F	G	H

Yes	Yes
BG	BG
DH	AE
BG	BG

GRU Directorate 1 Head	B	C	G	H
GRU Directorate 2 Head	A	D	E	H
GRU Directorate 3 Head	C	E	F	G
GRU Directorate 4 Head	B	D	E	G
GRU Directorate 5 Head	A	F	G	H

Yes	Yes
BH	BH
AE	DE
DG	DE

GRU Directorate 1 Head	B	C	G	H
GRU Directorate 2 Head	A	D	E	H
GRU Directorate 3 Head	C	E	F	G
GRU Directorate 4 Head	B	D	E	G
GRU Directorate 5 Head	A	F	G	H

GRU Directorate 1 Head	B	C	G	H
GRU Directorate 2 Head	A	D	E	H
GRU Directorate 3 Head	C	E	F	G
GRU Directorate 4 Head	B	D	E	G
GRU Directorate 5 Head	A	F	G	H

Yes	Yes
CH	CH
AE	DE
DG	DE

By observation of all the different cases possible we can say that both B and H or C and H can be a married couple. F and E can never be one.

Hence, if along with the GRU Directorate 5 Head, the suggestions of the Directorate 3 Head also had no married couple, then who definitely could not have been a couple.

33. B

As observed in the observations made in Question Number 1, only the second and fourth sub-case of the case where B and G are married or the second and third sub-case of the case where C and G are married will hold.

F is also one of the married Spetsnaz Colonels.

Studying all the different possible cases we see that F is married only in the fourth sub-case of the case where B and G are married.

The spouse of E in that case is F himself.

Hence, if among the eight Spetsnaz Colonels, Colonel F is married, Colonel E married to Colonel F

34. B

When along with the GRU Dir 5 Head, the suggestions of the Dir 2 Head also had no married couple, the following cases can be observed:

GRU Directorate 1 Head	B	C	G	H
GRU Directorate 2 Head	A	D	E	H
GRU Directorate 3 Head	C	E	F	G
GRU Directorate 4 Head	B	D	E	G
GRU Directorate 5 Head	A	F	G	H

Yes	Yes
BG	BG
CE	FE
BG	BG

GRU Directorate 1 Head	B	C	G	H
GRU Directorate 2 Head	A	D	E	H
GRU Directorate 3 Head	C	E	F	G
GRU Directorate 4 Head	B	D	E	G
GRU Directorate 5 Head	A	F	G	H

Yes	Yes
BH	BH
CE	FE
DG	DG

GRU Directorate 1 Head	B	C	G	H
GRU Directorate 2 Head	A	D	E	H
GRU Directorate 3 Head	C	E	F	G
GRU Directorate 4 Head	B	D	E	G
GRU Directorate 5 Head	A	F	G	H

Yes
CG
CG
BE

GRU Directorate 1 Head	B	C	G	H
GRU Directorate 2 Head	A	D	E	H
GRU Directorate 3 Head	C	E	F	G
GRU Directorate 4 Head	B	D	E	G
GRU Directorate 5 Head	A	F	G	H

Yes
CH
FE
DG

By observation of all the different cases possible we can say that in none of the four cases Colonel A is married.

35. A

At the end of the competition, it was found that by sheer coincidence, all the boxers had won one million USD less than the world ranking number they were bestowed with before the friendly competition.

So world number eight would have won 7 million USD as prize money, world number seven 6 million USD, and so on, with world number one winning no prize money.

But, it is also informed that according to the rules of the competition, every boxer was to fight all the others exactly once. The fights would go on till one fighter loses on points, gets knocked out or concedes defeat. The winner of every fight would win 1 million USD as prize money, while the loser would get no prize money.

Hence, to win 7 million USD, seven fights have to be won, to win 6 million USD, six fights have to be won, and so on, with no prize money implying not a single fight won.

Hence the actual scenario that must have occurred in the friendly competition must be as depicted below :

Boxers	World No 1	World No 2	World No 3	World No 4	World No 5	World No 6	World No 7	World No 8	Prize money (million USD)
World No 1	X	Lost	Lost	Lost	Lost	Lost	Lost	Lost	X
World No 2	Won	X	Lost	Lost	Lost	Lost	Lost	Lost	1
World No 3	Won	Won	X	Lost	Lost	Lost	Lost	Lost	2

World No 4	Won	Won	Won	X	Lost	Lost	Lost	Lost	3
World No 5	Won	Won	Won	Won	X	Lost	Lost	Lost	4
World No 6	Won	Won	Won	Won	Won	X	Lost	Lost	5
World No 7	Won	Won	Won	Won	Won	Won	X	Lost	6
World No 8	Won	Won	Won	Won	Won	Won	Won	X	7

We know that the world number three is Mr Rocky Marciano.

Also from the data provided in the incomplete table in the question, we can see :

- Mr Iron Mike Tyson wins against Mr Manny Pacquiao and Mr Sugar Ray Robinson
- Mr Muhammad Ali wins against Mr Iron Mike Tyson and Mr Sugar Ray Robinson
- Mr Robert Duran wins against Mr Big George Foreman
- Mr Rocky Marciano wins against Mr Joe Frazier
- Mr Manny Pacquiao wins against Mr Robert Duran
- Mr Sugar Ray Robinson wins against Mr Rocky Marciano
- Mr Joe Frazier wins against Mr Big George Foreman

So everybody has won at least one fight except Mr Big George Foreman. So Mr Big George Foreman is the world number one.

Mr Rocky Marciano , who is world number three and hence won two fights, must have won against Mr Joe Frazier (as given) and Mr Big George Foreman.

Hence Mr Joe Frazier must be world number two, and has won against Mr Big George Foreman.

Mr Iron Mike Tyson won against Mr Manny Pacquiao and Mr Sugar Ray Robinson, who in turn have won against Mr Robert Duran and Mr Rocky Marciano, who again in turn have won against Mr Joe Frazier, and Mr Big George Foreman.

So Mr Iron Mike Tyson has won against all the six boxers mentioned above.

So Mr Iron Mike Tyson is world number seven.

Mr Muhammad Ali has won against Mr Iron Mike Tyson, and hence must have won against all the six boxers Mr Iron Mike Tyson won against.

So Mr Muhammad Ali has won seven fights and hence must be world number eight.

Mr Sugar Ray Robinson was not accounted among the top five rankers in the world. But the seventh and eight rankers are Mr Iron Mike Tyson and Mr Muhammad Ali.

So Mr Sugar Ray Robinson must be world number six, and must have won against all except Mr Iron Mike Tyson and Mr Muhammad Ali.

The only two rankings left vacant are world number four and five, and the boxers in contention are Mr Manny Pacquiao and Mr Robert Duran.

But Mr Manny Pacquiao has won against Mr Robert Duran. So Mr Manny Pacquiao must be world number five and Mr Robert Duran world number four.

Hence, the final scenario is as below :

World No	Boxers	Mr Big George Foreman	Mr Joe Frazier	Mr Rocky Marciano	Mr Robert Duran	Mr Manny Pacquiao	Mr Sugar Ray Robinson	Mr Iron Mike Tyson	Mr Muhammad Ali	Prize money (million USD)
1	Mr Big George Foreman	X	Lost	Lost	Lost	Lost	Lost	Lost	Lost	X
2	Mr Joe Frazier	Won	X	Lost	Lost	Lost	Lost	Lost	Lost	1
3	Mr Rocky Marciano	Won	Won	X	Lost	Lost	Lost	Lost	Lost	2
4	Mr Robert Duran	Won	Won	Won	X	Lost	Lost	Lost	Lost	3
5	Mr Manny Pacquiao	Won	Won	Won	Won	X	Lost	Lost	Lost	4
6	Mr Sugar Ray Robinson	Won	Won	Won	Won	Won	X	Lost	Lost	5
7	Mr Iron Mike Tyson	Won	Won	Won	Won	Won	Won	X	Lost	6
8	Mr Muhammad Ali	Won	Won	Won	Won	Won	Won	Won	X	7

Hence, Mr Muhammad Ali won the maximum amount of prize money in the friendly boxing competition.

36. B

The final scenario is as below :

World No	Boxers	Mr Big George Foreman	Mr Joe Frazier	Mr Rocky Marciano	Mr Robert Duran	Mr Manny Pacquiao	Mr Sugar Ray Robinson	Mr Iron Mike Tyson	Mr Muhammad Ali	Prize money (million USD)
1	Mr Big George Foreman	X	Lost	Lost	Lost	Lost	Lost	Lost	Lost	X
2	Mr Joe Frazier	Won	X	Lost	Lost	Lost	Lost	Lost	Lost	1
3	Mr Rocky Marciano	Won	Won	X	Lost	Lost	Lost	Lost	Lost	2
4	Mr Robert Duran	Won	Won	Won	X	Lost	Lost	Lost	Lost	3

5	Mr Manny Pacquiao	Won	Won	Won	Won	X	Lost	Lost	Lost	4
6	Mr Sugar Ray Robinson	Won	Won	Won	Won	Won	X	Lost	Lost	5
7	Mr Iron Mike Tyson	Won	Won	Won	Won	Won	Won	X	Lost	6
8	Mr Muhammad Ali	Won	Won	Won	Won	Won	Won	Won	X	7

Hence, Mr Big George Foreman was bestowed the rank of world number one at the beginning of the friendly competition

37. 6

The final scenario is as below :

World No	Boxers	Mr Big George Foreman	Mr Joe Frazier	Mr Rocky Marciano	Mr Robert Duran	Mr Manny Pacquiao	Mr Sugar Ray Robinson	Mr Iron Mike Tyson	Mr Muhammad Ali	Prize money (million USD)
1	Mr Big George Foreman	X	Lost	Lost	Lost	Lost	Lost	Lost	Lost	X
2	Mr Joe Frazier	Won	X	Lost	Lost	Lost	Lost	Lost	Lost	1
3	Mr Rocky Marciano	Won	Won	X	Lost	Lost	Lost	Lost	Lost	2
4	Mr Robert Duran	Won	Won	Won	X	Lost	Lost	Lost	Lost	3
5	Mr Manny Pacquiao	Won	Won	Won	Won	X	Lost	Lost	Lost	4
6	Mr Sugar Ray Robinson	Won	Won	Won	Won	Won	X	Lost	Lost	5
7	Mr Iron Mike Tyson	Won	Won	Won	Won	Won	Won	X	Lost	6
8	Mr Muhammad Ali	Won	Won	Won	Won	Won	Won	Won	X	7

Hence, Mr Iron Mike Tyson won a prize money of 6 million USD in the friendly competition.

38. 3

The final scenario is as below :

World No	Boxers	Mr Big George Foreman	Mr Joe Frazier	Mr Rocky Marciano	Mr Robert Duran	Mr Manny Pacquiao	Mr Sugar Ray Robinson	Mr Iron Mike Tyson	Mr Muhammad Ali	Prize money (million USD)
1	Mr Big George Foreman	X	Lost	Lost	Lost	Lost	Lost	Lost	Lost	X
2	Mr Joe Frazier	Won	X	Lost	Lost	Lost	Lost	Lost	Lost	1
3	Mr Rocky Marciano	Won	Won	X	Lost	Lost	Lost	Lost	Lost	2
4	Mr Robert Duran	Won	Won	Won	X	Lost	Lost	Lost	Lost	3
5	Mr Manny Pacquiao	Won	Won	Won	Won	X	Lost	Lost	Lost	4
6	Mr Sugar Ray Robinson	Won	Won	Won	Won	Won	X	Lost	Lost	5
7	Mr Iron Mike Tyson	Won	Won	Won	Won	Won	Won	X	Lost	6
8	Mr Muhammad Ali	Won	Won	Won	Won	Won	Won	Won	X	7

Hence, Mr Robert Duran won 3 fights in the friendly competition.

39. 28

The final scenario is as below :

World No	Boxers	Mr Big George Foreman	Mr Joe Frazier	Mr Rocky Marciano	Mr Robert Duran	Mr Manny Pacquiao	Mr Sugar Ray Robinson	Mr Iron Mike Tyson	Mr Muhammad Ali	Prize money (million USD)
1	Mr Big George Foreman	X	Lost	Lost	Lost	Lost	Lost	Lost	Lost	X
2	Mr Joe Frazier	Won	X	Lost	Lost	Lost	Lost	Lost	Lost	1
3	Mr Rocky Marciano	Won	Won	X	Lost	Lost	Lost	Lost	Lost	2
4	Mr Robert Duran	Won	Won	Won	X	Lost	Lost	Lost	Lost	3
5	Mr Manny Pacquiao	Won	Won	Won	Won	X	Lost	Lost	Lost	4
6	Mr Sugar Ray Robinson	Won	Won	Won	Won	Won	X	Lost	Lost	5

7	Mr Iron Mike Tyson	Won	Won	Won	Won	Won	Won	X	Lost	6
8	Mr Muhammad Ali	Won	Won	Won	Won	Won	Won	Won	X	7

Hence, the total prize money (in USD) distributed among the winners of the fights in the friendly competition

$$= 1+2+3+4+5+6+7$$

$$= (7*8)/2$$

$$= 28 \text{ million USD}$$

40. C

The final scenario is as below :

World No	Boxers	Mr Big George Foreman	Mr Joe Frazier	Mr Rocky Marciano	Mr Robert Duran	Mr Manny Pacquiao	Mr Sugar Ray Robinson	Mr Iron Mike Tyson	Mr Muhammad Ali	Prize money (million USD)
1	Mr Big George Foreman	X	Lost	Lost	Lost	Lost	Lost	Lost	Lost	X
2	Mr Joe Frazier	Won	X	Lost	Lost	Lost	Lost	Lost	Lost	1
3	Mr Rocky Marciano	Won	Won	X	Lost	Lost	Lost	Lost	Lost	2
4	Mr Robert Duran	Won	Won	Won	X	Lost	Lost	Lost	Lost	3
5	Mr Manny Pacquiao	Won	Won	Won	Won	X	Lost	Lost	Lost	4
6	Mr Sugar Ray Robinson	Won	Won	Won	Won	Won	X	Lost	Lost	5
7	Mr Iron Mike Tyson	Won	Won	Won	Won	Won	Won	X	Lost	6
8	Mr Muhammad Ali	Won	Won	Won	Won	Won	Won	Won	X	7

If at the end of the friendly competition the eight boxers participating were re-ranked based on their prize money earned, such that the boxer with the highest amount of prize money would be world number one, the boxer with the second highest amount of prize money would be world number two, and so on, then the new ranking vis-à-vis prize money earned would be as below :

New Rank	Boxers	Prize money (million USD)
1	Mr Muhammad Ali	7

2	Mr Iron Mike Tyson	6
3	Mr Sugar Ray Robinson	5
4	Mr Manny Pacquiao	4
5	Mr Robert Duran	3
6	Mr Rocky Marciano	2
7	Mr Joe Frazier	1
8	Mr Big George Foreman	X

It can be observed that for Mr Manny Pacquiao the new rank of world number 4 is the same as the prize money of 4 million USD earned

41. A

As per the statement of Aryabhata,

$$\begin{array}{r}
 S \ A \ T \ U \ R \ N \\
 + \ U \ R \ A \ N \ U \ S \\
 \hline
 J \ U \ P \ I \ T \ E \ R
 \end{array}$$

A seven digit number added to another seven digit number has given an eight digit number. Hence J must be equal to 1, as the maximum value of S+U can be 18.

S+U can never be equal to a two digit number (≤ 18) whose units digit is U, unless a carrying of 1 has been added to it, and unless S is equal to 9.

Hence,

$$\begin{array}{r}
 9 \ A \ T \ U \ R \ N \\
 + \ U \ R \ A \ N \ U \ 9 \\
 \hline
 1 \ U \ P \ I \ T \ E \ R
 \end{array}$$

N+9 would be equal to 9 (that is S) if N is equal to 0. Since it is not so, hence N is not equal to 0. If N is any other digit, then R+1 must be equal to N, and N+9 must be a two digit number (≤ 18)

So R+U+1 is equal to a two digit number (≤ 18) with units digit E, because In the next column, U+N, that is U+R+1, must have a carrying of 1 added to it to be equal to a different two digit number (≤ 18) with units digit T Also we can conclude T is equal to E+1.

Hence,

$$\begin{array}{r}
 9 \ A \ (E+1) \ U \ (N-1) \ N \\
 + \ U \ (N-1) \ A \ N \ U \ 9 \\
 \hline
 1 \ U \ P \ I \ (E+1) \ E \ (N-1)
 \end{array}$$

1) Let N be equal to 8.

$$\begin{array}{r}
 9 \ A \ (E+1) \ U \ 7 \ 8 \\
 + \ U \ 7 \ A \ 8 \ U \ 9 \\
 \hline
 1 \ U \ P \ I \ (E+1) \ E \ 7
 \end{array}$$

a) Let U be equal to 0.

$$\begin{array}{r}
 9 \quad A \quad (E+1) \quad 0 \quad 7 \quad 8 \\
 + 0 \quad 7 \quad A \quad 8 \quad 0 \quad 9 \\
 \hline
 1 \quad 0 \quad P \quad I \quad (E+1) \quad E \quad 7
 \end{array}$$

But then E becomes equal to 8, which is not possible, as N is equal to 8.

b) Let U be equal to 2.

$$\begin{array}{r}
 9 \quad A \quad (E+1) \quad 2 \quad 7 \quad 8 \\
 + 2 \quad R \quad A \quad 8 \quad 2 \quad 9 \\
 \hline
 1 \quad 2 \quad P \quad I \quad (E+1) \quad E \quad 7
 \end{array}$$

So E becomes equal to 0, and T equal to 1, which is not possible, as J is equal to 1

c) Let U be equal to 3.

$$\begin{array}{r}
 9 \quad A \quad (E+1) \quad 3 \quad 7 \quad 8 \\
 + 3 \quad 7 \quad A \quad 8 \quad 3 \quad 9 \\
 \hline
 1 \quad 3 \quad P \quad I \quad (E+1) \quad E \quad 7
 \end{array}$$

But then E becomes equal to 1, which is not possible, as J is equal to 1

d) Let U be equal to 4.

$$\begin{array}{r}
 9 \quad A \quad (E+1) \quad 4 \quad 7 \quad 8 \\
 + 4 \quad 7 \quad A \quad 8 \quad 4 \quad 9 \\
 \hline
 1 \quad 4 \quad P \quad I \quad (E+1) \quad E \quad 7
 \end{array}$$

But then E becomes equal to 2, and T is equal to 3. Hence,

$$\begin{array}{r}
 9 \quad A \quad 3 \quad 4 \quad 7 \quad 8 \\
 + 4 \quad 7 \quad A \quad 8 \quad 4 \quad 9 \\
 \hline
 1 \quad 4 \quad P \quad I \quad 3 \quad 2 \quad 7
 \end{array}$$

But the remaining digits of 5, 6 and 0 can never substitute A, P or I in any order and produce the desired result as given.

e) Let U be equal to 5.

$$\begin{array}{r}
 9 \quad A \quad (E+1) \quad 5 \quad 7 \quad 8 \\
 + 5 \quad 7 \quad A \quad 8 \quad 5 \quad 9 \\
 \hline
 1 \quad 5 \quad P \quad I \quad (E+1) \quad E \quad 7
 \end{array}$$

But then E becomes equal to 3, and T equal to 4. Hence,

$$\begin{array}{r}
 9 \quad A \quad 4 \quad 5 \quad 7 \quad 8 \\
 + 5 \quad 7 \quad A \quad 8 \quad 5 \quad 9 \\
 \hline
 1 \quad 5 \quad P \quad I \quad 4 \quad 3 \quad 7
 \end{array}$$

But the remaining digits of 2, 6 and 0 can never substitute A, P or I in any order and produce the desired result as given.

f) Let U be equal to 6.

$$\begin{array}{r}
 9 \quad A \quad (E+1) \quad 6 \quad 7 \quad 8 \\
 + 6 \quad 7 \quad A \quad 8 \quad 6 \quad 9 \\
 \hline
 1 \quad 6 \quad P \quad I \quad (E+1) \quad E \quad 7
 \end{array}$$

But then E becomes equal to 4, and T equal to 5. Hence,

$$\begin{array}{r}
 9 \quad A \quad 5 \quad 6 \quad 7 \quad 8 \\
 + 6 \quad 7 \quad A \quad 8 \quad 6 \quad 9 \\
 \hline
 1 \quad 6 \quad P \quad I \quad 5 \quad 4 \quad 7
 \end{array}$$

But the remaining digits of 2, 3 and 0 can never substitute A, P or I in any order and produce the desired result as given.

g) U can have no other value, as 7, 8 and 9 are already taken.

2) Let N be equal to 7.

$$\begin{array}{r}
 9 \quad A \quad (E+1) \quad U \quad 6 \quad 7 \\
 + U \quad 6 \quad A \quad 7 \quad U \quad 9 \\
 \hline
 1 \quad U \quad P \quad I \quad (E+1) \quad E \quad 6
 \end{array}$$

a) Let U be equal to 0.

$$\begin{array}{r}
 9 \quad A \quad (E+1) \quad 0 \quad 6 \quad 7 \\
 + 0 \quad 6 \quad A \quad 7 \quad 0 \quad 9 \\
 \hline
 1 \quad 0 \quad P \quad I \quad (E+1) \quad E \quad 6
 \end{array}$$

But then E becomes equal to 7, which is not possible, as N is equal to 7.

b) Let U be equal to 2.

$$\begin{array}{r}
 9 \quad A \quad (E+1) \quad 2 \quad 6 \quad 7 \\
 + 2 \quad 6 \quad A \quad 7 \quad 2 \quad 9 \\
 \hline
 1 \quad 2 \quad P \quad I \quad (E+1) \quad E \quad 6
 \end{array}$$

So E becomes equal to 9, which is not possible, as S is equal to 9

Let U be equal to 3.

$$\begin{array}{r}
 9 \quad A \quad (E+1) \quad 3 \quad 6 \quad 7 \\
 + 3 \quad 6 \quad A \quad 7 \quad 3 \quad 9 \\
 \hline
 1 \quad 3 \quad P \quad I \quad (E+1) \quad E \quad 6
 \end{array}$$

But then E becomes equal to 0, and T is equal to 1, which is not possible, as J is equal to 1

c) Let U be equal to 4.

$$\begin{array}{r}
 9 \quad A \quad (E+1) \quad 4 \quad 6 \quad 7 \\
 + 4 \quad 6 \quad A \quad 7 \quad 4 \quad 9 \\
 \hline
 1 \quad 4 \quad P \quad I \quad (E+1) \quad E \quad 6
 \end{array}$$

But then E becomes equal to 1, which is not possible, as J is equal to 1

d) Let U be equal to 5.

$$\begin{array}{rcccccc} & 9 & A & (E+1) & 5 & 6 & 7 \\ + & 5 & 6 & A & 7 & 5 & 9 \\ \hline 1 & 5 & P & I & (E+1) & E & 6 \end{array}$$

But then E becomes equal to 2, and T equal to 3. Hence,

$$\begin{array}{rcccccc} & 9 & A & 3 & 5 & 6 & 7 \\ + & 5 & 6 & A & 7 & 5 & 9 \\ \hline 1 & 5 & P & I & 3 & 2 & 6 \end{array}$$

The remaining digits are 4, 8 and 0. If A is equal to 4, we get

$$\begin{array}{rcccccc} & 9 & 4 & 3 & 5 & 6 & 7 \\ + & 5 & 6 & 4 & 7 & 5 & 9 \\ \hline 1 & 5 & 0 & 8 & 3 & 2 & 6 \end{array}$$

The desired result is reached.

Hence, Varahamihira found out that the ten letters of the english alphabets Aryabhata had used in his statement of SATURN + URANUS = JUPITER were in place of the following digits :

A = 4,
E = 2,
I = 8,
J = 1,
N = 7,
P = 0,
R = 6,
S = 9,
T = 3, and
U = 5

Hence, as per the thought process of Aryabhata, the 'SUN' be represented by 957

42. B

We already know that the ten letters of the English alphabets Aryabhata had used in his statement of SATURN + URANUS = JUPITER were in place of the following digits :

A = 4,
E = 2,
I = 8,
J = 1,
N = 7,
P = 0,
R = 6,
S = 9,
T = 3, and
U = 5

Thus, in sync with the thought process of Aryabhata, the word PARASITE would be represented by 04649832.

Hence, the summation of the letters of PARASITE would be $0+4+6+4+9+8+3+2 = 36$

43. C

We already know that the ten letters of the English alphabets Aryabhata had used in his statement of SATURN + URANUS = JUPITER were in place of the following digits :

A = 4,
E = 2,
I = 8,
J = 1,
N = 7,
P = 0,
R = 6,
S = 9,
T = 3, and
U = 5

$(J\alpha)^2 = \beta\gamma J$, where $J\alpha$ is a two digit and $\beta\gamma J$ a three digit number respectively, and α , β and γ stand for any three of the distinct alphabets used by Aryabhata (except J)

31 is the largest, and 10 is the smallest, two digit number whose square is a three digit number ($31^2 = 961$ and $10^2 = 100$)

The tens digit of the two digit number and the units digit of the three digit number is J, that is 1 as per Aryabhata. Also α , β and γ are three distinct digits not equal to J, that is 1.

This condition is satisfied only by $19^2 = 361$.

Hence, α , β and γ are having the values of 9, 3 and 6 respectively.

$$\alpha * \beta * \gamma = 9 * 3 * 6 = 162$$

Hence, the crypto form used to express the value of $\alpha * \beta * \gamma$ is the crypto form used to express the value of 162, that is JRE

44. D

We already know that the ten letters of the English alphabets Aryabhata had used in his statement of SATURN + URANUS = JUPITER were in place of the following digits :

A = 4,
E = 2,
I = 8,
J = 1,
N = 7,
P = 0,
R = 6,
S = 9,
T = 3, and
U = 5

Hence,

$$[\{ (RINSE + JEANS - RISE) * UP \} / JUP + EAT + NUT * SPIN - ARTIST]$$

$$= \{[(68792 + 12479 - 6892) \times 50] / 150 + 243 + 753 \times 9087 - 463893\}$$

$$= \{[74379 \times 50] / 150 + 243 + 6842511 - 463893\}$$

$$= [24793 + 243 + 6842511 - 463893]$$

$$= 6403654$$

$$= \text{RAPTRUA}$$

Section - Quantitative Aptitude

45. 889000

In the beginning of 2018, Rs 1000 becomes $[10(1000) - 1000]$ i.e. Rs 9000

In the beginning of 2019, Rs 9000 becomes $[10(9000) - 1000]$ i.e. Rs 89000

In the beginning of 2020, Rs 89000 becomes $[10(89000) - 1000]$ i.e. Rs 889000

46. 7564

$$\log_4 (2x - y) - \log_9 x = 3$$

$$\Rightarrow \log_4 (2x - y)/x = 3$$

$$\Rightarrow (2x - y)/x = 64$$

$$\Rightarrow 2 - y/x = 64$$

$$\Rightarrow y/x = -62$$

Also,

$$\log_2 y - \log_2 x^2 = 1 - \log_2 4$$

$$\Rightarrow \log_2 y/x^2 = \log_2 2 - \log_2 4 = \log_2 \frac{1}{2}$$

$$\Rightarrow y/x^2 = \frac{1}{2}$$

$$\Rightarrow x^2/y = 2$$

Multiplying both equations

$$x = -124$$

$$y = 124 \times 62 = 7688$$

$$x + y = 7564$$

47. D

Let the speed of trains be a and b and the distance $= d$

Minimum time taken by 1st train $= 8$ hours,

For maximum difference in time taken by both of them, train 1 has to start at 9:00 AM and train 2 has to start at 11:00 AM.

Hence, train 2 will take 6 hours.

$$\text{Hence } a = d/8 \text{ and } b = d/6$$

Hence the speed of train 2 will exceed the speed of train 1 by

$$[(d/6 - d/8) / (d/8)] \times 100 = [(d/30) / (d/6)] \times 100 = 33.33\%$$

48. C

Total age of 11 students other than Geeta $= 16 \times 11 = 176$ years

Let age of Geeta $= x$

Total age of 12 students = $176 + x$

Average age of 12 students = $(176 + x)/12$

Average age of 11 students other than Rajesh = $(176 + x - 26)/11$

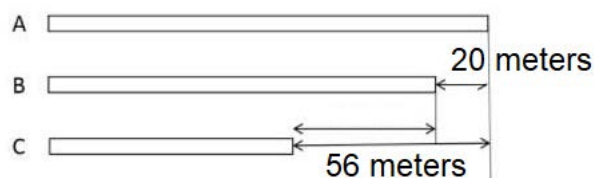
ATQ

$[(176 + x)/12 - (176 + x - 26)/11] < 1$

Using options

Answer is option (a)

49. 740



A beats B by 20 meters. When A completes x meters, B completes $(x - 20)$ meters and C completes $(x - 56)$ meters. Here x is length of the track.

When B completes x meters, C will complete = $[(x - 56)/(x - 20)]x$

ATQ

$x - [(x - 56)/(x - 20)]x = 37$

On solving, $x = 740$ m

50. C

ATQ

56% of m - 44% of $m = 7200$

12% of $m = 7200$

$m = 60000$

No of girls = 56% of 60000 = 33600

Number of students cleared the exam = 6% of 60000 = 3600

Number of Girls who cleared the exam = 3600 - 1600 = 2000

Percentage of girls who did not cleared the exam = $(33600 - 2000) \times 100/33600 = 94.04\%$

51. D

Distance covered by wheel A in 1 revolution = Circumference of wheel A = $2\pi(28)$ cm = 56π cm

Distance covered by wheel B in 1 revolution = Circumference of wheel A = $2\pi(36)$ cm = 72π cm

Number of revolutions made wheel A in distance p metre = $1000p/56\pi$

Number of revolutions made wheel B in distance p metre = $1000p/72\pi$

ATQ

$1000p/56\pi - 1000p/72\pi = m$

On solving, $p = 99m/125$

52. C

Since Seven men and Five Robots can finish a job in double the time as taken by five men and twelve robots to finish the same job. So, five men and twelve Robots can do double the work that was done by seven men and five robots in the same time.

So,

$2(7M + 5R) = (12R + 5M)$

$\Rightarrow 9M = 2R$

$\Rightarrow M/R = 2/9$

1 Men can do 2 units work in a day whereas a robot can do 9 units work in a day.

Total work = $60 \times 9 = 540$ units
 1 man can do 60 units of work in 30 days.
 Number of men require = $540/60 = 9$

53. A

For that, divide 1974 by 8 as shown

Divisor	quotient	Remainders
8	1974	6
8	246	6
8	30	6
	3	3

Write the remainders from bottom to top
 So, in base 12 year of birth is (3366)

54. 733200

2 out of 26 blacks, 2 out of 26 reds and 2 out of the remaining cards be selected
 ${}^{26}C_2 \times {}^{26}C_2 \times {}^{48}C_2 = 733200$

55. C

$$f(x)/g(x) = 3x^2/5x = 3x/5$$

$$h[f(x)/g(x)] = 2/(3x/5)^3 = 250/27x^3$$

$$h(x): h[f(x)/g(x)] = (2/x^3):(250/27x^3) = 27:125$$

56. A

Let Price of sugar cane per unit is $100x$ and $100y$ units of sugarcane is consumed initially.
 Expenditure = Cost of sugarcane + Labour cost = $(100x)(100y) + 15\% \text{ of } (100x)(100y)$
 $= 10000xy + 1500xy = 11500xy$

After increase in the price of sugarcane and labour cost;

Expenditure = $125xz + 20\% \text{ of } 125xz = 150xz$; where z is new consumption of sugarcane

Since Expenditure remains same. So,

$$11500xy = 150xz$$

$$\text{So, } z = 1150y/15 = 230y/3$$

$$\text{Reduction in usage of sugarcane} = 100y - 230y/3 = 70y/3$$

$$\text{Percentage reduction in usage of sugarcane} = (70y/3) \times 100/100y = 23.33\%$$

57. D

Let roots are α and β ;

Sum of roots; $\alpha + \beta = -a$

Product of roots; $\alpha\beta = b$

Also, $\alpha - \beta = 4$

$$(\alpha + \beta)^2 = (\alpha - \beta)^2 + 4\alpha\beta$$

$$\text{So, } (-a)^2 = 4^2 + 4b$$

$$\Rightarrow a^2 = 4^2 + 4b$$

$$\Rightarrow a^2 = 4(4 + b)$$

58. 2

$$7x = 2 + 3y$$

For integral solutions, $(2 + 3y)$ should be multiple of 7.

$$y = 4, x = 2$$

$$y = 18, x = 8$$

$$y = 25, x = 11$$

So, only two solutions are feasible since $y > 4$.

59. 2

$$\text{Area} = \frac{1}{2} (\text{base}) (\text{height}) = \frac{1}{2} b (7b^2 - 84) = \frac{7b^3}{2} - 84b/2$$

For Area to be maximum, find $dA/db = 21/2 b^2 - 42 = 0$

$$\Rightarrow b^2 = 4$$

$$\Rightarrow b = 2 \text{ or } b = -2.$$

Now find $d^2A/db^2 = 21b$

At $b = 2$; $d^2A/db^2 = 42$ which is greater than 0, so at $b = 2$, we get minimum value of Area.

Hence the answer is 2.

60. B

Probability of selecting towel from one room is $\frac{1}{2}$.

Probability of getting one red towels = $\frac{1}{2} \times \frac{5}{9} + \frac{1}{2} \times \frac{6}{9}$

61. 1

Let the average age of executives is x and there are n executives in the office.

Let the age of associate director is y .

$$\text{So, } nx + y = (n+1) 20$$

$$\text{Also, } nx + y + 50 = (n+2) 30$$

Subtract 1st equation from the 2nd, we get

$$50 = 30n + 60 - 20n - 20$$

$$50 = 10n + 40$$

So, $n = 1$. There is 1 executive in the office.

62. B

Case 1: Sum of two equal sides = 10

Sides of the triangle should be 5, 5, a

Also, $a < (5 + 5)$

$\Rightarrow a = [1, 2, 3, 4, 5, 6, 7, 8, 9]$ **9 possible triangles are there.**

Case 2: Sum of two unequal sides = 10

Sides of the triangle should be $a, a, 10 - a$

$$a + a > 10 - a \text{ and } a < 10$$

$$3a > 10$$

$a > 10/3$ but less than 10; So, a can be 4, 5, 6, 7, 8, 9

If $a = 5$ then other sides will also be 5 and 5. This case is already taken in Case 1.

Here 5 such triangles are possible.

Therefore, Answer is $9 + 5 = 14$.

63. 200

Let the investments made by Ashutosh, Bijay and Chaman are A, B and C respectively.

So, ratio of interest earned by them is

$$6A : 5B : 6C$$

ATQ

$$5B - 6A = 2400$$

$$\text{and } 5B - 6C = 3600$$

Subtracting 1st equation from 2nd

$$6A - 6C = 1200$$

$$\text{So, } A - C = \text{Rs } 200$$

64. A

Let the numbers are a and b.

$$\text{So, } \sqrt{ab} = 60$$

$$\text{or } ab = 3600$$

Also,

$$\frac{a+b}{a-b} = \frac{25}{7}$$

Using Componendo and Dividendo

$$\frac{2a}{2b} = \frac{25+7}{25-7}$$

$$\Rightarrow a/b = 32/18 = 16/9$$

$$\Rightarrow a = 16b/9$$

Put this value in 1st equation

$$(16b/9)b = 3600$$

$$\Rightarrow b^2 = 225 \times 9$$

$$\Rightarrow b = 15 \times 3 = 45$$

$$\text{So, } a = 80$$

$$\text{Required answer} = (80 - 45)^2 = 1225$$

65. C

$$(\sqrt{6})^{2p} 4^{3mq} = 2^{2p} 3^{nq}$$

$$\Rightarrow 6^p 2^{6mq} = 2^{2p} 3^{nq}$$

$$\Rightarrow 3^p 2^p 2^{6mq} = 2^{2p} 3^{nq}$$

$$\Rightarrow 3^p 2^{p+6mq} = 2^{2p} 3^{nq}$$

On comparing

$$p = nq \text{ and } (p + 6mq) = 2p$$

$$\text{So, } 6mq = nq$$

$$\text{Or, } 6m = n$$

Put $m = 1$, $n = 6$; both are co-primes

m is always having a common factor with n i.e. m .

So, there is only 1 pair in m and n that can exist satisfying the given conditions.

66. C

Let Maximum marks be $100x$

1st Condition:

$$\text{Passing marks} = 30x + m$$

2nd Condition: (marks increased by 50% i.e. $30x + 15x = 45x$)

$$\text{Passing marks} = 45x + n$$

$$30x + m = 45x + n$$
$$\Rightarrow 15x = m - n$$

3rd Condition: (Sunil gets 20% more marks than post-review marks of Manoj i.e. $45x + 9x = 54x$)

So, $30x + m = 54x \Rightarrow m = 24x$

And, $45x + n = 54x \Rightarrow n = 9x$

$m - n = 15x$ i.e. 15% of maximum marks.

CAREERS360

MOCK TEST – 14

Section - 1 - Verbal Ability & Reading Comprehension

Directions for Questions 1 to 4: Read the passage given below and answer the questions that follow.

Passage-1

Waleed Rally says that the genius of American patriotism is that it manages to be inclusive. The same cannot easily be said of Australian patriotism, and certainly cannot be said of the European version, which is so often expressed in moral panics about the supposed disloyalty of migrants. He then asks: What accounts for the difference? At first blush, the answer is as simple as it is patriotically appealing: that the patriotism of minorities simply mirrors the patriotism of the majority. That is, patriotism is a result of social pressure. If we only demand it stridently enough, our minorities will learn to love us. Or, to put it more acerbically, multiculturalism is a death wish. Such has been the diagnosis of a thousand culture warriors in recent years. Europe's flirtation with multiculturalism has killed its sense of self and allowed its recalcitrant minorities to disappear into a fog of cultural relativism and escape any sense of loyalty to the nation. Europe's multiculturalism is even said to have fostered subcultures hostile to it.

There is something different operating in America, something more subtle, complex and ingenious than the brutish social politics of monoculturalism. Something that is not ultimately about multiculturalism or migration, but about a more comprehensive phenomenon: national identity. There is something in the way America thinks and talks about itself that enables widespread national loyalty and astonishing diversity to coexist. Even its rioters rarely shun their American identity; instead, they assert their place in the nation.

America, like Australia, New Zealand and Canada, is part of the New World and created from settlement (or conquest) and migration. This creates a fundamentally different dynamic, for it is immediately apparent that there is nothing organic about these nations. The vanquished indigenous aside, everyone is a migrant to some degree, which necessarily fosters a more fluid, open notion of national identity: one that is not so firmly anchored in ethnicity as in Europe. Yet this does not explain why the United States should be any different to Australia.

Rally says that America has its creed, but one that corresponds to no particular religious tradition. It is a civil creed constructed on the central political idea of individual liberty. The US was settled by people fleeing religious persecution in Europe; it was thus almost inevitable that freedom, especially of religion, would become the new nation's touchstone. A people who had struggled to attain religious freedom could not easily found a nation on principles that denied that right to others: Theirs is a sense of self that is forward-looking, oriented towards constant improvement.

In contrast the message of Australia's staunchest patriots is that ours is a great country with a great history and no need for change. It is a message that replicates the European sense of national self, one bound in a fixed history. The history wars were so intense in Australia for the very reason that our sense of national pride is not forward-looking.

Q1. Which, out of the following, cannot be inferred from the passage?

- A. National identity, in the case of America, overpowers other social factors when it comes to patriotism.
- B. The Australian and the American sense of pride are dissimilar.
- C. It is claimed that European multiculturalism has led to creation of antagonistic fragments in its society.
- D. None of the above

Q2. The primary purpose of the author of the passage is:

- A. to majorly criticize two forms of patriotism and mostly praise another.
- B. to appreciate one form of patriotism against the backdrop of issues in two other forms.
- C. to learn from a particular form of patriotism.
- D. to understand different forms of patriotism.

Q3. According to the information given in the passage:

- A. America, Australia, New Zealand and Canada have come through a common process of evolution.
- B. America, Australia, New Zealand and Canada, created in a similar fashion, have not evolved in the natural and traditional ways in which countries do.
- C. America, unlike Australia, New Zealand and Canada, has not come up the organic way and has a fundamentally different dynamic.
- D. America, like Australia, New Zealand and Canada, has a fluid and open notion of national identity.

Q4. When the author says “Yet this does not explain why the United States should be any different to Australia”, he implies:

- I. The nature of how Australia and America were created, with settlement and migration as cornerstones, does only explain a limited part of identities in these nations.
- II. America is constructed on the central idea of individual liberty and does not correspond to particular religious tradition.
- III. Australia and America, despite the common elements, are different from one another.
- IV. Australia and America are not similar to Europe when it comes to national identity.

- A. I, II, and III
- B. II, III and IV
- C. I, III, and IV
- D. All of the above

Directions for Questions 5 to 8: Read the passage given below and answer the questions that follow.

Passage-2

“It was a bright cold day in April,” said Richard Blair, “and the clocks were striking thirteen.”

Blair is seventy-three and the son of George Orwell. To witness him stand at a lectern and read the opening line of his father’s great final novel, 1984, is to experience a sense of completion, an equation solved. We were in the Senate House, now part of the University of London, for 1984 Live. For the first

time in the United Kingdom, the book was to be read aloud publicly from start to finish. It had been estimated that it would take sixty or so readers—well-known journalists, academics, actors, activists—thirteen hours, that Orwellian number, to get from the bright cold day to the gin-scented tears. The event director, Jean Seaton, explained that the idea had come “last summer, just after Brexit, but before Trump. The world felt dark and full of lies. Still does.”

Since then, 1984 has taken on a strange currency; the electric charge of Orwell’s thinking hums and crackles through the culture. In January the novel topped Amazon’s bestseller list, almost seventy years since it was first published in 1949. Demand began to rise, according to Penguin Random House, shortly after Kellyanne Conway used the expression “alternative facts” to defend Sean Spicer’s claim that Donald Trump had attracted the largest audience ever to witness a presidential inauguration, period. By July 2017 sales had doubled over the same period in 2016. Half a million copies were printed in January alone.

All political moments are Orwellian, but some are more Orwellian than others. Reading 1984 “hurts” right now, according to Jean Seaton, but perhaps there is also something soothing in the recognition that the novel’s darkness looks so much like our own. “It feels like 1984 is here in our faces,” she told me.

George Orwell, whose real name was Eric Blair, wrote the novel between the summer of 1946 and the winter of 1948, mostly on the island of Jura, off the west coast of Scotland, where he had taken a house, moving there from austere post-war London. It tells the story of Winston Smith, a citizen of the state of Oceania, and his attempted rebellion—through sex and love and the written word—against the Party, which observes and controls every aspect of life. The novel has given us familiar concepts such as Big Brother and Room 101. Published in the United Kingdom on June 8, 1949, and five days later in the United States, the reviews at once recognized its significance. Mark Schorer wrote in the New York Times that “no other work of this generation has made us desire freedom more earnestly or loathe tyranny with such fullness.”

Orwell grew concerned that the novel was being interpreted across the Atlantic as an anti-communist or anti-left polemic, rather than the warning against totalitarianism that he had intended. True, he said, the name he had given to the political ideology of Oceania was Ingsoc—or English Socialism—but he could easily have chosen something different: “In the USA the phrase ‘Americanism’ or ‘hundred percent Americanism’ is suitable and . . . as totalitarian as anyone could wish.” One thinks of Trump’s inauguration, Capitol Hill within a belfry of cloud, and the tolling bell of his promise: “America first, America first.”

Q5. What does the author mean by 'All political moments are Orwellian'?

- A. All political moments are dystopian
- B. All political moments are utopian
- C. All political moments are fragmentary
- D. All political moments are fatuous

Q6. Which, out of the following statements, are correct?

- I. Post World War II, London bore an austere look.
- II. 1984 is the most sold book on Amazon in 2017.
- III. The number 13 did have a significant relation with Orwell's work.

- A. I & II

- B. II & III
- C. I & III
- D. All of the above

Q7. The meaning of the phrase “alternative facts”, in all probability, is:

- A. Facts which are true in one sense but not in another.
- B. Additional facts and alternative information.
- C. Facts which are always true in alternate dimensions.
- D. Alternative facts are not facts; they're falsehoods.

Q8. All of the following can be inferred from the passage except:

- A. The current political climate across the globe has contributed to 1984 again becoming popular.
- B. In the novel 1984, Orwell portrayed a regime that was in total control and did not allow dissent of any kind.
- C. What the world is seeing today is a near-about mirror image of Oceania in 1984.
- D. The America of today is displaying the kind of traits that are present in 1984.

Directions for Questions 9 to 12: Read the passage given below and answer the questions that follow.

Passage-3

I've been frequently asked if I think it's good for a writer to have been to war. My answer is usually that war isn't good for anyone. Setting that aside for the moment, an argument can be made that witnessing or taking part in a battle might not harm a writer—provided that he or she doesn't see too much of it. However, as prolonged exposure to direct sunlight can blind the eyes, prolonged exposure to combat can blind the writer's imagination, making it difficult to impossible to write about anything else. I recall when Joseph Heller and I shared the stage at a literary festival in Cheltenham, England, in 1993. He remarked that many of the writers we associate with the war novel were not in action for very long. Hemingway, for example, served on the Italian front in WWI for a mere 12 days. Heller himself flew mostly routine missions as a bombardier in WWII. He'd hardly been shot at, and believed that if he'd been in the thick of it, he might have been unable to write the ten books that followed *Catch-22*.

I'm a journalist as well as a novelist who has seen the red-eyed devil from almost every angle—as a participant, an observer, and a casualty. I served 16 months with a marine infantry regiment in Vietnam. As a correspondent for the *Chicago Tribune*, *Esquire*, and *National Geographic*, I covered the fall of Saigon in 1975, and conflicts in Israel, Lebanon, Cyprus, Eritrea, Afghanistan, and Sudan. I got out of Vietnam without a scratch, but while reporting on the Lebanese civil war, I became part of the story when I was wounded in both legs by automatic rifle fire, suffering injuries that put me in a hospital for a month and in a wheelchair or on crutches for six more months.

I've written on many topics. Most of my nonfiction isn't remotely about war. My last book, *The Longest Road*, was a travel memoir. But, directly or indirectly, the experiences I just mentioned have influenced almost everything I've put on paper. I cannot escape them; but I am not a war novelist in the same sense that Elmore Leonard was a mystery writer or Stephen King is a horror novelist. I am a writer who has written about war. That's a distinction with a difference.

Out of my 16 books, only the first one, *A Rumor of War*, concerns itself with war and nothing else. Otherwise, in novels like *Horn of Africa*, *Acts of Faith*, and the novella, *In the Forest of the Laughing Elephant*, the field of armed strife has been to me what the sea was to Joseph Conrad and Herman

Melville—a setting in which the conflicts and contradictions within our natures are revealed, with a clarity seldom seen in ordinary life. War prohibits all retreat into the familiar confines of whatever illusions people may have had about themselves, laying bare bedrock truths about their characters. Those truths can be unflattering. Some people, like the protagonist in Stephen Crane's *The Red Badge of Courage*, learn that they are not as brave or as good as they had imagined themselves to be. Sometimes, but no less compelling, they discover virtues they did not realize they had. But more often, they come face to face with both the best and the worst that's in them, their angels cohabiting, as it were, with their demons.

It's in that broader sense that my baptism of fire in Vietnam has affected much of my fiction. A typical situation for my characters is to find themselves in a strange, dangerous place where they strive to do what's right when everything around them prompts them to do the opposite. They are confronted by hard moral choices in circumstances stripped of the usual guideposts and of external restraints—laws, policemen, public opinion—forcing them to rely on their own inner resources. Some drill down and discover that they don't have any.

Q9. The primary purpose of the author of the passage is:

- A. to highlight a particular sensitivity in people
- B. to discuss a particular genre of work
- C. to enhance the value of a category of literature
- D. to support a particular style of representation

Q10. All of the following are true according to the information given in the passage except:

- A. the experience of the author in Vietnam had a deep impact on his writing.
- B. most authors who write on the war are actually not in action for long.
- C. some characters of the author lack the inner resources to make tough choices.
- D. Joseph Heller believes that if he had been exposed to war in a deeper manner, he might not have been able to produce the same kind of literary output that he did.

Q11. The phrase 'red-eyed devil' highlights which aspect of war:

I. bloodshed and loss of life

II. injury and casualty

III. material loss and destruction

- A. I & II
- B. II & III
- C. I & III
- D. None of the above

Q12. The reference to Joseph Conrad and Herman Melville in the second last paragraph of the passage can be identified as:

- A. an example
- B. an analogy
- C. a correlation
- D. a lesson

Directions for Questions 13 to 16: Read the passage given below and answer the questions that follow.

Passage-4

I bought my copy of Gaston Bachelard's *The Poetics of Space* at the Architectural Association's Triangle Bookshop, at a time when inner London telephone codes still began with '071' and while I was the architectural correspondent of the Sunday newspaper *The Observer*. That copy has been on the bookshelf above my desk ever since, kept for a lull and quieter times. Now, refreshing my memories of the book, at a moment when the prevailing blandness of planning and design rarely allows for a subjective, even poetic, response, I've plunged back into grappling with its enduring, infuriating attractions.

La Poétique de l'Espace (1958) was first published in English in 1964, two years after Bachelard's death, then in paperback in 1969, and reissued in 1994. An allusive little book, its author was a highly-respected philosopher who late in his career had turned from science to poetry. Nothing about his intellectual journey had been orthodox, particularly as measured against the rigid norms of French academic life and advancement. He was from a provincial background in Champagne, a post-office employee, who rose largely through intellectual tenacity to hold a chair in philosophy at the Sorbonne. Bachelard was, by all accounts, an inimitable lecturer, and on the page he wanders around, as amiable and gentle a cicerone as you could hope to find, introducing himself as 'an addict of felicitous reading' whose aim is to extend perceptions, deepen resonances and reinforce connections. *The Poetics of Space*, his final book, soon appeared on academic reading lists, and in schools of architecture and art, squeezed in alongside the works of better-known cultural theorists and practitioners. Surprisingly enough, it is still there.

'Bachelardian' has become a cultural shorthand for the lyrical possibilities of conjuring memory from buildings, and it is this book that brought it, and him, to prominence outside France. The first chapter, dealing with 'the house from cellar to garret' might well be all that the student will read, since, unlike the direct and determinist link between ideas of surveillance in Michel Foucault's writings and their roots in Jeremy Bentham's *Panopticon*, Bachelard's dependence on poetry, with digressions into botany, Carl Jung and much else, is intriguing but always elliptical. It remains, according to my limited international straw poll across the generations, a book still more often cited than read.

In 1961, Bachelard was interviewed, aged almost 80, at home in his tiny claustrophobic study in Paris. He sits snugly, seemingly shoe-horned into the only available space, between teetering heaps of books piled floor to ceiling, folios to slim pamphlets, the philosopher incarnate, down to his effulgent Socratic beard and unruly white hair. Life, he tells his awed interviewer lightly, is about thinking and then getting on with living. He admits to listening to the radio news every day.

As Foucault said of Bachelard a few years later, his characteristic approach was to avoid all defined hierarchies, any universal judgments: 'He plays against his own culture with his own culture.' He stood apart, separating himself from the mainstream, finding cracks, dissonances, minor phenomena that he could make his own. Poetry of every description was his raw material.

Q13. Which of the following statements is incorrect as per the information given in the passage?

- A. The author did not read 'The Poetics of Space' for a very long time.
- B. The *Poetics of Space* does contain a lot of indirect references.
- C. Gaston Bachelard rose up the ranks of philosophy by forging a career that tip-toed along expected paths.
- D. Gaston Bachelard displayed ample intellectual persistence to rise up the ranks.

Q14. It can be inferred from the passage that students don't read the complete book of Bachelard as:

- A. they don't connect with his themes and writing styles
- B. they are too scared by the heavy emphasis on poetry
- C. they are challenged by the obscure and indirect style of writing
- D. all of the above

Q15. It can be inferred from the passage that:

- A. modern day design and planning is prosaic in nature
- B. modern day design and planning is poetic in nature
- C. modern day design and planning is ingenious in nature
- D. modern day design and planning is superficial in nature

Q16. According to the information given in the passage:

I. Bachelard placed thought above action in the way he approached life.

II. 'Bachelardian' has become a symbolic term signifying a certain sentiment and this is due to the book, the Poetics of Space.

III. To the surprise of the author, the Poetics of Space is still a part of academic reading lists.

- A. I & II
- B. II & III
- C. I & III
- D. All of the above

Directions for the Question: Identify the apt summary for the given paragraph. Enter the option number you deem as the correct answer.

Q17. What has been revelatory is how theatre can in a matter of minutes bring to life and humanize the facts and figures of important academic work. In the 40 minutes of the performance, we are taken on a tram journey to the "most important meeting" in a young asylum seeker's life. We sit with a newly arrived young mother in a cockroach-ridden bedsit, and empathize with the refugee who no longer wants to speak of anything that led him to this point. But we are also reminded that migration isn't exclusively the preserve of those fleeing terror and war: a couple set up an English restaurant when they emigrate to Spain, someone starts a new life in Australia. Overwhelmingly, though, this experience is a rallying cry for kindness and connection. Hopefully, the line "Somewhere in a cafe in Colwyn Bay, someone has a cup of tea with a stranger from another country" can inspire us to see beyond the headlines, the numbers, the faceless masses, and our own notions of what migration is, and see each other as human beings without borders.

- A. Theatre, in its own style, delivers important messages and helps us understand deeper issues affecting the world.
- B. Theatre, with its inimical style, can bring out the best in individuals.
- C. Theatre, though limited by time restraints, is the only medium to convey the deeper issues of society.
- D. Theatre, with its performance centric-narrative, lends voice to important issues and can show us the mirror as a society.

Directions for the Question: Identify the apt summary for the given paragraph. Enter the option number you deem as the correct answer.

Q18. Why is unemployment so low in countries where inflation remains subdued? For economists, this is a fundamental question. And when economists confront a fundamental question, fundamental disagreement often follows. I was one of the rebel economists of the 1960s who rejected the macroeconomics we were taught in the 1950s – the “Keynesian” theory developed by J.R. Hicks, A.W. Phillips and James Tobin, according to which aggregate demand drove everything. High unemployment was caused only by deficient demand, and low unemployment only by abnormally high demand. This bothered us, because the basic economic theory we were taught – the theory built by Alfred Marshall, Knut Wicksell, and Robert Solow – said everything was driven by structural forces. Faster technological progress and a greater preference to work or to save were to be welcomed, because they would boost the supply of labor and capital – and thus employment and investment. But the Keynesians maintained that structural forces were bad, because they cost people their jobs, unless policy makers manufactured enough demand to match the increase in supply.

- A. Inflation and unemployment remain unsolvable puzzles.
- B. Particular models to understand inflation and unemployment might not be actually suitable to do so.
- C. Inflation and unemployment need separate treatment and conventional economics cannot provide the same.
- D. Inflation and unemployment cannot be explained by one particular model and need more than just plain and simple economics.

Directions for the Question: Identify the apt summary for the given paragraph. Enter the option number you deem as the correct answer.

Q19. As it turns 40 this year, ILM can claim to have played a defining role making effects for 317 movies. But that’s only part of the story: Pixar began, essentially, as an ILM internal investigation. Photoshop was invented, in part, by an ILM employee tinkering with programming in his time away from work. Billions of lines of code have been formulated there. Along the way ILM has put tentacles into pirate beards, turned a man into mercury, and dominated box office charts with computer-generated dinosaurs and superheroes. What defines ILM, however, isn’t a signature look, feel, or tone—those change project by project. Rather, it’s the indefatigable spirit of innovation that each of the 43 subjects interviewed for this oral history mentioned time and again. It is the Force that sustains the place.

- A. ILM has many achievements to its credit, such as Pixar, Photoshop and others; collectively, these give ILM the magic touch that it is famous for.
- B. ILM has many achievements to its credit; however, it’s defined not by these achievements but by the attitude of the team working there.
- C. ILM has been phenomenally successful over the years, working in 317 movies over the past 40 years; this is combined with its success in outcomes such as Pixar and Photoshop.
- D. ILM is successful due to the team and their attitude, not because of any external forces at play.

Directions for the Question: The question below has a paragraph given with one sentence missing in at the end. From among the answer choices given, select the sentence that can fill the blank to form a coherent paragraph.

Q20. Its demise coincides with grime’s eventual transformation into a mainstream genre. Rappers like Skepta are now regularly plastered across music video channels that once wouldn’t air them, and this is perhaps in part what rendered the station redundant: black British music now dominates the charts, garners international acclaim and is embedded in British culture to an extent we’ve never seen before. But all this would have been impossible without Channel U. (_____)

- a. Founded in 2003 by Darren Platt, the satellite channel sat at 385 and its position – huddled several clicks away from more mainstream channels like Kiss, The Box and MTV – was a perfect allegory for the scene it represented.
- b. Even when artists were commercially successful, it didn't mean the mainstream were willing to give them airtime. Channel U did this.
- c. Before its existence, fans relied on pirate radio stations, YouTube uploads, and audio files Blue toothed back and forth at the back of the bus; Channel AKA took the scene from phones to televisions.
- d. It quickly became the home of the young and label-less, putting faces to the voices that lived in our Blackberrys.

Directions for the Question: The question below has a paragraph given with one sentence missing in at the end. From among the answer choices given, select the sentence that can fill the blank to form a coherent paragraph.

Q21. The question below has a paragraph given with one sentence missing at the end. From among the answer choices given, select the sentence that can fill the blank to form a coherent paragraph.

Snowden knew at that moment his old life was over. "It was scary but it was liberating," he said. "There was a sense of finality. There was no going back." What has happened in the five years since? He is one of the most famous fugitives in the world, the subject of an Oscar-winning documentary, a Hollywood movie, and at least a dozen books. Courts, on the basis of his revelations, have ruled surveillance by the US and UK governments illegal. New legislation has been passed in both countries. (_____)

- a. The nations were shattered as all the secrets were floating online.
- b. The five years have indeed affected his life as he has been on the run. The US has been trying to capture him.
- c. The internet companies, responding to a public backlash over privacy, have made encryption commonplace.
- d. We now know because of him that we have been watched and our privacy has been breached badly.

Directions for questions 22: In the following question, rearrange the five sentences in order to form a meaningful paragraph.

TITA

Q22.

1. Four years before World War I shattered the empires of Europe, the Encyclopedia Britannica predicted an indefinite age of peace and commercial prosperity.
2. Thanks to technology and moral enlightenment, the writers judged, an increasingly connected world was hurtling toward the age of "cosmopolitan man," who would enjoy leisure and freedom in a global community of equals.
3. Published at the high-water mark of imperial self-confidence, the entry on "civilization" was particularly optimistic.
4. "When this ideal is attained," the Encyclopedia promised, "mankind will again represent a single family, as it did in the day when our primeval ancestors first entered on the pathway of progress."

Directions for questions 23: In the following question, rearrange the five sentences in order to form a meaningful paragraph.

TITA

Q23.

1. It has grown into a major world economy, particularly in automobiles, and electronic goods.
2. South Korea, for years, has been nurtured as a US ally.
3. No superpower by its very nomenclature likes that.
4. It has quality products, and can be a manufacturing goods solution to the US, creating more jobs, and friendly trade adjustments, where deficits may not loom as economic threats, nor even be suggestible as what the US may like to interpret as political indolence.

Directions for questions 24: In the following question, rearrange the five sentences in order to form a meaningful paragraph.

TITA

Q24.

1. In World War I, Germany was stuck in the impasse of trench warfare. It faced French-British troops in the west, and Russians in the east.
2. Communists will celebrate the centenary of the Russian Revolution of 1917 as a triumph of workers and peasants. In fact it owed much to a German diplomatic plot, executed through an armed coup by Lenin.
3. Breaking through trench lines required massive military dominance, which neither side had. So, all advances ended in bloody stalemates.
4. Germany badly needed a deal with Russia in order to shift forces from the eastern to the western front.

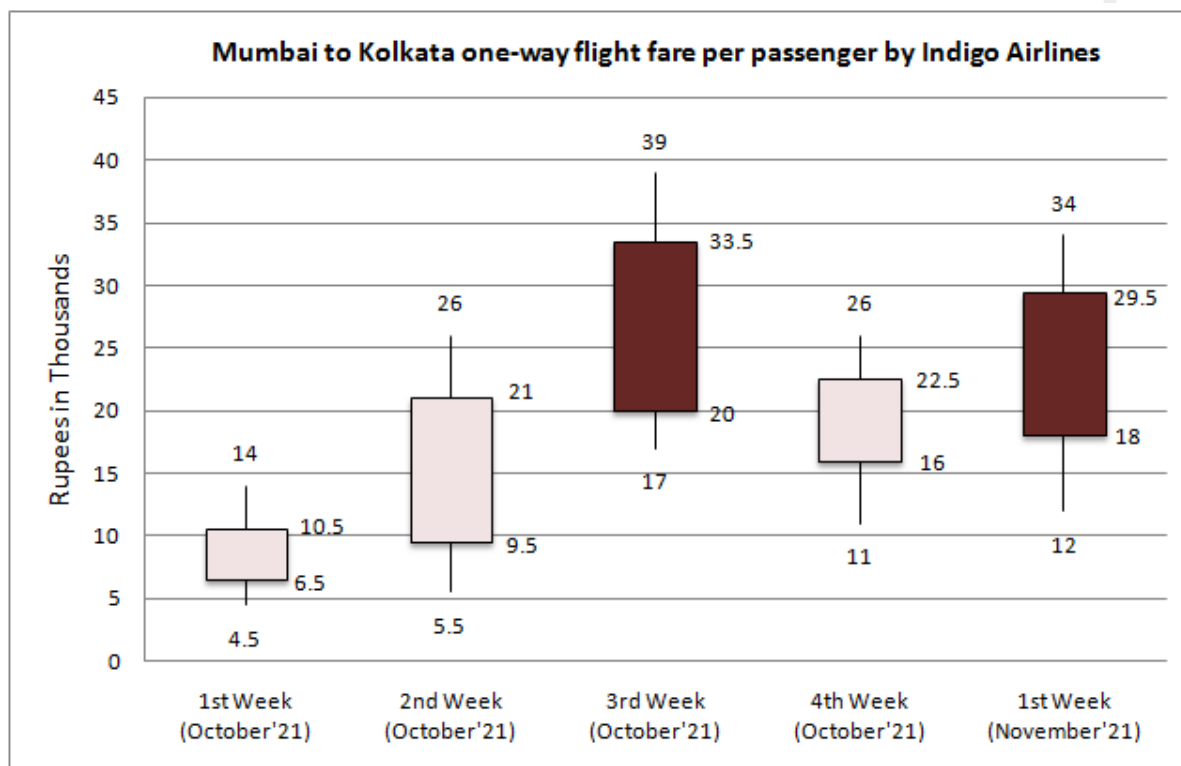
Section - 2 - Data Interpretation and Logical Reasoning

Directions for questions from 25 to 27 :

Durga Puja and Kali Puja are the two festive occasions when all Bengalis working in Mumbai like to come home to Kolkata. As a result the air-fares from Mumbai to Kolkata during this time of the year tend to go through the roof. In the present age of variable pricing, the fluctuation of the price of a one-way ticket is also high.

In 2021, Durga Puja fell in the third week of October and Kali Puja in the first week of November.

The prices of the one-way flight ticket per passenger from Mumbai to Kolkata by Indigo Airlines from the 1st week of October 2021 to the 1st week of November 2021 are as given in the following candle-stick chart. All the figures denoted are in thousands of rupees. The top end and the bottom end of the candle-wick (vertical line on the top and bottom of every candle) depict the maximum and minimum values attained respectively of the ticket price in the week. The ceiling and floor of the candles depict the opening price and the closing price for the week respectively for the dark shaded candles, and the opposite (that is the closing price and the opening price for the week) for the light shaded candles.



Q 25 (TITA)

The Banerjee and the Sengupta families, who were neighbours staying in Mumbai, decided to visit Kolkata during Durga Puja. They purchased their tickets for the second week of October 2021 from two different online travel agents -- Buymyticket.com and Bookmyticket.com respectively, each charging commissions of five and seven percent on the ticket value booked respectively. The Banerjee family booked three one-way Mumbai to Kolkata tickets of Indigo Airlines, while the Senguptas booked five tickets in the same flight. The Banerjees purchased their tickets at the opening price of the week, while the Senguptas purchased it at the average of the maximum and minimum values attained of the ticket price for the week. What was the difference of the amount of commission paid (in Rs) to the online travel agents by the Banerjee and the Sengupta families ?

Q 26 (TITA)

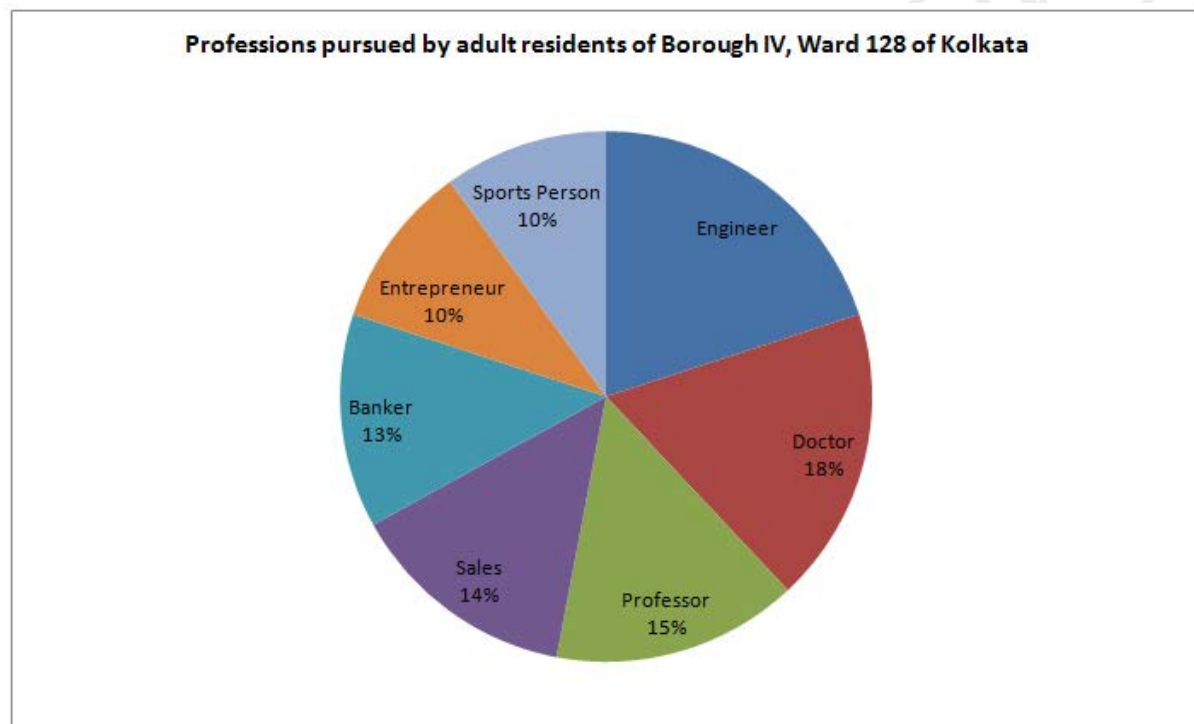
By what percent is the opening price of a one-way Mumbai to Kolkata ticket by Indigo Airlines in the third week of October more than the closing price of the ticket in the fourth week of October 2021 ?

Q 27 (TITA)

Mr Sinha had purchased a one-way ticket from Mumbai to Kolkata by Indigo Airlines for the first week of October 2021, from the Indigo Airlines ticket booking counter, at the minimum value of the ticket price for the week. However his plans got changed and he had to cancel the booking. He booked another one-way Mumbai Kolkata ticket at the same airlines at the closing price for the first week of November 2021 from a travel agent charging four percent of the ticket value as commission. If on cancellation of a ticket, only forty percent of the ticket value is refunded, what was the actual overall expense (in Rs) of Mr Sinha to travel one-way from Mumbai to Kolkata by Indigo Airlines ?

Directions for questions from 28 to 30 :

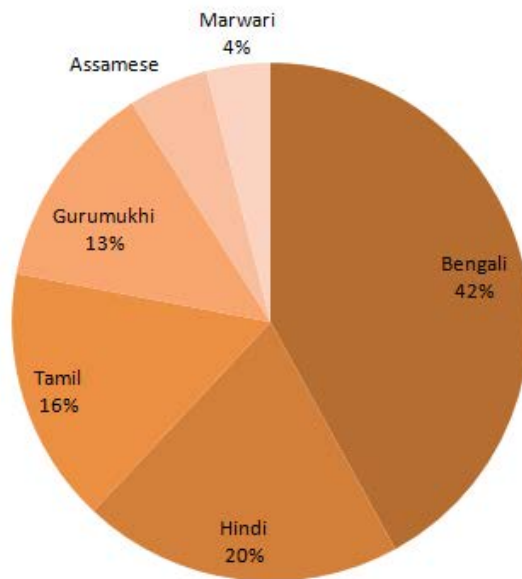
The result of a survey conducted by the Municipal Corporation of Kolkata about the professions pursued by the resident adult population in Borough XIV, Ward 128, of Kolkata yielded the following result expressed as a pie-chart :



On further detailed survey on the mother-tongue of the residents, it was revealed that out of the doctors, the count of mother-tongue when expressed in a pie-chart was as follows :

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Mother-tongue of the Doctors residing in Borough IV, Ward 128 of Kolkata



It was found that only 9 Doctors had Assamese as their mother tongue.

Q 28 (TITA)

How many residents in Borough IV, Ward 128 in Kolkata were Engineers by profession ?

Q 29 (TITA)

If the ratio of Doctors in Borough IV, Ward 128 in Kolkata who have their mother-tongue as Tamil are the same as the Professors whose mother-tongue is Gurumukhi, how many Professors have Gurumukhi as their mother-tongue ?

Q 30 (TITA)

By dint of the survey it was found that 11% of all the residents in Borough IV, Ward 128 in Kolkata were having their mother-tongue as Hindi. What could be the largest possible fraction of the Sales professionals in Borough IV, Ward 128 in Kolkata whose mother tongue was Hindi ?

Directions for questions from 31 to 34 :

The mighty kingdom of the Vanars (monkeys) located at Dandakaranya, with the capital as Kishkindha, was ruled by the mighty King Bali. The top engineer of the kingdom, Nala, had a boon from Brahma that rocks thrown by him in water would stay afloat. Hence Nala was entrusted by Lord Rama to build the Ram Setu across the ocean to Lanka, which would enable him to rescue his wife Sita from the clutches of King Ravana of Lanka.

Once the Ram Setu was complete, King Bali decided to do a reconnaissance of the Setu and the kingdom of Lanka too, to ensure the safety of Lord Rama before he embarked on his journey. For this mission of reconnaissance, King Bali along with himself and Nala selected his brother Sugriv, his son Angad, and the six brothers of Hanuman, Matiman, Shrutiman, Dhritiman, Ketuman and Gatiman, all of whom were extraordinary courageous and brave commanders of his army.

The engineering feat of Nala was successful, and the team of ten crossed the ocean without any problem onto Lanka. On entering the kingdom of King Ravana, they saw a beautiful garden filled with many bright and sweet smelling flowering plants and trees in bloom, and also having numerous Mango, Blackberry, Litchi and Jackfruit trees, all filled with fruit. Being hungry and tired after the long journey of crossing the ocean, they decided to eat the fruits on the trees and rest in the garden.

All the fruit trees in the garden were visited by the members. Only one out of the ten members visited all the types of fruit trees to eat. Each of the types of fruit trees in the garden was visited by six of the ten members. Every member of the ten visited at least one type of fruit tree and exactly two of them visited only one type of fruit tree. King Bali, his son Angad, Hanuman, Shrutiman, Ketuman and Gatiman were the only ones who visited the Jackfruit trees. However Angad, Matiman and Shrutiman did not visit the Blackberry trees. The Litchi trees were visited by only Nala, Sugriv, Angad, Shrutiman, Ketuman and Gatiman. King Bali, Dhritiman and Gatiman did not visit the mango trees at all. No other member ate fruits from the same tree one member chose to eat from, even if the type of fruit chosen was the same by both.

Q 31 How many fruit trees were visited by the ten members in the garden located at King Ravana's kingdom in Lanka ?

- A) 24
- B) 22
- C) 18
- D) 16

Q 32 Who among the following visited all the types of fruit trees in the garden located at King Ravana's kingdom at Lanka ?

- A) Gatiman
- B) Ketuman
- C) Shrutiman
- D) Angad

Q 33 Who among the following definitely visited the Blackberry trees in the garden located at King Ravana's kingdom at Lanka ?

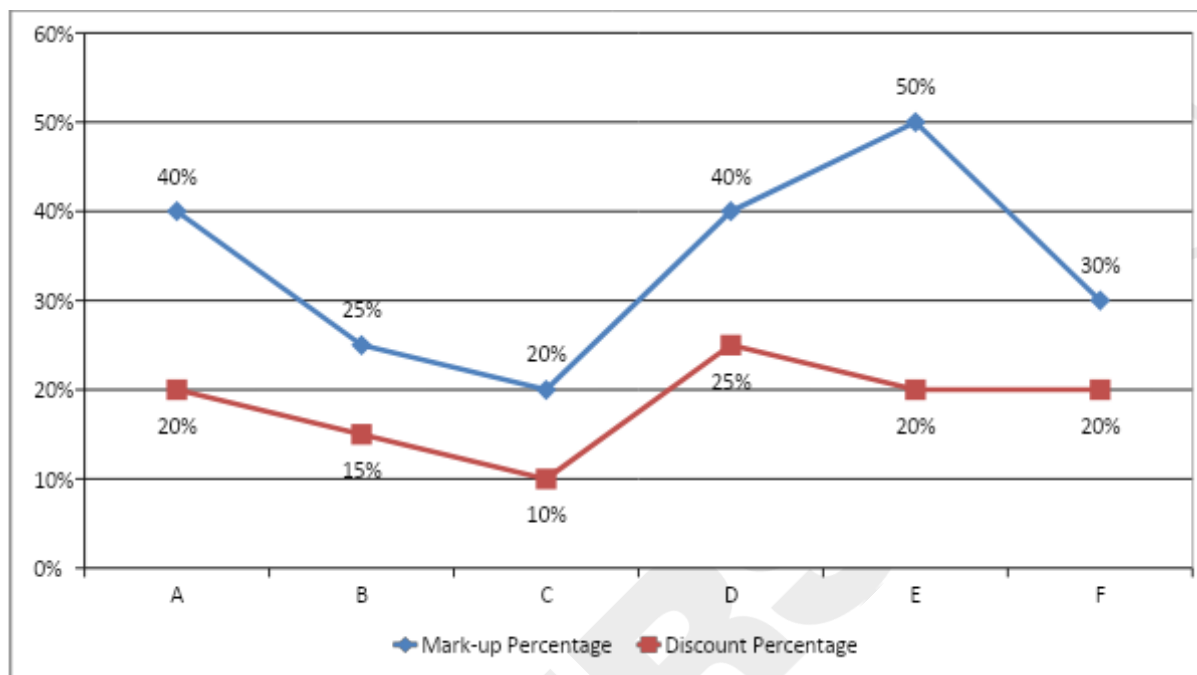
- A) Nala
- B) Sugriv
- C) Dhritiman
- D) King Bali

Q 34 How many members visited exactly three fruit trees in the garden located at King Ravana's kingdom in Lanka ?

- A) 1
- B) 2
- C) 3
- D) 4

Directions for questions from 35 to 38 :

The following Line Graph depicts the Mark-up percentage and the Discount percentage of six types of hand-woven Murshidabad-silk sarees A to F at a Tantuja Store in Kolkata, the West Bengal government handloom and silk saree shop.



Q 35 What is the ratio of the cost price and the selling price of Murshidabad-silk saree type D ?

- A) 20 : 21
- B) 19 : 21
- C) 21 : 22
- D) 19 : 22

Q 36 The ratio of the selling price of Murshidabad-silk saree types C and D is 3 : 4.

Quantity A : The percentage by which the cost price of saree type D is more than the cost price of saree type C.

Quantity B : 30%

- A) $A = B$
- B) $A > B$
- C) $A < B$
- D) Cannot be determined

Q 37 Assuming all six types of hand-woven Murshidabad-silk sarees A to F had the same selling price, which type fetched the Tantuja Store in Kolkata the highest amount of profit ?

- A) A
- B) C
- C) D
- D) E

Q 38 The cost price of Murshidabad-silk saree type A and saree type E is Rs 500 and Rs 600 respectively.

Quantity A : The difference between the selling price of Murshidabad-silk saree type A and saree type E.

Quantity B : Rs 170

- A) $A = B$
- B) $A > B$
- C) $A < B$
- D) Cannot be determined

Directions for questions from 39 to 44 :

The headquarters of the Ramkrishna Mission and Ramkrishna Math founded by Swami Vivekananda, the disciple of Sri Ramkrishna Paramhansa, is located at the majestic Belur Math, on the banks of the Ganges, in Howrah. It is one of the largest philanthropic institutions of the world and a place of pilgrimage for truth seekers all over the world from different religious faiths, and has a lot of footfall on a daily basis.

In the morning session, Belur Math opens its gates to all from 6.30 am to 1.30 pm every day. Entry and exit gates open after every one hour interval from 6.30 am, that is at 7.30 am, 8.30 am, and so on till 1.30 pm. People can enter or exit the Math only at those times. At 1.30 pm all people in the Math will have to leave and the Math gets closed to re-open in the evening at 6.30 pm again.

Three types of people visit the Belur Math every day. They are a) Disciples of Sri Ramkrishna Paramhansa and Swami Vivekananda, b) Donors to the Ramkrishna Mission for their philanthropic activity, and c) Pilgrims from all class of society. It has been observed that the Disciples stay at the Math for either 3 or 4 hours, the Donors stay for either 2 or 3 hours, and the pilgrims stay for either 1 or 2 hours.

On the 22nd of August 2022, at 2.00 pm, it was observed from the records at the security counter beside the entry and exit gates that 96 Disciples, 120 Donors and 240 Pilgrims had visited the Math that day since the gates opened at 6.30 am. An incomplete record of the entry and exit of the three types of people at different times was also available as below :

	Entry			Exit		
	Disciples	Donors	Pilgrims	Disciples	Donors	Pilgrims
6.30 am			12			
7.30 am		48				
8.30 am		0			36	0
9.30 am	0				0	0
10.30 am	24	12				96
11.30 am			0		24	
12.30 pm			24	12	0	0
1.30 pm				24		

Q 39 What is the total number of people who entered the Belur Math on 22nd August 2022 at 6.30 am and 7.30 am ?

- A) 156
- B) 168
- C) 174
- D) Cannot be determined

Q 40 If the number of Pilgrims who entered Belur Math on 22nd August 2022 at 9.30 am was equal to the number of Pilgrims who entered the Math at 10.30 am, what could be the possible number of Pilgrims (from the options given) who entered the Math at 8.30 am ?

- A) 45
- B) 60
- C) 75
- D) 97

Q 41 How many Pilgrims exited the Belur Math on 22nd August 2022 at 11.30 am ?

- A) 84
- B) 96
- C) 108
- D) Cannot be determined

Q 42 How many Disciples exited the Belur Math on 22nd August 2022 at 10.30 am?

- A) 24
- B) 36
- C) 48
- D) Cannot be determined

Q 43 What is the total number of people who exited the Belur Math on 22nd August 2022 at 9.30 am, 10.30 am and 11.30 am ?

- A) 336
- B) 288
- C) 228
- D) Cannot be determined

Q 44 How many times when the entry gates were opened on 22nd August 2022, did no person enter the Belur Math ?

- A) 0
- B) 1
- C) 2
- D) Cannot be determined

Section - 3 - Quantitative Aptitude

Q45. The salaries of Rabi, Geeta and Sushma were in the ratio 4: 8: 9 in 2016, after 5 years their salaries are in the ratio of 1: 2: 1. If Rabi's salary is increased by 40% during these five

years. The difference between percentage change in salary of Sushma and Geeta during these five years is

- (a) 37.77 (b) 2.23 (c) 40 (d) 77.77

Q46. (TITA)

If $\sqrt{\log \frac{x^2+7x}{4x}}$, gives a positive integer value, then minimum value of x will be

Q47. Monthly sales of Ramesh is double the sum of the quarterly sales of Manoj and Anita in 2011. In 2012, the sales of each of them increased by Rs 12000 per month. In 2012, monthly sales of Ramesh, Manoj and Sunita is in the ratio of 12: 5: 7. Then Anita's Monthly sale exceeded Manoj's sales in 2011 by Rs.....

- (a) 2200 (b) 4400 (c) 11000 (d) 12000

Q48. (TITA)

How many pairs (p, q) of positive integers satisfy the equation $p^2 - 72 = 2q^2$ and $q^2 \leq 82$?

Q49. Ashok alone can do a job in 30 days while Kamal alone can do it in 50 days. Both start to work together and continues for 4 days. On 5th day Kishan and Deepak joins them and work is finished after few more days. Kishan is 25% more efficient than Deepak. If Deepak did 16% of the total work, In how many days Kishan can do the total work alone?

- (a) 36 (b) 50 (c) 40 (d) 22

Q50. Three circles, each of radius 7 cm, touch externally. Area of the region enclosed by the three circles is what percent of area of one circle is closest to

- (a) 4 (b) 5 (c) 2 (d) 10

Q51. (TITA)

In an examination, the score of B was 20% more than that of C, and the score of D is 2x% more than score of C if B has x% more marks than A. If A and C scored 78 and 80 marks, then marks scored by D is

Q52. A horse leaves point A at 11 am and reaches point B by 12 noon. Starting from 11: 02 am, after every 2 minutes a bike leaves A and reaches B on or before 12 noon. 20 such bikes are there. All bikes have the same speed. If horse runs 3 times faster than its original speed, how many bikes would have reached B by the time the horse reached B?

- (a) 3 (b) 10 (c) 5 (d) 8

Q53. Out of 28 non zero integers, exactly 12 exceeds 10 and exactly 12 are less than 10. Average of these 28 integers is 10. What is the highest possible value of the average of remaining 4 integers?

- (a) 14 (b) 13.5 (c) 14.5 (d) 10

Q54. (TITA)

The quadratic equation $2x^2 + bx + c = 0$ has two roots 2a and 5a, where a is an positive integer. The least possible integer value of $c^2 - b$ is

Q55. (TITA) How many factors of $20^5 \times 3^5 \times 12^4$ are perfect squares which are odd and greater than 1?

Q56. Pushpa, a perfect business woman, purchased 10 similar bottles in 2021. She sold 60% of them at a profit of one fourth of purchase price of 1 bottle and the remaining at a loss of one fourth of purchase price of 1 bottle. If She earns Rs 250 as profit, then at what rate she purchased a bottle, in Rupees?

- (a) 500 (b) 600 (c) 400 (d) 200

Q57. (TITA)

A shoe making company offers Rs 87 per hour for regular work and Rs 174 per hour for overtime work. A and B, both work for 60 hours. If B's income from overtime is Rs 1740 more than that of A from overtime. What is the difference of their total income?

Q58. A man makes complete use of 792 cc of iron and 792 cc of aluminium to make a number of sphere and solid right circular cylinder respectively. Spheres and Cylinders are of radius 3 cm and have equal volumes. Then the total surface area of all these spheres and cylinders, in sq cm, is

- (a) 914 (b) 792 (c) 1584 (d) 457

Q59. Let ABC be a right-angled triangle with hypotenuse BC. If AP is perpendicular of length 10 cm on BC, then area of triangle ABC if AB is $5\sqrt{13}$ cm long, in sq cm, is

- (a) 325 (b) $325/4$ (c) $325/3$ (d) $25\sqrt{13}$

Q60.(TITA)

Let f be a function such that $f(mn) = [f(m)]^2 - [f(n)]$ for every positive integer $m > n$. If $f(1) = 2$, $f(2)$ and $f(3)$ are positive integers, value of $f(6)$ is

Q61. Anwar invests Rs 10000 at 8% interest, compounded semiannually, and Rs 10000 at 6% simple interest, both investments being for one year. Vinod invests Rs 20000 at $x\%$ simple interest for one year. If Anwar and Vinod get the same amount of interest, then value of x is _____

- (a) 7.08 (b) 14.16 (c) 28.32 (d) 14%

Q62. (TITA)

The sum of the common terms in the two sequences: 12, 18, 24, 30, ..., 660 and 16, 24, 32, 40, ..., 720 is

Q63. The difference of $10^{43} - 4$ and $10^{42} + x$ is divisible by 3 for $x = ?$

- (a) 3 (b) 2 (c) 4 (d) 6

Q64. What is the remainder when $3 + 3^2 + 3^3 + \dots + 3^{2n+1}$ is divided by 6?

- (a) 1 (b) 2 (c) 3 (d) 4

Q65. 8 different brands of pair of shoes counting 16, 64, 48, 88, 92, 60, 120, 44 were ordered buy a newly open store. They need to be packed in such a way that each box has the same

brand of pair of shoes and the number of pair of shoes each box is also the same. What is the minimum number of boxes required to pack?

- (a) 129 (b) 64 (c) 48 (d) 133

Q66. Of the population over 18 yrs in Singapore, 36% of men and 45% of women are married. What percentage of the total population of age more than 18 yrs is men? (Assume that no man marries more than one woman and vice versa)?

- (a) 44.44% (b) 55.55% (c) Cannot be determined (d) None of these

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Answer Key - Mock Test 14

Section - Verbal Ability & Reading Comprehension

1-D, 2-B, 3-B, 4-C, 5-A, 6-C, 7-D, 8-C, 9-B, 10-B, 11-A, 12-B, 13-C, 14-C, 15-A, 16-B, 17-A, 18-B, 19-B, 20-A, 21-C, 22-1324, 23-2143, 24-2143

Section - Data Interpretation & Logical Reasoning

25-4087.50, 26-48.89, 27-21420, 28-200, 29-24, 30-37/55, 31-A, 32-B, 33-C, 34-D, 35-A, 36-B, 37-D, 38-C, 39-A, 40-B, 41-C, 42-D, 43-A, 44-C

Section - Quantitative Aptitude

45-D, 46-33, 47-B, 48-1, 49-C, 50-B, 51-120, 52-C, 53-D, 54-414, 55-14, 56-A, 57-870, 58-A, 59-C, 60-2, 61-B, 62-9072, 63-C, 64-C, 65-D, 66-B

Solutions - Mock Test 14

Section - Verbal Ability & Reading Comprehension

1. D

Option A can be derived from the lines: There is something different operating in America, something more subtle, complex and ingenious than the brutish social politics of monoculturalism. Something that is not ultimately about multiculturalism or migration, but about a more comprehensive phenomenon: national identity.

Option B can be derived from the lines: The history wars were so intense in Australia for the very reason that our sense of national pride is not forward-looking.

Option C can be derived from the lines: Europe's flirtation with multiculturalism has killed its sense of self and allowed its recalcitrant minorities to disappear into a fog of cultural relativism and escape any sense of loyalty to the nation. Europe's multiculturalism is even said to have fostered subcultures hostile to it.

2. B

The first step to identify the answer is to identify what the author is talking about in the passage:

- American patriotism (which he favors); this becomes one form of patriotism
- Australian and European patriotism (which he finds issue with); these become two forms of patriotism.

Now let us look at the options.

Option A is too negative when it comes to the two forms. The author does find fault with them but it would be too harsh to say he majorly criticizes them.

Option C is incorrect as we cannot identify the objective of the author in discussing this.

Option D is limited in its nature, and like option C, misses out the main things the author does in the passage.

3. B

Option B can be derived from the lines: America, like Australia, New Zealand and Canada, is part of the New World and created from settlement (or conquest) and migration. This creates a fundamentally different dynamic, for it is immediately apparent that there is nothing organic about these nations.

Option A is partially correct only. Option B completes the sentiment mentioned in option A.

Option C is factually incorrect.

Option D is the dicey one. In Option D, we have extremely subtle distinctions at play.

Refer to the lines: The vanquished indigenous aside, everyone is a migrant to some degree, which necessarily fosters a more fluid, open notion of national identity: one that is not so firmly anchored in ethnicity as in Europe.

The original context here compares these countries to Europe and not amongst themselves.

In comparison to Europe, yes, these countries are fluid and open. But the comparison is not among themselves.

We cannot say these countries are like one another in terms of building fluidity and openness.

Fluid and open in comparison to Europe? Yes.

Fluid and open with respect to each other, at similar levels? We do not know.

4. C

The first thing you need to notice here is that either 3 statements are correct or all the statements are correct.

Statements I, III, and IV can be derived from the lines: The vanquished indigenous aside, everyone is a migrant to some degree, which necessarily fosters a more fluid, open notion of national identity: one that is not so firmly anchored in ethnicity as in Europe. Yet this does not explain why the United States should be any different to Australia.

Statement II is the odd one out as it is derived from the next paragraph and does not gel with the existing context in this case.

Refer to the lines: Rally says that America has its creed, but one that corresponds to no particular religious tradition. It is a civil creed constructed on the central political idea of individual liberty.

The above question is about comparison and why America is different; statement II does not answer this.

5. A

Orwellian: characteristic of the writings of George Orwell, especially with reference to his dystopian account of a future totalitarian state in Nineteen Eighty-Four.

The meanings of the options are:

Dystopian: As bad as can be; characterized by human misery

Utopian: Having a strong belief that everything can be perfect, often in a way that does not seem to be realistic or practical

Fragmentary: Consisting of small disconnected parts

Fatuous: Showing a lack of intelligence or thought; stupid and silly

Considering the above and the general context of the passage, we can see that option A is the best answer in the given case.

6. C

Statement I can be derived from the lines: George Orwell, whose real name was Eric Blair, wrote the novel between the summer of 1946 and the winter of 1948, mostly on the island of Jura, off the west coast of Scotland, where he had taken a house, moving there from austere post-war London.

You can object to which war this is but then you are supposed to have this cursory knowledge of history. This is not regarded as outside information.

Statement II is incorrect. It is one of the bestsellers but we do not know whether it is the most-sold.

Statement III can be derived from the following lines: "It was a bright cold day in April," said Richard Blair, "and the clocks were striking thirteen." It had been estimated that it would take sixty or so readers—well-known journalists, academics, actors, activists—thirteen hours, that Orwellian number, to get from the bright cold day to the gin-scented tears.

7. D

This is a question where you require a little bit of outside information.

"Alternative facts" is a phrase used by U.S. Counselor to the President Kellyanne Conway during a Meet the Press interview on January 22, 2017, in which she defended White House Press Secretary Sean Spicer's false statement about the attendance numbers of Donald Trump's inauguration as President of the United States. When pressed during the interview with Chuck Todd to explain why Spicer "utter[ed] a provable falsehood", Conway stated that Spicer was giving "alternative facts". Todd responded, "Look, alternative facts are not facts. They're falsehoods."

In the given context, we can infer that the given phrase is a negative one and option D provides us with the most negative sentiment in the given context.

8. C

Option C is incorrect here.

Refer to the lines: Reading 1984 "hurts" right now, according to Jean Seaton, but perhaps there is also something soothing in the recognition that the novel's darkness looks so much like our own. "It feels like 1984 is here in our faces," she told me.

A similarity has been implied but saying that we have a near-about mirror image is too strong a sentiment here.

Mirror images means (in the given context): a person or thing that closely resembles another.

Option A can be derived from the lines: The event director, Jean Seaton, explained that the idea had come "last summer, just after Brexit, but before Trump. The world felt dark and full of lies. Still does." Since then, 1984 has taken on a strange currency; the electric charge of Orwell's thinking hums and crackles through the culture. In January the novel topped Amazon's bestseller list, almost seventy years since it was first published in 1949. Demand began to rise, according to Penguin Random House,....

Option B can be derived from the lines: It tells the story of Winston Smith, a citizen of the state of Oceania, and his attempted rebellion—through sex and love and the written word—against the Party, which observes and controls every aspect of life.... Orwell grew concerned that the novel was being interpreted across the Atlantic as an anti-communist or anti-left polemic, rather than the warning against totalitarianism that he had intended.

Option D can be derived from the lines: True, he said, the name he had given to the political ideology of Oceania was Ingsoc—or English Socialism—but he could easily have chosen something different: "In the USA the phrase 'Americanism' or 'hundred percent Americanism' is suitable and . . . as totalitarian as anyone could wish." One thinks of Trump's inauguration, Capitol Hill within a belfry of cloud, and the tolling bell of his promise: "America first, America first."

9. B

In the given passage, the author of the passage is simply discussing the literature of war and how he/other writers go about it. He talks about the influence of war on his writing and the writing of others. There is no specific agenda of the author other than discussing this genre of work. This makes option B the suitable option in this case. It is the most generic option that fits the bill.

10. B

Option A can be derived from the lines: It's in that broader sense that my baptism of fire in Vietnam has affected much of my fiction.

Option B is incorrect. The passage states: He remarked that many of the writers we associate with the war novel were not in action for very long.

The option replaces 'many' with 'most'.

Option C can be derived from the lines: They are confronted by hard moral choices in circumstances stripped of the usual guideposts and of external restraints—laws, policemen, public opinion—forcing them to rely on their own inner resources. Some drill down and discover that they don't have any.

Option D can be derived from the lines: He'd hardly been shot at, and believed that if he'd been in the thick of it, he might have been unable to write the ten books that followed *Catch-22*.

11. A

Red as a color when it comes to good and evil has always been associated with something being bad or of evil nature, simply because blood is red in color. There is no specific reason for it. It came from scenes where they describe like demons, devils kill humans, and eat their flesh, drink their blood and the favorite color of devil is red because devil likes blood and blood is red.

In this case, the reference is to blood and violence: I'm a journalist as well as a novelist who has seen the red-eyed devil from almost every angle—as a participant, an observer, and a casualty.

This makes option A the best answer in the given case.

Remember, if the option 'All of the above' was there, this would have been a really difficult question to solve.

12. B

Refer to the lines: Otherwise, in novels like *Horn of Africa*, *Acts of Faith*, and the novella, *In the Forest of the Laughing Elephant*, the field of armed strife has been to me what the sea was to Joseph Conrad and Herman Melville—a setting in which the conflicts and contradictions within our natures are revealed, with a clarity seldom seen in ordinary life.

In this case, the author uses the said example as an analogy (drawing a comparison in order to show a similarity in some respect).

13. C

Option A can be derived from the lines: I bought my copy of Gaston Bachelard's *The Poetics of Space* at the Architectural Association's Triangle Bookshop, at a time when inner London telephone codes still began with '071' and while I was the architectural correspondent of the Sunday newspaper *The Observer*. That copy has been on the bookshelf above my desk ever since, kept for a lull and quieter times. Now, refreshing my memories of the book, at a moment when the prevailing blandness of planning and design rarely allows for a subjective, even poetic, response, I've plunged back into grappling with its enduring, infuriating attractions.

Option B can be derived from the lines: An allusive little book, its author was a highly-respected philosopher who late in his career had turned from science to poetry.

The word allusive means: characterized by indirect references.

Option C is incorrect: Nothing about his intellectual journey had been orthodox, particularly as measured against the rigid norms of French academic life and advancement.

Option D can be derived from the lines: He was from a provincial background in Champagne, a post-office employee, who rose largely through intellectual tenacity to hold a chair in philosophy at the Sorbonne.

14. C

Refer to the lines: The first chapter, dealing with 'the house from cellar to garret' might well be all that the student will read, since, unlike the direct and determinist link between ideas of surveillance in Michel Foucault's writings and their roots in Jeremy Bentham's Panopticon, Bachelard's dependence on poetry, with digressions into botany, Carl Jung and much else, is intriguing but always elliptical.

The word elliptical means:

- (1) :of, relating to, or marked by extreme economy of speech or writing
- (2) :of or relating to deliberate obscurity (as of literary or conversational style)

Keeping the above in mind, we find that option C is the best answer in the given case.

Options A and B are judgements/opinions we cannot derive from the given context of the passage.

15. A

Refer to the lines: Now, refreshing my memories of the book, at a moment when the prevailing blandness of planning and design rarely allows for a subjective, even poetic, response, I've plunged back into grappling with its enduring, infuriating attractions.

Now the meanings of the tough words in the answer options are as follows:

Prosaic: Not fanciful or imaginative

Ingenious: Showing inventiveness and skill

Superficial: Concerned with or comprehending only what is apparent or obvious; not deep or penetrating emotionally or intellectually

We can see that option A is the best find in the given case.

16. B

Statement I cannot be derived from the lines: Life, he tells his awed interviewer lightly, is about thinking and then getting on with living.

We know that he thought and then moved on to living; this does not identify whether he placed any of these two above one another.

Statement II can be derived from the lines: 'Bachelardian' has become cultural shorthand for the lyrical possibilities of conjuring memory from buildings, and it is this book that brought it, and him, to prominence outside France.

Statement III can be derived from the lines: The Poetics of Space, his final book, soon appeared on academic reading lists, and in schools of architecture and art, squeezed in alongside the works of better-known cultural theorists and practitioners. Surprisingly enough, it is still there.

17. A

Option B does not represent the central idea here.

Option C incorrectly uses the word 'only' in the given context.

Options A and D are the close ones. Option D is ruled out as the passage does not state the theatre acts as a mirror. Option A is a lot closer to the central sentiment of the passage and does a much better job of delivering the main idea here.

18. B

This is a question where none of the options deal with the direct sentiments of the paragraph. All options are indirectly phrased for the given context and require you to extend your understanding to the overall context. The paragraph, in itself, is inconclusive and does not provide any stringent conclusions. It simply states that inflation and unemployment cannot be understood through the Keynesian model and

other economic theories (one is mentioned) need to be considered. Considering this, we can see that option B is the best fit in the given case.

19. B

The passage talks about some successes achieved by ILM and goes on to say that these successes don't define ILM; rather, it's the attitude of the team there that is the "Force" sustaining the place. Option B is the correct choice.

Option A and C are incorrect as they do not mention the attitude of the team factor

Option D is incorrect as it does not mention any successes achieved by ILM and no external force is mentioned in the passage.

20. A

The idea is based on the simple concept of arrangement of the options. The sequential order based on the priority gives the correct option.

At the end of the passage, we have got the idea that the very next line will be based on the Channel U. Whenever we begin a description about something we start with the basics-year of commencement.

Hence it can be plainly concluded that the immediate sentence after the passage would be option A.

Option B is about the activity of Channel U. This comes only after giving the introduction to channel U.

Option C speaks about the post-Channel U era. This is something that comes immediately before citing the advantage of Channel U. Hence we can simply say that this follows only after the introductory sentence.

Option D shows the progress and hence it definitely cannot precede channel U's introductory statement.

21. C

The entire passage is based on the impacts of the revelation made by Snowden. So the highest priority will be for similar impacts that have been described towards the end of the passage.

Option C is such an impact. Hence this has to be the answer.

Option A is also an impact. But this is on a broad scale. This has to happen as a further step of the immediate impacts.

Option B is not speaking about the impact.

Option D is also not an impact on an immediate basis.

Moreover options B and D are not backed up with proper premises.

22. 1324

The two mandatory pairs, in this case, are: 13 and 24.

Now out of these two pairs, 13 forms the introduction as it introduces the subject of the discussion.

This question should be purely solved on the basis of these two pairs.

23. 2143

The two sets of connected statements are: 21 and 43.

Statement 2 introduces the topic in the given case.

Statement 1 then takes the sentiment forward and provides us with a positive for South Korea.

Statement 4 then mentions a fact that the US might not like and statement 3 wraps up the given context.

24. 2134

Statement 2 is the opening sentence in this case and introduces the given subject. Statements 1 and 3 are then connected by the common reference to trench warfare. Statement 4 then provides the final statement in this connected set by outlining the needs of Germany. Effectively, statements 2-1-3-4 are from a German perspective.

Section - Data Interpretation & Logical Reasoning

25. 4087.50

The price per one-way Mumbai to Kolkata ticket by Indigo Airlines purchased by the Banerjees from Buymyticket.com

= Opening price for the second week of October 2021

= Rs 9500

Total ticket value for the 3 such tickets purchased by the Banerjees

= 9500×3

= Rs 28500

Commission paid to Buymyticket.com by the Banerjees @ 5% on the ticket booking values

= $(28500 \times 5)/100$

= Rs 1425.00

Maximum value attained by the price of a one-way Mumbai to Kolkata ticket by Indigo Airlines in the second week of October 2021

= Rs 26000

Minimum value attained by the price of a one-way Mumbai to Kolkata ticket by Indigo Airlines in the second week of October 2021

= Rs 5500

Thus, average of the maximum and minimum values attained

= $(26000 + 5500)/2$

= Rs 15750

The price per one-way Mumbai to Kolkata ticket by Indigo Airlines purchased by the Senguptas from Bookmyticket.com

= The average of the maximum and minimum values of the ticket attained for the second week of October 2021

= Rs 15750

Total ticket value for the 5 such tickets purchased by the Senguptas

= 15750×5

= Rs 78750

Commission paid to Bookmyticket.com by the Senguptas @ 7% on the ticket booking values

= $(78750 \times 7)/100$

= Rs 5512.50

Hence, the difference of the amount of commission paid to the online travel agents by the Banerjee and the Sengupta families

= $(5512.50 - 1425.00)$

= Rs 4087.50

26. 48.89

The opening price in the third week of October 2021 per one-way Mumbai to Kolkata ticket by Indigo Airlines

= Rs 33500

The closing price in the fourth week of October 2021 per one-way Mumbai to Kolkata ticket by Indigo Airlines

= Rs 22500

The difference in the prices
 $= 33500 - 22500$
 $= \text{Rs } 11000$

Hence, the percent by which the opening price of a one-way Mumbai to Kolkata ticket by Indigo Airlines in the third week of October is more than the closing price of the ticket in the fourth week of October 2021

$= (11000 \times 100) / 22500$
 $= 48.89\%$

27. 21420

The price per one-way Mumbai to Kolkata ticket by Indigo Airlines purchased by Mr Sinha from the Indigo Airlines ticket booking counter

$=$ Minimum value attained of the price of the ticket in the first week of October 2021
 $= \text{Rs } 4500$

Value that remains expended even after cancellation of the previous purchased ticket

$= 60\%$ of the ticket value
 $= 60\%$ of Rs 4500
 $= (4500 \times 60) / 100$
 $= \text{Rs } 2700$

The price per one-way Mumbai to Kolkata ticket by Indigo Airlines purchased by Mr Sinha from a travel agent

$=$ Closing price for the first week of November 2021
 $= \text{Rs } 18000$

Total expense after payment of commission by Mr Sinha to the travel agent @ 4% on the ticket booking values

$= 104\%$ of Rs 18000
 $= (18000 \times 104) / 100$
 $= \text{Rs } 18720$

Hence, the actual overall expense of Mr Sinha to travel one-way from Mumbai to Kolkata by Indigo Airlines

$= 18720 + 2700$
 $= \text{Rs } 21420$

28. 200

From the second pie-chart,

The percentage of Doctors who had Assamese as their mother-tongue

$= 100 - (42 + 20 + 16 + 13 + 4)$
 $= 100 - 95$
 $= 5\%$

Thus 5% of Doctors = 9

Hence total number of Doctors $= (9/5) \times 100 = 180$

From the first pie-chart,

The percentage of the adult population who were Engineers by profession

$= 100 - (10 + 10 + 13 + 14 + 15 + 18)$
 $= 100 - 80$
 $= 20\%$

18% of the adult population were Doctors by Profession

Thus 18% of the adult population = 180

Hence, the total number of residents in Borough IV, Ward 128 in Kolkata were Engineers by profession = $(180/18)*20 = 200$

29. 24

16% of Doctors in Borough IV, Ward 128 in Kolkata have their mother-tongue as Tamil

As the ratios are given to be the same,

16% of Professors too in Borough IV, Ward 128 in Kolkata have their mother-tongue as Gurumukhi

From the last question,

The number of Doctors in Borough IV, Ward 128 in Kolkata = 180

Thus 18% of the adult population = 180

Professors were 15% of the adult population

So 15% of the adult population = $(180/18)*15 = 150$

Thus, the number of Professors in Borough IV, Ward 128 in Kolkata = 150

Hence, the number of Professors who have Gurumukhi as their mother-tongue

= 16% of 150

= $(16*150)/100$

= 24

30. 37/55

From the first question,

The number of Doctors in Borough IV, Ward 128 in Kolkata = 180

Thus 18% of the adult population = 180

So 100% of the adult population = $(180/18)*100 = 1000$

From the first pie-chart,

The percentage of the adult population who were Sales professionals = 14%

Thus, the number of Sales professionals in Borough IV, Ward 128 in Kolkata = $(14/100)*1000 = 140$

The total number of adult population in Borough IV, Ward 128 in Kolkata who were having their mother-tongue as Hindi

= $(11/100)*1000$

= 110

Out of the above, the number of Doctors with mother-tongue as Hindi were = $(20/100)*180 = 36$

It can be possible that nobody in the other professions except Sales had a mother-tongue as Hindi.

Thus the maximum possible Sales professionals with mother-tongue as Hindi = $110 - 36 = 74$

Hence, the largest possible fraction of the Sales professionals in Borough IV, Ward 128 in Kolkata whose mother tongue was Hindi

= $74 : 110$

= $74/110$

= $37/55$

31. 24

Every member ate fruits from different trees even if the type of fruit chosen was the same.

All the fruit trees in the garden were visited by the members.
 Each of the type of fruit trees in the garden was visited by six of the ten members.
 There were four types of fruit trees – Mango, Blackberry, Litchi and Jackfruit.

From the above four facts we can conclude that the total number of fruit trees of the four types that were visited by the ten members in the garden located at King Ravana's kingdom at Lanka = $6 \times 4 = 24$

32. B

Angad, Matiman and Shrutiman did not visit the Blackberry trees.
 So, none of them could have visited all the four types of fruit trees.

King Bali, Dhritiman and Gatiman did not visit the mango trees.
 So, none of them could have visited all the four types of fruit trees.

Left were Nala, Sugriv, Hanuman and Ketuman.

King Bali, Angad, Hanuman, Shrutiman, Ketuman and Gatiman were the only ones who visited the Jackfruit trees.

Which implies Nala and Sugriv did not visit the Jackfruit trees.
 So Nala and Sugriv could not have visited all the four types of fruit trees.

Left were Hanuman and Ketuman.

Nala, Sugriv, Angad, Shrutiman, Ketuman and Gatiman were the only ones who visited the Litchi trees.
 Which implies Hanuman did not visit the Litchi trees.
 So Hanuman could not have visited all the four types of fruit trees.

The only one left was Ketuman.

Hence, Ketuman visited all the types of fruit trees in the garden located at King Ravana's kingdom at Lanka

33. C

King Bali, Angad, Hanuman, Shrutiman, Ketuman and Gatiman were the only ones who visited the Jackfruit trees.

Thus, Nala, Sugriv, Matiman and Dhritiman definitely did not visit the Jackfruit trees.

Angad, Matiman and Shrutiman did not visit the Blackberry trees.
 Thus, King Bali, Nala, Sugriv, Hanuman, Dhritiman, Ketuman and Gatiman may or may not have visited the Blackberry trees.

Nala, Sugriv, Angad, Shrutiman, Ketuman and Gatiman were the only ones who visited the Litchi trees.
 Thus, King Bali, Hanuman, Matiman and Dhritiman definitely did not visit the Litchi trees.

King Bali, Dhritiman and Gatiman did not visit the mango trees.
 Thus, Nala, Sugriv, Angad, Hanuman, Matiman, Shrutiman and Ketuman may or may not have visited the Mango trees.

We also already know from the previous question that Ketuman visited all the four types of fruit trees.

From the above data we can conclude the following :

	Definitely visited	Definitely not visited	May or may not have visited
King Bali	Jackfruit	Mango, Litchi	Blackberry
Nala	Litchi	Jackfruit	Blackberry, Mango
Sugriv	Litchi	Jackfruit	Blackberry, Mango
Angad	Jackfruit, Litchi	Blackberry	Mango
Hanuman	Jackfruit	Litchi	Blackberry, Mango
Matiman		Jackfruit, Blackberry, Litchi	Mango
Shrutiman	Jackfruit, Litchi	Blackberry	Mango
Dhritiman		Jackfruit, Litchi, Mango	Blackberry
Ketuman	Jackfruit, Blackberry, Litchi, Mango	X	X
Gatiman	Jackfruit, Litchi	Mango	Blackberry

But every member of the ten visited at least one type of fruit tree, and exactly two of them visited one type of fruit tree only.

Hence Matiman must have definitely visited the Mango tree and Dhritiman the Blackberry tree.

Hence the final distribution becomes as follows :

	Definitely visited	Definitely not visited	May or may not have visited
King Bali	Jackfruit	Mango, Litchi	Blackberry
Nala	Litchi	Jackfruit	Blackberry, Mango
Sugriv	Litchi	Jackfruit	Blackberry, Mango
Angad	Jackfruit, Litchi	Blackberry	Mango
Hanuman	Jackfruit	Litchi	Blackberry, Mango
Matiman	Mango	Jackfruit, Blackberry, Litchi	X

Shrutiman	Jackfruit, Litchi	Blackberry	Mango
Dhritiman	Blackberry	Jackfruit, Litchi, Mango	X
Ketuman	Jackfruit, Blackberry, Litchi, Mango	X	X
Gatiman	Jackfruit, Litchi	Mango	Blackberry

As we can see from above, Nala, Sugriv and King Bali may or may not have visited the Blackberry trees.

But Dhritiman definitely visited the Blackberry tree in the garden located at King Ravana's kingdom in Lanka.

34. D

Only one out of the ten members visited all the types of fruit trees to eat.
We already know him to be Ketuman.

Exactly two of the ten members visited only one type of fruit tree.
We already know them to be Matiman and Dhritiman.

We also know that the total number of fruit trees of the four types taken together is 24

Let the number of members who visited only two types of fruit trees be α and the number of members who visited only three types of fruit trees be β

$$\text{Hence } \alpha + \beta = 10 - (1+2) \\ \text{or, } \alpha + \beta = 7$$

$$\text{Also, } 2*1 + \alpha*2 + \beta*3 + 1*4 = 24 \\ \text{or, } 2\alpha + 3\beta = 18$$

Solving them, we get $\beta = 4$ and $\alpha = 3$

Thus, 3 members visited only two types of fruit trees and 4 members visited only three types of fruit trees.

Hence, 4 members visited exactly three fruit trees in the garden located at King Ravana's kingdom at Lanka

35. A

From the graph,

For Murshidabad-silk saree type D, marked price is 40% over cost price, and discount is 25% on marked price

We know that If profit percentage is p , mark up percentage is m and discount percentage is d , then
 $p = m - d - (m*d)/100$

Hence profit percentage on saree type D = $40 - 25 + 40(-25)/100 = 5\%$.

So if the cost price is 100, the selling price should be 105.

Hence, the ratio of the cost price and the selling price of Murshidabad-silk saree type D

$$= 100 : 105$$

$$= 20 : 21.$$

36. B

Profit percentage on saree type C

$$= 20 - 10 + 20(-10)/100$$

$$= 8\%.$$

Profit percentage on saree type D = 5% (found in previous question).

If the cost price of saree type C is $100x$, then selling price of saree type C is $108x$.

If the cost price of saree type D is $100y$, then selling price of saree type D is $105y$.

Thus,

$$108x/105y = 3/4$$

$$\text{or, } x/y = 35/48$$

or, the ratio of cost price of saree type C and D = $35/48$

Hence, the percentage by which the cost price of saree type D is more than the cost price of saree type C

$$= \{(48-35)/35\} \times 100$$

$$= 37\%$$

Hence $A > B$

37. D

Profit percentage on saree type A = $40 - 20 + 40(-20)/100 = 12\%$

Profit percentage on saree type C = 8% (found in previous question)

Profit percentage on saree type D = 5% (found in previous question)

Profit percentage on saree type E = $50 - 20 + 50(-20)/100 = 20\%$

Among the options provided, E has the highest profit percent of 20%

Thus for the same selling price, E will have the least cost price, and hence, the highest profit amount.

Hence, the type of hand-woven Murshidabad-silk saree which type fetched the Tantuja Store in Kolkata the highest amount of profit was E

38. C

Profit percentage on saree type A = 12% (found in previous question).

Profit percentage on saree type E = 20% (found in previous question).

Selling price of saree type A = $(500 \times 112)/100 = \text{Rs } 560$

Selling price of saree type E = $(600 \times 120)/100 = \text{Rs } 720$

Hence, difference between the selling price of Murshidabad-silk saree type A and saree type E = $720 - 560$
= Rs 160

Hence $A < B$

38. A

96 Disciples stayed at the Belur Math for 3 to 4 hours

120 Donors stayed at the Belur Math for 2 to 3 hours

240 Pilgrims stayed at the Belur Math for 1 to 2 hours

Let us consider the Disciples first.

As per the incomplete record at the security counter on 22nd August 2022 of the entry and exit of the 96 Disciples at the different times when the entry and exit gates opened, we can conclude the following :

	Entry			Exit		
	Disciples	Donors	Pilgrims	Disciples	Donors	Pilgrims
6.30 am	x		12	0		
7.30 am	$60-x$	48		0		
8.30 am	12	0		0	36	0
9.30 am	0			a	0	0
10.30 am	24	12		b		96
11.30 am	0		0	$60-(a+b)$	24	
12.30 pm	0		24	12	0	0
1.30 pm	0			24		
Total	96			96		

At 6.30 am and 7.30 am a total of 60 Disciples had entered, and at 9.30 am, 10.30 am and 11.30 am a total of 60 Disciples had exited the Math. 12 Disciples had also entered the Math at 8.30 am.

Let us consider the Donors secondly.

As per the incomplete record at the security counter on 22nd August 2022 of the entry and exit of the 120 Donors at the different times when the entry and exit gates opened, we can conclude the following :

	Entry			Exit		
	Disciples	Donors	Pilgrims	Disciples	Donors	Pilgrims
6.30 am		36	12		0	
7.30 am		48			0	
8.30 am		0			36	0
9.30 am	0	24			0	0
10.30 am	24	12			48	96
11.30 am		0	0		24	
12.30 pm		0	24	12	0	0
1.30 pm		0		24	12	
Total		120			120	

At 6.30 am and 9.30 am, 36 and 24 Donors respectively had entered the Belur Math. At 10.30 am and 1.30 pm, 48 and 12 Donors had exited the Math.

Finally let us consider the Pilgrims.

As per the incomplete record at the security counter on 22nd August 2022 of the entry and exit of the 240 Pilgrims at the different times when the entry and exit gates opened, we can conclude the following :

	Entry			Exit		
	Disciples	Donors	Pilgrims	Disciples	Donors	Pilgrims
6.30 am			12			0
7.30 am		48	0			12
8.30 am		0	m		36	0
9.30 am	0		n		0	0
10.30 am	24	12	$204-(m+n)$			96
11.30 am			0		24	108
12.30 pm			24	12	0	0
1.30 pm			0	24		24
Total			240			240

At 8.30 am, 9.30 am and 10.30 am a total of 204 Pilgrims entered the Belur Math. At 7.30 am, 11.30 am and 1.30 pm, 12, 108 and 24 Pilgrims respectively exited the Math.

So the complete data on 22nd August 2022 of the entry and exit of the 96 Disciples, 120 Donors and 240 Pilgrims at the different times when the entry and exit gates opened are as below :

	Entry			Exit		
	Disciples	Donors	Pilgrims	Disciples	Donors	Pilgrims
6.30 am	x	36	12	0	0	0
7.30 am	$60-x$	48	0	0	0	12
8.30 am	12	0	m	0	36	0
9.30 am	0	24	n	a	0	0
10.30 am	24	12	$204-(m+n)$	b	48	96
11.30 am	0	0	0	$60-(a+b)$	24	108
12.30 pm	0	0	24	12	0	0
1.30 pm	0	0	0	24	12	24
Total	96	120	240	96	120	240

The total number of Disciples who entered the Belur Math on 22nd August 2022 at 6.30 am and 7.30 am
 $= x + (60-x) = 60$

The total number of Donors who entered the Belur Math on 22nd August 2022 at 6.30 am and 7.30 am
 $= 36 + 48 = 84$

The total number of Pilgrims who entered the Belur Math on 22nd August 2022 at 6.30 am and 7.30 am
 $= 12 + 0 = 12$

Hence, the total number of people who entered the Belur Math on 22nd August 2022 at 6.30 am and 7.30 am = $60+84+12 = 156$

40. B

We already know that the complete data on 22nd August 2022 of the entry and exit of the 96 Disciples, 120 Donors and 240 Pilgrims at the different times when the entry and exit gates opened were as below :

	Entry			Exit		
	Disciples	Donors	Pilgrims	Disciples	Donors	Pilgrims
6.30 am	x	36	12	0	0	0
7.30 am	$60-x$	48	0	0	0	12
8.30 am	12	0	m	0	36	0
9.30 am	0	24	n	a	0	0
10.30 am	24	12	$204-(m+n)$	b	48	96
11.30 am	0	0	0	$60-(a+b)$	24	108
12.30 pm	0	0	24	12	0	0
1.30 pm	0	0	0	24	12	24
Total	96	120	240	96	120	240

The total number of Pilgrims who had entered the Belur Math on 22nd August 2022 at 8.30 am, 9.30 am and 10.30 am was 204

The number of Pilgrims who entered Belur Math at 9.30 am was equal to the number of Pilgrims who entered the Math at 10.30 am.

So the summation for the Pilgrims who entered the Math at 9.30 am and 10.30 am must be an even number.

204 is itself an even number.

The subtraction of the summation from 204 will give us the number of Pilgrims who entered the Math at 8.30 am.

The result of the subtraction should also be even.

Out of all the options given, only 60 is an even number.

Hence, the possible number of Pilgrims (from the options given) who entered the Math on 22nd August 2022 at 8.30 am is 60

41. C

We already know that the complete data on 22nd August 2022 of the entry and exit of the 96 Disciples, 120 Donors and 240 Pilgrims at the different times when the entry and exit gates opened were as below :

	Entry			Exit		
	Disciples	Donors	Pilgrims	Disciples	Donors	Pilgrims
6.30 am	x	36	12	0	0	0
7.30 am	$60-x$	48	0	0	0	12
8.30 am	12	0	m	0	36	0
9.30 am	0	24	n	a	0	0
10.30 am	24	12	$204-(m+n)$	b	48	96
11.30 am	0	0	0	$60-(a+b)$	24	108
12.30 pm	0	0	24	12	0	0
1.30 pm	0	0	0	24	12	24
Total	96	120	240	96	120	240

Hence, 108 Pilgrims exited the Belur Math on 22nd August 2022 at 11.30 am

42. D

We already know that the complete data on 22nd August 2022 of the entry and exit of the 96 Disciples, 120 Donors and 240 Pilgrims at the different times when the entry and exit gates opened were as below :

	Entry			Exit		
	Disciples	Donors	Pilgrims	Disciples	Donors	Pilgrims
6.30 am	x	36	12	0	0	0
7.30 am	$60-x$	48	0	0	0	12
8.30 am	12	0	m	0	36	0
9.30 am	0	24	n	a	0	0
10.30 am	24	12	$204-(m+n)$	b	48	96
11.30 am	0	0	0	$60-(a+b)$	24	108
12.30 pm	0	0	24	12	0	0
1.30 pm	0	0	0	24	12	24
Total	96	120	240	96	120	240

At 9.30 am, 10.30 am and 11.30 am on 22nd August 2022, a total of 60 Disciples had exited the Belur Math.

However it is not possible to conclude what the specific numbers of Disciples were at the specific times of 9.30 am, 10.30 am or 11.30 am.

Hence, the number of Disciples who had exited the Belur Math on 22nd August 2022 at 10.30 am cannot be determined.

43. A

	Entry			Exit		
	Disciples	Donors	Pilgrims	Disciples	Donors	Pilgrims
6.30 am	x	36	12	0	0	0
7.30 am	$60-x$	48	0	0	0	12
8.30 am	12	0	m	0	36	0
9.30 am	0	24	n	a	0	0
10.30 am	24	12	$204-(m+n)$	b	48	96
11.30 am	0	0	0	$60-(a+b)$	24	108
12.30 pm	0	0	24	12	0	0
1.30 pm	0	0	0	24	12	24
Total	96	120	240	96	120	240

The total number of Disciples who exited the Belur Math on 22nd August 2022 at 9.30 am, 10.30 am and 11.30 am = $a+b+\{60-(a+b)\} = 60$

The total number of Donors who exited the Belur Math on 22nd August 2022 at 9.30 am, 10.30 am and 11.30 am = $0+48+24 = 72$

The total number of Pilgrims who exited the Belur Math on 22nd August 2022 at 9.30 am, 10.30 am and 11.30 am = $0+96+108 = 204$

Hence, the total number of people who exited the Belur Math on 22nd August 2022 at 9.30 am, 10.30 am and 11.30 am

$$= 60+72+204 = 336$$

44. C

We already know that the complete data on 22nd August 2022 of the entry and exit of the 96 Disciples, 120 Donors and 240 Pilgrims at the different times when the entry and exit gates opened were as below :

	Entry			Exit		
	Disciples	Donors	Pilgrims	Disciples	Donors	Pilgrims
6.30 am	x	36	12	0	0	0
7.30 am	$60-x$	48	0	0	0	12
8.30 am	12	0	m	0	36	0
9.30 am	0	24	n	a	0	0
10.30 am	24	12	$204-(m+n)$	b	48	96
11.30 am	0	0	0	$60-(a+b)$	24	108
12.30 pm	0	0	24	12	0	0

1.30 pm	0	0	0	24	12	24
Total	96	120	240	96	120	240

On 22nd August 2022, at 11.30 am and 1.30 pm, when the entry gates were opened, no Disciple or Donor or Pilgrim entered the Belur Math.

Hence, it was twice that when the entry gates were opened on 22nd August 2022, no person entered the Belur Math.

Section - Quantitative Aptitude

45. D

Let their salaries in 2016 be $4x$, $8x$ and $9x$ respectively.
Also, let their salaries in 2021 be y , $2y$ and y respectively
Given, $y = 1.4(4x) = 5.6x$

Therefore, salary of Geeta in 2021 = $2(5.6)x = 11.2x$
Percentage increase = $(3.2x/8x) 100 = 40\%$

And salary of Sushma in 2021 = $y = 5.6x$
Percentage decrease = $(3.4x/9x) 100 = 37.77\%$ or -37.77% increase

Difference in percentage change = $40 - (-37.77) = 77.77\%$

46. 33

$$\begin{aligned}\sqrt{\log \frac{x^2+7x}{4x}} &\geq 1 \\ \Rightarrow \frac{x^2+7x}{4x} &\geq 10 \\ \Rightarrow x^2 + 7x &\geq 40x \\ \Rightarrow x^2 - 33x &\geq 0 \\ \Rightarrow x &\geq 33\end{aligned}$$

So, minimum value of x will be 33.

47. B

Let monthly sales of Ramesh, Manoj and Sunita be $12x$, $5x$ and $7x$ in 2012.
So, monthly sales of each in 2011 be $12x-12000$, $5x-12000$ and $7x-12000$ respectively.

ATQ, Monthly sales of Ramesh is double the sum of the quarterly sales of Manoj and Anita in 2011
So, $12x - 12000 = 2[3(5x - 12000 + 7x - 12000)]$
 $x = 2200$

Anita's monthly Sale exceeds Manoj's monthly sales by Rs $(7x - 5x) = \text{Rs } 2x$ i.e Rs 4400.

48. 1

q must be less than 10 since $q^2 \leq 82$
So, q^2 can take 1, 4, 9, 16, 25, 36, 49, 64 and 81.

$$\begin{aligned}\text{since } p^2 - 72 &= 2q^2 \\ \Rightarrow p^2 &= 2q^2 + 72\end{aligned}$$

So, possible values of $2q^2 + 72$ are 74, 80, 90, 104, 122, 144, 170, 200, 234.
Out of which only 144 is a perfect square. So, p can take only 1 value i.e. 12.

Therefore, only one pair of solution in p and q is possible.

49. C

Let total work be 150 units.

Ashok can do $(150/30 = 5 \text{ Units})$ work in day.

Kamal can do $(150/50 = 3 \text{ Units})$ work in day.

In 4 days, Ashok and Kamal will finish 32 units of work.

Remaining Work = $150 - 32 = 118$ units.

Deepak did 16% of the work. So, Kishan will have done 20% of the work (since Kishan is 25% more efficient than Deepak). Therefore remaining 64% work which is equal to 96 units will be done by Ashok and Kamal.

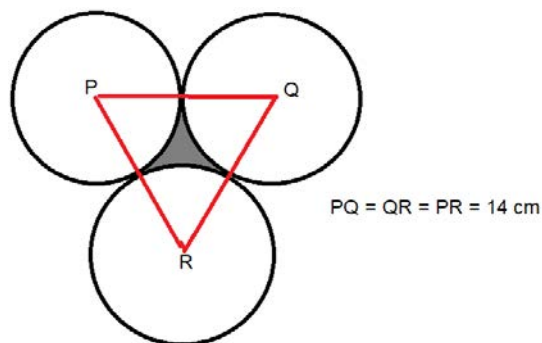
So, Ashok and Kamal must have worked for $96/8 = 12$ days.

So, Kishan should have worked for $12 - 4 = 8$ days

Kishan did 20% of the total work in 8 days

So, he must take 40 days to finish the 100% work.

50. B



Area of shaded region = Area of equilateral triangle PQR - 3 x Area of each sector of 60°

$$= \frac{\sqrt{3}}{4} 14^2 - 3 \times \frac{60}{360} \pi 7^2$$

$$= 84.87 - 77 = 7.87$$

Area of one circle = $\pi 7^2 = 154$

%age of area of shaded region to area of one circle = $\frac{7.87}{154} \times 100 = 5.11\%$

51. 120

Marks of A = 78

Marks of C = 80

Marks of B = 120 % of 80 = 96

$x = (18/72)100 = 25\%$

Marks of D = 150% of 80 = 120

52. C

Time taken by horse to cover the distance AB = 60 min

Given, starting from 11:02 am, every minute a bike leaves A and moves towards B.

Twenty such motor cycles reach B by 12 noon.

Also, the speed of all the bikes is same.

That means that the 20th bike started at 11:40 am, reached B exactly at 12 noon. Rest all reached B some time before 12 noon.

Therefore, each motor cycle takes 20 min to cover the distance AB.

Now, if the horse triples its speed, then he will reach B in 30 min i.e. at 11:30 am.

So, the bike started at 11: 10 am would be the last to reach at B at 12 noon.

This bike is 5th if 1st started at 11: 02 am.

53. D

Each of the remaining number is equal to 10. (the only possibility)

So, average of remaining 4 will be 10.

54. 414

$$2a + 5a = -b/2 \Rightarrow b = -14a$$

$$\text{and } (2a)(5a) = c/2 \Rightarrow c = 20a^2$$

$$c^2 - b = 400a^4 - (-14a) = 400a^4 + 14a$$

This value is least for $a = 1$

So, answer is 414

55. 14

$$20^5 \times 3^5 \times 12^4 = 2^{18} \times 3^9 \times 5^5$$

For perfect squares which are, we have to take only even powers of the odd prime factors of the number.

So, only factors that we can take $(3^0, 3^2, 3^4, 3^6, 3^8)$ and $(5^0, 5^2, 5^4)$

So, total factors = $5 \times 3 = 15$

Since factors should be greater than 1, required answer will be 14.

56. A

Let the cost of each bottle be x.

From the given condition:

$$10x + 250 = 1.25 \times 6 \times x + 0.75 \times 4 \times x$$

$$\Rightarrow 0.5x = 250$$

$$\Rightarrow x = 500$$

57. 870

Since B's income from overtime is Rs 1740 more than that of A from overtime. Therefore, B must have worked for $1740/174 = 10$ hrs more in extra time. So, A must have worked for 10hrs extra in regular time than B. So, A must have earned Rs 870 more in regular time.

Difference in their incomes = $1740 - 870 = \text{Rs } 870$

58. A

$$\text{Volume of } n \text{ spheres} = n \times \frac{4}{3} \times \frac{22}{7} \times 3 \times 3 \times 3 = 792$$

So, $n = 7$ (number of spheres)

Volume of 1 sphere = volume of 1 cylinder

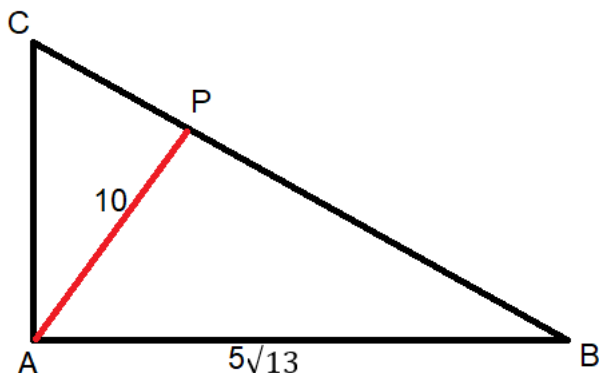
$$\frac{4}{3} \times \frac{22}{7} \times 3 \times 3 \times 3 = \frac{22}{7} \times 3 \times 3 \times h$$

$$\Rightarrow h \text{ (height of cylinder)} = 4 \text{ cm}$$

Since the volume of 1 cylinder and volume of 1 sphere is same, therefore number of cylinders = number of spheres = 7

Total Surface area of 7 spheres and surface area of 7 cylinders = $7 \times 4 \times \frac{22}{7} \times 3 \times 3 + 2 \times \frac{22}{7} \times 3 \times (3 + 4)$ 924 sq cm.

59. C



$$\begin{aligned} BP^2 &= AB^2 - AP^2 \\ \Rightarrow BP^2 &= (5\sqrt{13})^2 - 10^2 \\ \Rightarrow BP &= 15 \text{ cm} \end{aligned}$$

$$\begin{aligned} \text{Also, } AP^2 &= BP \times CP \\ \Rightarrow CP &= 100/15 \text{ cm} = 20/3 \text{ cm} \\ AC^2 &= AP^2 + CP^2 \\ \Rightarrow AC^2 &= 10^2 + (20/3)^2 \\ AC &= (10/3)\sqrt{13} \\ \text{Area} &= \frac{1}{2} (\text{base}) (\text{height}) = \frac{1}{2} (5\sqrt{13}) (10/3)\sqrt{13} = 325/3 \text{ sq cm} \end{aligned}$$

60. 2

$$\begin{aligned} f(1) &= 2 \\ f(2 \times 1) &= [f(1)]^2 - [f(1)] \\ \text{here } m &= 2 \text{ and } n = 1 \end{aligned}$$

$$\begin{aligned} \text{So, } f(2) &= [f(1)]^2 - 2 \\ \text{On solving this equation, we get } f(2) &= 2 \text{ (since } f(2) \text{ cannot be negative)} \\ f(3) &= [f(2)]^2 - f(2) = [f(2)]^2 - 2 \\ \text{On solving this equation, we get } f(3) &= 2 \text{ (since } f(3) \text{ cannot be negative)} \\ f(6) &= [f(3)]^2 - [f(2)] = 2^2 - 2 = 2 \end{aligned}$$

61. B

$$\begin{aligned} \text{Interest earned by Anwar} &= 10000[(1 + 4/100)^2 - 1] + 6\% \text{ of } 10000 \\ &= \text{Rs } (816 + 600) = \text{Rs } 1416 \end{aligned}$$

$$\text{Interest earned by Vinod} = x\% \text{ of } 10000 = 100x$$

ATQ

$$100x = 1416$$

$$x = 14.16\%$$

62. 9072

1st Series is multiple of 6

2nd series is multiple of 8

1st common term is LCM (6, 8) = 24

Last common term = 648

Number of terms = $(648 - 24)/24 + 1 = 27$

Sum = $27(24 + 648)/2 = 9072$

63. C

Difference = $(10^{43} - 7) - (10^{42} + x) = (10^{43} - 10^{42} + x - 7) = 10^{42}(10 - 1) + (x - 7) = 9 \cdot 10^{42} + (x - 7)$

$9 \cdot 10^{42}$ is divisible by 3 since it is multiple of 3.

$(x - 7)$ is divisibly by 3 if x is 4 in the given options. (Considering magnitude only)

64. C

When 3 is divided by 6, remainder is 3.

When 3^2 is divided by 6, remainder is 3.

When 3^3 is divided by 6, remainder is 3.

When 3^4 is divided by 6, remainder is 3 and so on.

So, the remainder is $3 + 3 + 3 + \dots$ up to $2n+1$ terms.

If 3 is added to odd number of terms, after dividing by 6 it will give a remainder of 3.

65. D

Take the HCF of number of pair of shoes and divide total number of pair shoes by HCF to find the minimum number of boxes required.

HCF (16, 64, 48, 88, 92, 60, 120, 44) = 4

Number of boxes are required = $(16+64+48+88+92+60+120+44)/4 = 133$

66. B

Let there are $100x$ and $100y$ men and women respectively (Age more than 18 yrs)

Married Men = Married Women

i.e. $36x = 45y$

So, $x = 5y/4$

Total Men = $100x = 100 \cdot 5y/4 = 125y$

Total Population (more than 18yrs) = $125y + 100y = 225y$

Men = $125y \cdot 100/225y \% = 55.55\%$.

MOCK TEST – 15

Section - 1 - Verbal Ability & Reading Comprehension

Directions for Questions 1 to 4: Read the passage given below and answer the questions that follow.

Passage-1

“Like elaborately plumed birds...we preen and strut and display our t-values.” That was Edward Leamer’s uncharitable description of his profession in 1983. Mr Leamer, an economist at the University of California in Los Angeles, was frustrated by empirical economists’ emphasis on measures of correlation over underlying questions of cause and effect, such as whether people who spend more years in school go on to earn more in later life. Hardly anyone, he wrote gloomily, “takes anyone else’s data analyses seriously”. To make his point, Mr Leamer showed how different (but apparently reasonable) choices about which variables to include in an analysis of the effect of capital punishment on murder rates could lead to the conclusion that the death penalty led to more murders, fewer murders, or had no effect at all.

In the years since, economists have focused much more explicitly on improving the analysis of cause and effect, giving rise to what Guido Imbens of Harvard University calls “the causal literature”. The techniques at the heart of this literature—in particular, the use of so-called “instrumental variables”—have yielded insights into everything from the link between abortion and crime to the economic return from education. But these methods are themselves now coming under attack.

Instrumental variables have become popular in part because they allow economists to deal with one of the main obstacles to the accurate estimation of causal effects—the impossibility of controlling for every last influence. Mr Leamer’s work on capital punishment demonstrated that the choice of controls matters hugely. Putting too many variables into a model ends up degrading the results.

Worst of all, some relevant variables may simply not be observable. For example, the time someone stays in school is probably influenced by his innate scholastic ability, but this is very hard to measure. Leaving such variables out can easily lead econometricians astray. What is more, the direction of causation is not always clear. Working out whether deploying more policemen reduces crime, for example, is confused by the fact that more policemen are allocated to areas with higher crime rates.

Instrumental variables are helpful in all these situations. Often derived from a quirk in the environment or in public policy, they affect the outcome only through their influence on the input variable while at the same time being uncorrelated with what is left out. The job of instrumental variables is to ensure that the omission of factors from an analysis—does not end up producing inaccurate results.

Q1. A suitable title for the passage is:

- A. The rise of “causal literature”.
- B. How “causal literature” has changed the world of economics.
- C. Instrumental variables: the answer to the problems of economics
- D. The role of instrumental variables in economics

Q2. Which of the following can be derived from the passage?

- A. The choice of controls does not matter significantly when it comes to using instrumental variables.
- B. Instrumental variables enable economists to deal with the issue of controlling too many influences.
- C. Instrumental variables impact input variables as well as uncorrelated factors, thereby reducing the number of inaccurate results.
- D. The techniques of “causal literature” have become a universal standard in economics.

Q3. In the example related to years spent in the school, scholastic ability, time spent in school, and earnings (in this respective order) would be represented by which economic terms?

- A. the input variable, the indeterminate variable, the output variable
- B. the indeterminate variable, the input variable, the output variable
- C. the indeterminate variable, the output variable, the input variable
- D. the output variable, the indeterminate variable, the input variable

Q4. The quote by Edward Leamer, in the first line of the paragraph, is used to imply:

- A. Economists are attention-hungry
- B. Economists are arrogant
- C. Economists are self-centered
- D. Economists are not precise enough

Direction for questions 5 to 8: Answer the questions on the basis of the information provided in the passage.

Passage-2

Buddhism is famous for its doctrine of no-self (anātman). Do Buddhists really believe that we have no self? Yes. Isn't that crazy? No. Do you mean that none of us exist? No.

But we don't exist as selves. And to believe that you do exist as a self is a serious, albeit common, pathology. Let me explain. The Buddhist doctrine of no-self is not a nihilistic denial of your reality, or that of your friends and relatives; instead, it is a middle way between such a nihilistic denial and a reification of the existence that you do have. That reification is instinctive, and then forms the basis for lots of bad religion and metaphysics, as well as for some really problematic ethical thought and conduct, all of which lead to a mass of suffering. Since Buddhism is all about the release from suffering (they call it nirvāṇa), and the belief in a self is regarded as a cause of suffering, extirpating that belief is a central project of Buddhist philosophy.

Let us begin by identifying the self whose existence is denied. It is the self that we instinctively regard as the core of our being. It is the thing which continues as the same entity throughout our lifetime (and into the afterlife or next life if you believe in such things). It is the subject of our experience, the agent of our actions, the possessor of our body and mind, the bearer of our attributes and moral qualities, the ultimate referent of the word 'I'.

Buddhists claim that there is no such thing. The denial has two dimensions—the diachronic and the synchronic. That is, Buddhists deny that anything retains its identity over time (this is the doctrine of

universal impermanence), and that even at a given moment, there is no unity to who we are, and nothing in us that answers to the object of our habitual self-grasping.

Q5. According to Buddhism:

- A. There is no 'I'.
- B. Its denial of 'self' has two facets.
- C. Both A and B
- D. Neither A nor B

Q6. According to the information given in the third paragraph of the passage about 'self', which one of the following is true?

I. self is the thing that continues in perpetuity during our life

II. self is the object of our experience

III. self is the driving force of our actions

IV. self ultimately signifies the 'I' in us

- A. I, II, and III
- B. II, III, and IV
- C. I, III, and IV
- D. All of the above

Q7. According to Buddhism:

- A. Accept the belief in a self as it helps reduce suffering
- B. Letting go of the belief in a self helps one release oneself from suffering
- C. Suffering can be eradicated if one understands the true nature of one's self
- D. One's self is the core tenet which acts to propagate the myth of suffering

Q8. The author of the passage is trying:

- A. to highlight a line of thinking
- B. to debunk a parable
- C. to showcase a presentiment
- D. to discuss a capricious idea

Direction for questions 9 to 12: Answer the questions on the basis of the information provided in the passage.

Passage-3

Jan van Deursen was baffled by the decrepit-looking transgenic mice he created in 2000. Instead of developing tumours as expected, the mice experienced a stranger malady. By the time they were three months old, their fur had grown thin and their eyes were glazed with cataracts. It took him years to work out why: the mice were ageing rapidly, their bodies clogged with a strange type of cell that did not divide, but that wouldn't die.

That gave van Deursen and his colleagues at Mayo Clinic in Rochester, Minnesota, an idea: could killing off these 'zombie' cells in the mice delay their premature descent into old age? The answer was yes. In a 2011 study, the team found that eliminating these 'senescent' cells forestalled many of the ravages of age. The discovery set off a spate of similar findings. In the seven years since, dozens of experiments have confirmed that senescent cells accumulate in ageing organs, and that eliminating them can

alleviate, or even prevent, certain illnesses. This year alone, clearing the cells in mice has been shown to restore fitness, fur density and kidney function. It has also improved lung disease and even mended damaged cartilage. And in a 2016 study, it seemed to extend the lifespan of normally ageing mice.

“Just by removing senescent cells, you could stimulate new tissue production,” says Jennifer Elisseeff, senior author of the cartilage paper and a biomedical engineer at Johns Hopkins University in Baltimore, Maryland. It jump-starts some of the tissue's natural repair mechanisms, she says. This anti-ageing phenomenon has been an unexpected twist in the study of senescent cells, a common, non-dividing cell type first described more than five decades ago. When a cell enters senescence—and almost all cells have the potential to do so—it stops producing copies of itself, begins to belch out hundreds of proteins, and cranks up anti-death pathways full blast. A senescent cell is in its twilight: not quite dead, but not dividing as it did at its peak.

Now biotechnology and pharmaceutical companies are keen to test drugs—known as senolytics—that kill senescent cells in the hope of rolling back, or at least forestalling, the ravages of age. Unity Biotechnology in San Francisco, California, co-founded by van Deursen, plans to conduct multiple clinical trials over the next two-and-a-half years, treating people with osteoarthritis, eye diseases and pulmonary diseases. At Mayo, gerontologist James Kirkland, who took part in the 2011 study, is cautiously beginning a handful of small, proof-of-concept trials that pit senolytic drugs against a range of age-related ailments. “I lose sleep at night because these things always look good in mice or rats, but when you get to people you hit a brick wall,” says Kirkland. No other anti-ageing elixir has yet cleared that wall, and for a few good reasons. It's next to impossible to get funding for clinical trials that measure an increase in healthy lifespan. And even as a concept, ageing is slippery. The US Food and Drug Administration has not labelled it a condition in need of treatment. Still, if any of the trials offer “a whiff of human efficacy”, says Unity's president, Ned David, there will be a massive push to develop treatments and to better understand the fundamental process of ageing. Other researchers who study the process are watching closely. Senolytics are “absolutely ready” for clinical trials, says Nir Barzilai, director of the Institute for Aging Research at the Albert Einstein College of Medicine in New York City. “I think senolytics are drugs that could come soon and be effective in the elderly now, even in the next few years.”

Q9. It can be inferred from the passage the most likely meaning for the term 'transgenic' is:

- A. an organism that has undergone mutations due to the variety of situations it has been exposed to.
- B. an organism that contains genetic material into which DNA from an unrelated organism has been artificially introduced.
- C. an organism that contains genetic material into which DNA from an unrelated organism has been naturally introduced.
- D. an organism that has transformed into another organism when it is placed in different environmental conditions

Q10. Which of the following statements is correct as per the information given in the passage?

- A. Senescent cells build up over a period of time in ageing organs
- B. By removing senescent cells, the tissue repair mechanisms receive an impetus or boost.
- C. Both A and B
- D. Neither A nor B

Q11. A suitable title for the passage could be:

- A. The world is always looking for Magic Cures
- B. Doctor, can you give me the pill of immortality?
- C. To Stay Young, Kill Zombie Cells
- D. Will I ever grow old after I kill these cells?

Q12. Identify the statements that are incorrect as per the information provided in the passage:

I. The US FDA does not recognise ageing as an ailment.

II. Some researchers believe that it is time to put senolytics into trial.

III. It is not easy to get funded for research that focuses on increasing the lifespan of humans.

- A. I & II
- B. II & III
- C. I & III
- D. None of the above

Directions for Questions 13 to 16: The passage given below is followed by a set of questions. Choose the best answer to each question.

Passage-4

Facebook Inc. takes its place as the new political whipping boy in congressional hearings this week, revealing that at least 126 million Americans were exposed to Russia-backed content on the site during the 2016 election campaign. Yet most of the circulating critiques of Facebook are grossly overstated, and are often little more than variants on the age-old charge that free speech allows many bad and even harmful ideas to circulate. Just to be clear, I am not a fan of Facebook as a way of using our time or shaping our culture, but the best protest is voluntary abstention. I am worried that the exaggerated rancor against Facebook will become an excuse to renege on principles of free speech.

Facebook is a relatively new product, so you can't compare it exactly to the media of the past, but let's consider a few analogies. Take the phone company of your choice, either in earlier times or today. All sorts of phone conversations are carried out using its wires and bandwidth, including talk of money laundering, plots of murder, and fascist and racist sentiment, not to mention political and electoral conspiracies. The phone company is of course "neutral" across these conversations and doesn't try to monitor, intercept or restrict them, though in extreme instances the government may step in with wiretaps. Most of us seem OK with this arrangement, although when Facebook tries to serve as a neutral medium they are seen as more at fault for the bad content.

Critics may argue that Facebook isn't so much like a phone company because it uses complex algorithms to decide what to place before our eyes. That's true, but would the critics be much happier if ads and posts on Facebook simply appeared in linear, chronological order? And on the question of algorithms, consider an analogy with a traditional publisher: Plenty of mainstream companies have published and promoted the works of Marx, Stalin, Hitler and Mao. The "algorithm" behind these decisions was whether these works would find an audience and bring in profit. The ideologies behind those works, of course, led to revolutions and the massacres of many millions, plus the infiltration of Western governments by communist sympathizers and delusional beliefs for several generations of Western intellectuals. Few of us are happy about those outcomes, yet for the most part we don't blame printing presses, publishers' quest for profit or their "algorithms." We instead focus on the bad ideas themselves, and how we might persuade individuals otherwise.

You could think of Facebook as akin to a delivery truck, noting that such trucks often carry guns, abused medications, junk food and bad books, among other evils. If Russian conspirators order you flowers for

Valentine's Day, perhaps in appreciation of your pro-Putin tweets, the delivery truck will bring those too. Some critics object to the lack of transparency in online postings. Personally, I strongly dislike a lot of the content, but anonymity and pseudonymity are a time-honored tradition in Western thought, including for the Federalist Papers and Thomas Paine and many other classics. I don't want to abolish anonymity, nor do I think it is practical to do so. In any case, to the extent I find the practice objectionable, I don't hold Facebook uniquely at fault.

A common myth is that Facebook sells our data to Russians or other outside parties. But your data are not passed on; Facebook keeps its information secret, while helping third parties target ads in an exact way known only to Facebook. Nor is Russian interference in American politics new, or for that matter vice versa. The Comintern funded "The Daily Worker" in the 1920s, and various Soviet and communist sources have funded agitation around the world for many decades. Those nefarious activities used a variety of cooperating Western suppliers, including delivery trucks, publishers, paper makers and much more, but again we don't regard those businesses as sinister.

Q13. The author of the passage is:

- A. a supporter of Facebook
- B. a detractor of Facebook
- C. a conditional supporter of Facebook
- D. an unconditional critic of Facebook

Q14. The views of the author towards communism can be regarded as:

- A. positive
- B. negative
- C. neutral
- D. cannot be determined

Q15. Which, out of the following, represents a key idea of the author of the passage:

- A. that ideas of people cannot be controlled even though they might be negative at times.
- B. that the messenger cannot be blamed for delivering a negative message; his job is to simply deliver the message.
- C. both A and B
- D. neither A nor B

Q16. According to the author of the passage:

I. Though Facebook does use our data, it does not sell it to third-parties.

II. Content that we view on Facebook actually is filtered by Facebook.

III. For the sake of profit, traditional publishers have promoted content which led to revolutions and massacres.

- A. I & II
- B. II & III
- C. I & III
- D. All of the above

Directions for the Question: Identify the apt summary for the given paragraph. Enter the option number you deem as the correct answer.

Q17. The Great lakes levels are monitored by 87 stations, 53 in the United States and 34 in Canada. According to these monitors, Lake Huron and Michigan are 3.2 feet higher than their low point and seven inches above their seasonal average. Lake Superior is up 2.3 feet above its January 2013 low point and Lake Erie is up 13 inches over its low point. But all is not so great in the water-filled lakes. While boating and shipping might be rejoicing for the higher water levels, scientists are concerned with the potential for further erosion of the coasts of the Great Lakes. The higher water levels will reach parts of the coast not accustomed to the presence nor the water of the lakes, leading to the potential for erosion and the extension of coast lines if the water levels continue to rise. Lake levels typically rise in the spring, with their peak in the summer months. However, Lake Erie's water levels declined for twelve consecutive months in 2012 and didn't rise until June 2013. The six month forecast shows Lake Erie is expected to remain five to eleven inches above its level just one year ago, and six to 8 inches above its long-term average.

- A. Although researchers are concerned about the rising water level in the Great Lakes, they believe that there may not be any effect on the coastline.
- B. Scientists are concerned about the rising water level in the Great Lakes and the impact it will have on the coast, including erosion, as a result of the rising water level.
- C. The rising water level in the Great Lakes has the scientific community concerned since they believe it may eventually have an effect on the coastline as well.
- D. Scientists are concerned about the rising water level in the Great Lakes, and they believe that this phenomenon may also have an effect on the coastline.

Directions for the Question: Identify the apt summary for the given paragraph. Enter the option number you deem as the correct answer.

Q18. Directions for the Question: Identify the apt summary for the given paragraph. Enter the option number you deem as the correct answer.

A forthcoming paper co-authored by Mr Lapuente analyses 1.4m procurement contracts in 212 regions of the European Union, and finds that the regions whose own public employees rate them as meritocratic pay less for roads, bridges and the like. The researchers estimate that if every region were as meritocratic as Baden-Württemberg, in Germany, EU governments could save €13 billion-20 billion (\$14 billion-22 billion) a year. Separate work by Peter Evans and James Rauch, of the universities of California Berkeley and San Diego respectively, finds that in poorer countries meritocratic hiring and promotion are associated with faster growth.

- A. Meritocracy saves money and contributes to the expansion of the economy.
- B. Meritocracy encourages economic expansion and lowers the cost of purchasing physical infrastructure.
- C. Meritocracy encourages social equality while also lowering the cost of purchasing physical infrastructure.
- D. Meritocracy lowers the cost of purchasing infrastructure and raises the overall quality of the job that is completed.

Directions for the Question: Identify the apt summary for the given paragraph. Enter the option number you deem as the correct answer.

Q19. Given below is a short paragraph and a set of four options. Read the paragraph and select the best summary for the paragraph.

India finds itself in a do-or-die situation. Lose one of the next three matches and it's all over and that would send a billion fans into mourning. But it's the next match on Saturday in Kolkata that will grip the entire Asian sub-continent. The pressure on Dhoni's team will be huge and losing will not be an option. Pakistan's battle, on the other hand, isn't confined to just inside the boundary ropes. It is also played out in diplomatic offices in New Delhi and Islamabad. The team had to clear a few hurdles to get to this global event even though it's just a short hop across the border. Before the team set foot in India a Pakistani security team nixed Dharamsala as a safe venue for its players and the match was moved to Kolkata.

- A. Both India and Pakistan are under stress, although it comes in various forms for each country.
- B. A match with large stakes is scheduled to take place in Kolkata between India and Pakistan.
- C. India is under pressure on the field to win the upcoming match, while Pakistan is under pressure both on and off the field to qualify for this international competition.
- D. Both India and Pakistan are under a lot of pressure to do well on the field, but Pakistan is also under a lot of strain off the field.

Directions for the Question: The question below has a paragraph given with one sentence missing in at the end. From among the answer choices given, select the sentence that can fill the blank to form a coherent paragraph.

Q20. One of the main drivers for increased protein consumption has been the gym culture that took off in the late 1990s, and the accompanying trend for putting on muscle mass. But scientists believe that the idea of requiring additional protein in your diet to build up muscle, either through meat or supplements such as protein shakes, is a myth. "There are some quite nice trials which now show that giving people extra protein doesn't actually increase muscle mass," Sanders says. What builds up muscle is exercise and load bearing, and the body has ways of conserving its existing protein to do that. (_____)

- A. If you eat more protein, the body just breaks it down into ammonia and urea and you excrete it.
- B. If you do not exercise regularly, it must be affecting your body leading to weakness of the overall organs.
- C. Hence more protein does not help you as it is going to be digested.
- D. But we can notice that the scientists are wrong as we have seen the results when people take protein powders.

Directions for the Question: The question below has a paragraph given with one sentence missing in at the end. From among the answer choices given, select the sentence that can fill the blank to form a coherent paragraph.

Q21. The question below has a paragraph given with one sentence missing at the end. From among the answer choices given, select the sentence that can fill the blank to form a coherent paragraph.

It is a brave move to stage a World Cup in a country where the chairman of the board believes "the younger generation" and the "Asian community" are not attracted to your sport, and braver still to make those two audiences such a key part of your marketing strategy. Which is what the International Cricket Council has done for this tournament. (_____)

- A. ICC used the local channels to spread the news of him playing at the ground with some players.
- B. ICC said that they are going to build cricket stadiums in the area keeping it open to the international players whenever they want to stay away from their homeland.
- C. ICC brought together a lot of children to play street cricket in the area provided by them.
- D. ICC planned to bring together a lot of stars and musicians to create a grand arts ceremony in order to get them recognition.

Directions for questions 22: In the following question, rearrange the five sentences in order to form a meaningful paragraph.

TITA

Q22.

1. With the news of coral reef, it is clear that Australia is also suffering from the same issue and it will also need to address the same at the earliest in order to avert any danger to one of the main attractions of the country
2. The Great Coral Reef in Australia has been damaged to a certain extent because of the pollution in the seas that is the direct result of global warming in the world
3. The issue of increasing temperature in India has been in the news since long now and the melting of ice in various Himalayan mountains is also very common because of that heat
4. The issue is plaguing almost every country in the world and the main reason for the rise in temperature can be attributed to the human beings only who are not observing any kind of norms for environment protection

Directions for questions 22: In the following question, rearrange the five sentences in order to form a meaningful paragraph.

TITA

Q23.

1. This think tank is going to work closely with the world leaders and the experts of all the member countries to devise a strategy so as to prevent any kind of cyber-attacks on the sensitive websites
2. The plan was mooted by the world body only with support coming from all the member countries thereby pointing to the fact that all the countries are actually suffering from the same issue
3. This is a step in the right direction given the harsh realities of the digital world which is becoming very much insecure with each passing day because of the advent of hacking and other malicious technology interventions
4. The World Economic Forum is very much relevant in the present era and that has been proved once again by the launch of the global Cybersecurity think tank of the world body

Directions for questions 22: In the following question, rearrange the five sentences in order to form a meaningful paragraph.

TITA

Q24.

The sentences given in each question, when properly sequenced, form a coherent paragraph. Each sentence is labelled with a number. Enter the correct order in the box below.

1. But human practices can accelerate that process by exposing infections to their treatments too often.
2. Taking antibiotic medication when you have a cold or flu virus, for example, doesn't do anything to help the infection

3. Microbes can naturally become resistant to drugs over time due to genetic mutation. This is similar to why you have to get a new flu vaccine every year.
4. And instead increases the chance of the antibiotic coming into contact with bacteria and that microbe mutating as a result.

Section - 2 - Data Interpretation and Logical Reasoning

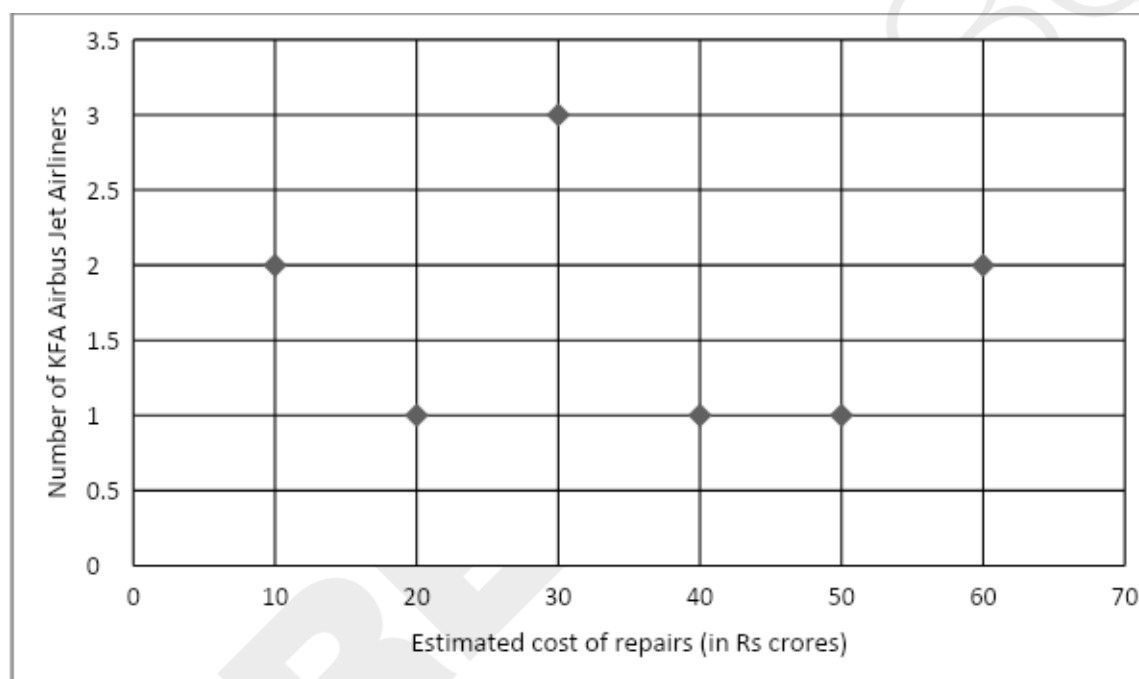
Directions for questions from 25 to 28 :

Mr Vinay Dube, the CEO of Akasa Air, decided to reinforce his fleet of aircrafts to pump up the profitability of Akasa Air. However recession was round the corner, and being the intelligent entrepreneur that he was, wanted to do so at the minimum cost to the Akasa Air capital. So he initiated a reconnaissance of the condition of the then defunct Kingfisher Airlines (KFA) aircrafts lying at the various airports of India, with the aim of buying them from the Airport Authority of India and the tax authorities, who would be more than willing to auction them at a nominal cost to any buyer who would be remotely interested. He would then repair them to make them airworthy, and use them in the Akasa Air fleet. The repairing was the actual big budget expense that would have to be undertaken.

The result of the reconnaissance yielded the fact that there were ten modern Airbus jet airliners of A319 and A380 version of Kingfisher Airlines (KFA) which were in very decent condition and could very well be used after repairs of the issues created by lack of usage for a very long time. The ten aircrafts were coded with the English letters from A to J.

The maintenance engineers submitted a survey report to Mr Dube on the estimate of the expenditure behind repairs of the aircrafts A to J. All the expenditures behind repairs (in Rs crores) of each aircraft were integral. The repairs with an estimated cost of rupees ten to twenty crores were termed as 'minor repairs', that of rupees thirty to forty crores as 'medium repairs' and that of rupees fifty to sixty crores as 'major repairs'.

The report was in the form of a Scatter Graph as shown below :



The report also stated that :

- Aircrafts coded A, C, E, G and I would not need minor repairs, aircrafts coded B, D, F, H and J would not need medium repairs and aircrafts coded C, F and I would not need major repairs
- Aircrafts coded D to I would need different repairing costs
- Aircraft coded G needed the maximum and aircraft coded H the minimum repairing expenditure.

Q 25 Which of the following options may not be necessarily true ?

- Aircraft coded A needs a medium repair
- The repairing expense of aircraft coded E will be no more than rupees forty crores
- Aircraft coded G needs a major repair
- The repairing expense of aircraft coded J will be no more than rupees forty crores

Q 26 (TITA)

What is the total cost of repairing the aircrafts coded A, C, E, G and I (in Rs crores) ?

Q 27 (TITA)

In the postscript of the report there were two added statements :

i) Four of the ten aircrafts of A to J code were A380 Airbuses, and needed a total of rupees two hundred crores for repairs

ii) Only one of the aircrafts of A to E code was an A380 Airbus

What was the estimated cost of repairing aircraft coded I (in Rs crores) ?

Q 28 From the complete report, which of the below mentioned aircrafts can be correctly considered to be an A380 Airbus ?

- A) Aircraft coded J
- B) Aircraft coded H
- C) Aircraft coded E
- D) Aircraft coded B

Directions for questions from 29 to 32 :

In the year 2002, on 1st January, the now nationally renowned advertising Creative Consultants Mr Piyush Pandey, Mr Archit Gadyar, Mr Sonal Dabral and Ms Nikita Goswami had started their professional career simultaneously on the same day from the famed advertising agency of M/S Ogilvy & Mather, at their Kolkata branch, as Junior Probationary Content Creators.

As has always been the norm for probationary joiners in the Content Creation Department of M/S Ogilvy & Mather, they were given as target an exorbitantly difficult task of creating a single content per day per individual, irrespective of weekends or holidays, for exactly four months from January 2002 to April 2002. They were strictly forbidden to create more than a single content per day. However, if partial content was created, it would be taken into consideration in the form of a fraction of the total content. Their confirmation would depend on the performance during this period.

On later becoming the Creative Director of M/S Ogilvy & Mather at their Head Office in Mumbai in July 2022, Mr Piyush Pandey came across an old record of their performance in their four probationary months, as documented by the HR department in 2002.

It was in the form of a table that provided the data for the number of contents they had individually created monthly from January to April 2002, as a decimal of the total number of contents that was the target in those four months together.

The documented record was as shown below :

	January 2002	February 2002	March 2002	April 2002
Mr Piyush Pandey	0.18	0.28	0.29	0.25
Mr Archit Gadyar	0.50	0.25	0.15	0.10
Mr Sonal Dabral	0.25	0.40	0.15	0.04
Ms Nikita Goswami	0.15	0.10	0.30	0.45

Q 29 (TITA)

Please help Mr Piyush Pandey to find the maximum number of created contents by any one of them in the months from January to April 2002.

Q 30 (TITA)

Mr Archit Gadyar, on hearing the news from Mr Piyush Pandey, wanted to know the difference between the maximum number of contents that he could have created in February 2002 to the maximum number of contents Mr Piyush Pandey could have created in January 2002. Please help Mr Piyush Pandey to find it out.

Q 31 If in a particular month from January to April 2002, all four of them created at least ten contents each, which month could that have been ? Please help Mr Piyush Pandey to find it out.

- A) March 2002
- B) February 2002
- C) January 2002
- D) More than one of the above

Q 32 (TITA)

In approximately how many of the four months from January to April 2002, out of Mr Piyush Pandey, Mr Archit Gadyar, Mr Sonal Dabral or Ms Nikita Goswami, no one definitely could have fulfilled their target of monthly content creation ? Please help Mr Piyush Pandey to find it out.

Directions for questions from 33 to 34 :

In each of the following questions there are two or more statements. Consider the statements to be true even if they contradict very common facts. They are followed by three or four conclusions. Choose the conclusions which logically follow from the given statements, and mark the correct option

Q 33

Statements :

Some rats are cats.

Some cats are dogs.

No dog is cow.

Conclusions:

I) No cow is cat.

II) No dog is rat.

III) Some cats are rats.

- A) Only I
- B) Only I and II
- C) Only I and III
- D) Only III

Q 34

Statements :

All cars are cats.

All fans are cats.

Conclusions :**I) All cars are fans.****II) Some fans are cars.**

- A) Only conclusion I follows
- B) Only conclusion II follows
- C) Either I or II follows
- D) Neither I nor II follows

Directions for questions from 35 to 40 :

Behala Players' Corner is a registered club known for its grand public annual Durga Puja celebration held at Behala Chowrasta, Kolkata, under the patronage of the family of Mr Chandidas Ganguly, whose sons Mr Snehasis Ganguly and Mr Sourav Ganguly are notable members.

Mr Abhik Mishra, Mr Biplab Das, Mr Chinmoy Sen and Mr Dilip Palit, all of whom were very reputed and well-to-do local residents are actively involved every year as volunteers in collecting subscriptions on behalf of Behala Players' Corner for the expenditure of Durga Puja celebrations. They are cumulatively entrusted with the responsibility of subscriptions from the four localities of Barisha, Bakultala, Sarsuna and Adarshapally, all areas being in the vicinity of Behala Players' Corner.

The following partially filled table shows the subscriptions collected by each of them in the month of September 2021, a month before Durga Puja :

	Total Cumulative Subscription from four localities	Maximum Cumulative Subscription from any locality	Cumulative Subscription from Barisha	Cumulative Subscription from Bakultala	Cumulative Subscription from Sarsuna	Cumulative Subscription from Adarshapally
Mr Abhik Mishra	Rs 4,11,600	Rs 1,17,600	Rs 74,400			
Mr Biplab Das	Rs 2,78,400	Rs 91,200				Rs 21,600
Mr Chinmoy Sen	Rs 3,45,600	Rs 1,12,800	Rs 36,000			
Mr Dilip Palit	Rs 1,29,600	Rs 57,600				Rs 14,400
TOTAL	Rs 11,65,200		Rs 2,44,800	Rs 3,44,400	Rs 3,28,800	Rs 2,47,200

It was also known that :

- a) Each volunteer collected the maximum cumulative subscription from distinct localities out of the four.
- b) No volunteer collected equal subscriptions from any two localities.
- c) Mr Biplab Das collected more subscriptions from Bakultala than Sarsuna.
- d) The subscription collected by all four volunteers from each locality was a multiple of Rs 1,200.

Q 35 (TITA)

What was the difference (in Rs) between the amounts collected as subscription by Mr Biplab Das from Barisha and Adarshapally ?

Q 36 What was the difference (in Rs) between the amounts collected as subscription by Mr Chinmoy Sen from Bakultala and Sarsuna ?

- A) 12,000
- B) 9,600
- C) 6,000
- D) Cannot be determined

Q 37 If the subscription collected by Mr Dilip Palit from Bakultala was a natural number multiple of the subscription collected by him from Sarsuna, what could be his collection as subscription (in Rs) from the locality of Sarsuna ?

- A) 26,400
- B) 24,000
- C) 19,200
- D) None of the above

Q 38 Which of the following (in Rs) cannot be the amount collected as subscription by Mr Abhik Mishra from the locality of Sarsuna ?

- A) 1,11,600
- B) 1,08,000
- C) 1,03,200
- D) 1,00,800

Q 39 Which of the following could be the summation of the subscriptions collected (in Rs) by Mr Abhik Mishra and Mr Dilip Palit from the locality of Bakultala ?

- A) 1,42,800
- B) 1,50,000
- C) 1,78,800
- D) All of the above

Q 40 Which of the following could be the summation of the subscriptions collected (in Rs) by Mr Abhik Mishra from the localities of Bakultala and Sarsuna

- A) 2,19,600
- B) 2,38,800
- C) 2,56,400
- D) None of the above

Directions for questions from 41 to 44 :

The film director Mr Rohit Shetty wants an actress for the lead role of Meenamma in his film, who perfectly fits the description that appears in the original screenplay. He is not willing to consider actresses

who do not resemble the character as she is described in the screenplay, no matter how talented they are.

The screenplay describes Meenamma as a slim, thirty something brunette, with average height, deep brown eyes, very fair skin, and a brilliant smile.

The casting agent has four actresses in mind :

Actress 1 is a stunning brunette beauty who is 5'9" and in her mid-twenties. Her eyes are brown and she has an olive complexion.

Actress 2 has black hair, big brown eyes, and a fair complexion. She is in her mid-thirties and is 5'5".

Actress 3 is 5'4" and of medium build. She has black hair, brown eyes, and is in her early thirties.

Actress 4 is a blue-eyed brunette in her early twenties. She's of very slight build and stands at 5'.

Q.41 Which of the actresses have the maximum chance of getting selected for the role of Meenamma ?

- A) 1, 2
- B) 2, 3
- C) 1, 4
- D) 2, 4

Q 42. Mrs. Chatterjee took a taxi to meet her three lady-friends for lunch. They were waiting for her outside the restaurant when she pulled up in the car. She was so excited to see her friends that she left her handbag in the taxi. As the taxi pulled away, she and her friends took notice of the license plate number so they would be able to identify the car when they called the taxi company.

- 1) The four women seem to agree that the plate starts out with the letters WB.
- 2) Three of them agree that the plate ends with 269, and there was a letter M before that.
- 3) Three of them think that the third and fourth number is 02, and a different three think that the sixth and seventh number is 62.

The four licence plate numbers below represent what each of the four women thinks she saw. Which one is most likely the license plate number of the taxi?

- A) WBM0962269
- B) WB02M6269
- C) WB090269M02
- D) WB09M2629

Q 43 While travelling in a West Bengal registered commercial taxi from Kolkata in West Bengal, to Bhubaneswar in the neighbouring state of Odisha, my taxi driver informed me that since he has no permit for running the taxi in that city, he will stop at its Transport Office and pay the prescribed fee of Rs 120 for a day. While paying the fee at the counter I found that the transport clerk was taking an extra Rs 80 for which no receipt was given. I was in a hurry for an important class at IIT Bhubaneswar.

Under such circumstances, what would I have done ?

- A) Do not interfere at all as this is a matter between the taxi driver and tax authorities
- B) Take note of the incident and subsequently report the matter to the concerned authorities
- C) Go up to the counter and ask the clerk to give back the money which he has illegally taken

- D) Treat it as a normal affair and simply forget about it

Q 44 Mr Rajat Mohta owns West Bengal's largest plastic and packaging unit M/s Shashi Plastics. He is on friendly terms with West Bengal's environment minister, Mr Manas Ranjan Bhunia. However, with the recent declaration that India would be committed to be a plastic free country, the country has decided to reduce plastic and plastic packaging by fifty percent over the next decade as plastic bags are non-biodegradable. Mr Bhunia is under great pressure from the central government to shut down all plastic packaging units in his state. However he stands firm and decides not to do so. Mr Mohta is most ecstatic about this decision and promises to help Mr Bhunia in any way he can. After a few months, Mr Bhunia requests Mr Mohta that his nephew be inducted in Mr Mohta's company as a Manager. Mr Bhunia's nephew has just passed his graduation in Commerce and has no work experience. The corporate rules at M/s Shashi Plastics dictate that employees should have at least eight to ten years of prior experience before he/she can be considered for a manager's position.

What should Mr Mohta do?

- A) Inform Mr Bhunia politely that his nephew cannot be made a manager immediately and that he is willing to take him on as a management trainee but at a manager's remuneration.
- B) Do nothing. After all Mr Mohta does not need Mr Bhunia's help anymore.
- C) Bypass company rules and make Mr Bhunia's nephew a manager.
- D) Inform Mr Bhunia politely that his nephew cannot be made a manager immediately and that he is willing to take him on as a management trainee and make him a manager as soon as his nephew is ready for the role

Section - 3 - Quantitative Aptitude

Q45. Three persons A, B and C together can do a work in 30 days. If A takes the rest of one day on alternate days. B takes rest of one day after every two days while C takes a one-day rest on every sixth day. Efficiency of A, B and C is in the ratio of 3: 2: 1. In how many days work be completed if all the three started to work in this manner?

- (a) 45 days (b) 60 days (c) 52.66 day (d) 48.66 days

Q46. (TITA)

If $f(y)$ is a polynomial satisfying $f(y) + f(y^2) = y^2 - f(y)$ and $f(3) = 2f(2) = 3f(1)$, then $f(4) + f(9) = ?$

Q47. The sum of two numbers p and q is $\sqrt{45}$ and their difference is $\sqrt{20}$. The value of $\log_{5/2}^{pq}$ is

- (a) -1 (b) 2 (c) 1 (d) $1/2$

Q48. If p and q are real roots of the equation $px^2 + x + pq = 0$, then $p + q$ is

- (a) -1 (b) 2 (c) 1 (d) 0

Q49. A student gets marks in four subjects in the ratio 10: 9: 8: 6. She gets failed in two subjects and pass in subject. Passing marks are 50% of the maximum marks and each subject has the same maximum marks, What percent marks she gets?

- (a) 36 (b) 50.33 (c) 45.83 (d) 40.66

Q50. (TITA)

Two friends A and B went for a picnic. A brought 10 mangoes and B brought eight. A third person ask them to share their fruits in terms of amount he had. If he had less than Rs 100 with him. What is the maximum amount that B can receive [amount received must be in integer value in rupees]?

Q51. (TITA)

The numbers 854, 974 and 1094 when divided by a number N give the same remainder of 2. Find the LCM of quotients obtained when each number is divided by N .

Q52. Two trains A and B, 137 m and 63 m in length respectively are running in opposite directions, one at the rate of 40 kmph and the other at the rate of 32 kmph. A third train C is running at the rate 90 Kmph on a track perpendicular to the first track and joining the first track at its mid-point. When A and B both are at a distance of 500m from the mid-point, Train C is also at a distance of 500 m from the mid-point of first track. By what minimum percent C should reduce its speed just to avoid collision?

- (a) 33.33 (b) 66.66 (c) 50 (d) 72.5

Q53. (TITA)

Two men Amit and Bhuvan walk from M to N together, at the rate of 6 and 8 km an hour respectively. Bhuvan reaches N, returns immediately and meets Amit at P. The distance from M to P is 12 KM, Distance between M to N, in KM, is

Q54. (TITA)

The sum of the first 80 term of the sequence 0. 10, 0. 11, 0. 12, ... is

Q55. A bike costs Rs.96000. Its value depreciates by 10% of the present value at the end of every year. By what percent a person should increase the price of the bike at the end of the third year so that he will be able to sold it at no loss and no profit?

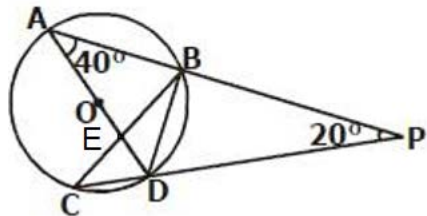
- (a) 37.17 (b) 137.16 (c) 30 (d) 130

Q56. A shopkeeper intended to earn a profit in the range of 40% to 50%. Which of the following could be the value of percent by which the cost price of an article be marked up such that even after allowing a discount of 50%, he could have earned the intended profit?

- (a) 100 (b) 150 (c) 50 (d) 190

Q57. (TITA)

In the given figure, AD is diameter and angles are as shown in figure. Find measurement of angle BED in degree



Q58. (TITA)

X, Y and Z are mid points of the sides AB, BC and AC of the triangle ABC respectively. If the area of triangle ABC is 40 sq cm, then the area of trapezium BXZC, in sq cm, is.....

Q59. (TITA)

Three-digit numbers divisible by 6 are to be formed by using the digits 0, 2, 3, 5, 6, 9 (without repetition). the total number of such numbers that can be formed is

Q60. Six marbles of equal size are placed in a cylindrical flask. Each marble is in contact with the adjacent marble(s). Also, each marble is in contact all around the flask wall. Find the volume of the flask, in cubic cm, which is not occupied by the marbles if marbles are filled up to the level of flask. It is given that radius of marble is 5 cm?

- (a) 1000π (b) 500π (c) 1500π (d) Can not be determined

Q61. X is p% less than Y and Z is p% more than Y. If X is 2.5p% more than Z, then find p. (Note: $p \neq 0$)

- A.20 B.40 C.60 D.50

Q62. The equation $x^2 + ax + (3-b) = 0$ has real roots. What is the minimum value of $a^2 + b^2$?

- (a) 0 (b) 2 (c) 4 (d) 8

Q63. (TITA)

The sum of the integers in the solution set of $|x^2 - 7x| > 5$ is:

Q64. In the land of the famous architects, an architect sells his design for Rs 720 at some profit. Had he sold design at Rs 540, the loss incurred would have been double that of the profit earned. What are the expenses to make design?

- (a) Rs 600 (b) Rs 625 (c) Rs 660 (d) None of these

Q65. Sum of money invested at simple interest becomes 7 times of itself in 15 years. How many times will it become in 5 years' time at the same rate if compounded annually?

- (a) 4.68 times (b) 7.2 times (c) 6 times (d) 5.38 times

Q66. A person bought an Electric Car under the following scheme: Down payment of Rs 6,15,000 and the rest amount in equal annual instalments of Rs 20000 at the rate of 12% per annum for 5 years. Find the total amount he paid (Assume simple interest).

(a) Rs 740000

(b) Rs 615000

(c) Rs 839000

(d) Rs 124000

CAREERS360

Answer Key - Mock Test 15

Section - Verbal Ability & Reading Comprehension

1-D, 2-B, 3-B, 4-C, 5-C, 6-C, 7-B, 8-A, 9-B, 10-C, 11-C, 12-D, 13-C, 14-B, 15-C, 16-D, 17-B, 18-A, 19-C, 20-A, 21-C, 22-2314, 23-4123, 24-3124

Section - Data Interpretation & Logical Reasoning

25-D, 26-190, 27-30, 28-A, 29-100, 30-2.5, 31-C, 32-1, 33-D, 34-D, 35-55200, 36-B, 37-C, 38-D, 39-B, 40-A, 41-B, 42-B, 43-B, 44-D

Section - Quantitative Aptitude

45-D, 46-10, 47-B, 48-A, 49-C, 50-33, 51-5040, 52-B, 53-14, 54-40, 55-A, 56-D, 57-100, 58-30, 59-10, 60-B, 61-A, 62-D, 63-0, 64-C, 65-D, 66-C

Solutions - Mock Test 15

Section - Verbal Ability & Reading Comprehension

1. D

In this question, each of the incorrect options has some issue or the other.

Option A is too limited in its scope.

Options B and C are too wide in their scope; we cannot establish these as the influence of causal literature/instrumental variables.

Option D is effectively a diplomatic option in the given case. It provides a very generic description that does not violate the passage and hence, fits.

2. B

Option B is correct and can be derived from the lines: Instrumental variables have become popular in part because they allow economists to deal with one of the main obstacles to the accurate estimation of causal effects—the impossibility of controlling for every last influence.

Option A is incorrect. Refer to the lines: Mr Leamer's work on capital punishment demonstrated that the choice of controls matters hugely. Putting too many variables into a model ends up degrading the results.

Option C is incorrect. Refer to the lines: Instrumental variables are helpful in all these situations. Often derived from a quirk in the environment or in public policy, they affect the outcome only through their influence on the input variable while at the same time being uncorrelated with what is left out. The job of instrumental variables is to ensure that the omission of factors from an analysis—does not end up producing inaccurate results.

Option D is incorrect. Refer to the lines: The techniques at the heart of this literature—in particular, the use of so-called “instrumental variables”—have yielded insights into everything from the link between abortion and crime to the economic return from education. But these methods are themselves now coming under attack.

3. B

In this case, scholastic ability is an indeterminate variable. Refer to the lines: For example, the time someone stays in school is probably influenced by his innate scholastic ability, but this is very hard to measure. Leaving such variables out can easily lead econometricians astray. What is more, the direction of causation is not always clear.

Refer to the lines: Mr Leamer, an economist at the University of California in Los Angeles, was frustrated by empirical economists' emphasis on measures of correlation over underlying questions of cause and effect, such as whether people who spend more years in school go on to earn more in later life.

Here, earnings (the final output) is correlated with time spent in school (input). These two parameters can be measured.

This gives us option B as the correct answer here.

4. C

Refer to the lines: "Like elaborately plumed birds...we preen and strut and display our t-values." was frustrated by empirical economists' emphasis on measures of correlation over underlying questions of cause and effect, such as whether people who spend more years in school go on to earn more in later life. Hardly anyone, he wrote gloomily, "takes anyone else's data analyses seriously".

The quote is actually explained by the line following the context, where in Leamer explains that economists do not take others seriously and are only concerned with displaying their work.

Options A and B are opinions we cannot derive in the given context.

Option D is incorrect as precision is not mentioned in the passage.

5. C

Option A can be derived from the line: It is the subject of our experience, the agent of our actions, the possessor of our body and mind, the bearer of our attributes and moral qualities, the ultimate referent of the word 'I'. Buddhists claim that there is no such thing.

Option B can be derived from the line: The denial has two dimensions—the diachronic and the synchronic.

Facet here means dimension.

6. C

Statement I can be derived from the line: It is the thing which continues as the same entity throughout our lifetime....

Statement II can be negated from the line: It is the subject of our experience,....

Statement III can be derived from the line: ...the agent of our actions...

Statement IV can be derived from the line: the ultimate referent of the word 'I'.

7. B

This is a question where you need to connect information in two parts of a single sentence:

Part-1: Since Buddhism is all about the release from suffering (they call it nirvāṇa), - this means that Buddhism promotes release from suffering

Part-2: and the belief in a self is regarded as a cause of suffering, extirpating that belief is a central project of Buddhist philosophy. This means Buddhism views the self as the problem.

Adding the two parts, we have option B as the correct answer.

Option D is incorrect as there is no myth of suffering; suffering exists.

8. A

In order to identify the correct answer, let us look at the meanings of the answer options:

Parable: A short moral story (often with animal characters)

Presentiment: an intuitive feeling about the future, especially one of foreboding.

Capricious: Determined by chance or impulse or whim rather than by necessity or reason

In the given passage, the author of the passage is actually concerned with Buddhism and its approach to self (in other words, a belief system/line of thinking). None of the other options fit here.

9. B

Remember, the word contains 'gene' in it and it needs to refer to some change which is related to genetics. Options A and D refer to environment changes and not genetic changes.

Option B is the correct answer as the introduction of DNA from another organism will constitute an artificial change and not a natural one.

10. C

Option A can be derived from the lines: The discovery set off a spate of similar findings. In the seven years since, dozens of experiments have confirmed that senescent cells accumulate in ageing organs, and that eliminating them can alleviate, or even prevent, certain illnesses.

Option B can be derived from the lines: "Just by removing senescent cells, you could stimulate new tissue production," ...It jump-starts some of the tissue's natural repair mechanisms, she says.

11. C

This is a tricky one where none of the options is direct in nature. All of the options here are vague in nature and in fact, in order to identify the answer, you need to know the meaning of the word zombie.

Zombie means a person who is or appears lifeless, apathetic, or completely unresponsive to their surroundings. Here, it refers to the senescent cells the passage is all about. Once you know the meaning of the word, the options become clear on their own.

Option A changes the topic to magic cure from senescent cells.

Option B talks about immortality (nothing related to immortality in the passage).

Option D talks about growing old and raises a hypothetical question. No such sentiment is raised in the passage.

12. D

Statement I can be derived from the lines: The US Food and Drug Administration has not labelled it a condition in need of treatment.

Statement II can be derived from the lines: Senolytics are "absolutely ready" for clinical trials, says NirBarzilai, director of the Institute for Aging Research at the Albert Einstein College of Medicine in New York City. "I think senolytics are drugs that could come soon and be effective in the elderly now, even in the next few years."

Statement III can be derived from the lines: It is next to impossible to get funding for clinical trials that measure an increase in healthy lifespan.

13. C

Refer to the lines: Just to be clear, I am not a fan of Facebook as a way of using our time or shaping our culture, but the best protest is voluntary abstention.

The author of the passage supports Facebook in the given passage on the subject of congressional hearings being faced by the company. He offers his support but on this issue itself. This makes his support conditional in nature.

14. B

Refer to the lines: The ideologies behind those works, of course, led to revolutions and the massacres of many millions, plus the infiltration of Western governments by communist sympathizers and delusional beliefs for several generations of Western intellectuals.

It is clear from the above lines that the author does not view communism in a positive light.

15. C

Option A: can be derived from the lines: Yet most of the circulating critiques of Facebook are grossly overstated, and are often little more than variants on the age-old charge that free speech allows many bad and even harmful ideas to circulate....I am worried that the exaggerated rancor against Facebook will become an excuse to renege on principles of free speech.

Option B: can be derived from the lines: You could think of Facebook as akin to a delivery truck, noting that such trucks often carry guns, abused medications, junk food and bad books, among other evils.

16. D

Statement I can be derived from the lines: A common myth is that Facebook sells our data to Russians or other outside parties. But your data are not passed on; Facebook keeps its information secret, while helping third parties target ads in an exact way known only to Facebook.

Statement II can be derived from the lines: Critics may argue that Facebook isn't so much like a phone company because it uses complex algorithms to decide what to place before our eyes. That's true, but would the critics be much happier if ads and posts on Facebook simply appeared in linear, chronological order?

Statement III can be derived from the lines: And on the question of algorithms, consider an analogy with a traditional publisher: Plenty of mainstream companies have published and promoted the works of Marx, Stalin, Hitler and Mao. The "algorithm" behind these decisions was whether these works would find an audience and bring in profit. The ideologies behind those works, of course, led to revolutions and the massacres of many millions, plus the infiltration of Western governments by communist sympathizers and delusional beliefs for several generations of Western intellectuals.

17. B

The passage highlights the increasing level of water in the Great Lakes and talks about scientists' concern related to coast extension and erosion due to the same. This is best reflected in Option B.

Option A is incorrect as scientists are clearly concerned about impact on the coast.

Options C and D are incorrect as scientists are not just interested in the increasing water, they are concerned as well

18. A

The passage mentions saving of EUR 13 bn-20bn; therefore, meritocracy saves money is the appropriate inference. Further, there is no mention of social equality and the quality of work delivered. Therefore, option A is the correct choice.

19. C

While all options mention the key points listed in the passage, the option that reflects the paragraph's contents most closely is option C and therefore, option C is the correct choice.

20. A

The passage is about the effect of taking excessive proteins on the body. We should notice that the idea has reached a point where the muscles grow due to load bearing and not because of the extra protein consumed. Hence we should note that any option regarding this can be avoided.

Option A: tells us what happens with the extra proteins. This can be a continuation to the scientific explanation. Hence this can be the suitable option.

Option B: speaks about keeping the body fit. Our expected content is actually regarding the consumption of protein and its effects on the body.

Option C: should come only after option A, as option A makes the premise for going into option C.

Option D: is something that we assume without any relevant information. Hence this can be disregarded.

21. C

The motive of ICC is to make the people (younger generation) fans of the game. So in order to achieve this, they need to let them play the game and become addicts.

Option A suggests that they should use the local channels to spread the news of the ICC chairman and some players playing the game. In a nation where the sports do not have a fan following, this will be of no use.

Option B: suggests that cricket stadiums must be built. If people are not attracted to the sports then there is no use of building cricket stadiums around as no one will turn up to play.

Option C: is the correct answer as the game should be spread among the younger generations so that they start enjoying the game. This will create a huge and concrete fan following.

Option D: has a completely useless idea as the people will enjoy the show and then they'll disappear without trying the game.

22. 2314

Exp: Statement 2 is the generic opening sentence of the passage since it is about the introduction to the central idea of the passage whereas statement 3 is the next sentence because it talks about the Indian context in this regard. Statement 1 comes after that because it is about the world-wide issue of global warming being described by the author. Statement 4 comes after that with further details of that.

23. 4123

Exp: Statement 4 introduces the central idea of the passage and that is why it comes in the beginning of the paragraph whereas statement 1 is the next sentence with details about the initiative taken by the World Economic Forum. It is again followed by statement 2 which is about the effect of cyber-attacks on almost all the countries of the world. Statement 3 is the next sentence as it gives the reaction of the author.

24. 3124

Passage is about gene mutation of microbes. Statement 3 will open as it introduces the topic and sets the base for next statements. 3-1 makes a mandatory pair. Also, 4 will follow 2 because of the word "instead". Thus, the correct order would be 3124.

Section - Data Interpretation & Logical Reasoning

25. D

It is given in the report that :

a) Aircrafts coded A, C, E, G and I would not need minor repairs, aircrafts coded B, D, F, H and J would not need medium repairs and aircrafts coded C, F and I would not need major repairs.

So aircrafts coded A, C, E, G and I would need either medium repairs or major repairs

Also aircrafts coded B, D, F, H and J would need either minor repairs or major repairs

Aircrafts coded C, F and I would need either minor repairs or medium repairs

From the above we can conclude :

Aircrafts coded C and I would need medium repairs

Aircraft coded F would need minor repairs

It is also given in the report that :

c) Aircraft coded G needed the maximum and aircraft coded H the minimum repairing expenditure.

From the above we can conclude :

Aircraft coded H would need minor repairs costing Rs 10 crores

Aircraft coded G would need major repairs costing Rs 60 crores

From the scatter graph we can also make out that :

There are three aircrafts that would need minor repairs (two Rs 10 crores and one Rs 20 crores)

There are four aircrafts that would need medium repairs (three Rs 30 crores and one Rs 40 crores)

There are three aircrafts that would need major repairs (one Rs 50 crores and two Rs 60 crores)

The report also said that :

b) Aircrafts coded D to I would need different repairing costs

Now, out of the aircrafts coded B, D, F, H and J, F and H are already identified to need minor repairs.

But because aircrafts coded D to I would need different repairing costs, the third one requiring minor repairs must not lie within them as otherwise there would be two Rs 10 crore repairing costs.

So, the code of the third aircraft needing minor repairs must be having code B or J, of estimated repair value Rs 10 crores.

Hence the estimated repairing cost of aircraft coded F is Rs 20 crores.

The rest, that is aircrafts coded D and J or D and B needed major repairs.

But because aircrafts coded D to I would need different repairing costs, and the estimated repairing cost of aircraft coded G is Rs 60 crores, aircraft coded D must have an estimated repairing cost of Rs 50 crores.

So the estimated repairing cost of J or B is Rs 60 crores.

The remaining aircrafts coded A and E would require medium repairs

Out of the aircrafts coded A, C, E and I which needed medium repairs, aircrafts coded E and I must have different repairing costs, as per point (c).

The rest, that is aircrafts coded A and C must have the same repairing cost of Rs 30 crores.

We cannot be sure about the repairing cost of aircrafts coded E and I, as anyone can have Rs 30 crores and the other would have Rs 40 crores.

Thus, it can be finally concluded that :

Aircraft Code	Repair type	Estimated repairing cost (Rs crores)
A	Medium	30
B	Minor	10/60
C	Medium	30
D	Major	50
E	Medium	30/40
F	Minor	20
G	Major	60
H	Minor	10
I	Medium	40/30
J	Major	60/10

Aircraft coded A needs a medium repair is true

The repairing expense of aircraft coded E will be no more than rupees forty crores is true

Aircraft coded G needs a major repair is true

However, the statement that the repairing expense of aircraft coded J will be no more than rupees forty crores is not necessarily true.

Hence Option D is the correct choice.

26. 190

From the data given, it can be concluded that :

Aircraft Code	Repair type	Estimated repairing cost (Rs crores)
A	Medium	30
B	Minor	10/60
C	Medium	30
D	Major	50
E	Medium	30/40
F	Minor	20
G	Major	60
H	Minor	10
I	Medium	40/30
J	Major	60/10

The total cost of repairing the aircrafts coded E and I is Rs 70 crores (either 30+40 or 40+30 crores of rupees)

Hence, the total cost of repairing the aircrafts coded A, C, E, G and I
 $= 30 + 30 + 70 + 60$
 $= \text{Rs } 190 \text{ crores}$

27. 30

From the data given, it can be concluded that :

Aircraft Code	Repair type	Estimated repairing cost (Rs crores)
A	Medium	30
B	Minor	10/60
C	Medium	30
D	Major	50
E	Medium	30/40
F	Minor	20
G	Major	60
H	Minor	10
I	Medium	40/30
J	Major	60/10

The extra postscript data informed :

- i) Four of the ten aircrafts of A to J code were A380 Airbuses, and needed a total of rupees two hundred crores for repairs
- ii) Only one of the aircrafts of A to E code was an A380 Airbus

For both point (i) and (ii) to be applicable, the only possible combination of A380 Airbuses could be aircrafts coded D, G, I and J, but only if the repairing cost of aircraft coded J was Rs 60 crores and the repairing cost of aircraft coded I was Rs 30 crores, as $50+60+30+60 = \text{Rs } 200 \text{ crores}$.

Hence, the estimated cost of repairing aircraft coded I was Rs 30 crores

28. A

From the complete report, including the postscript information, the only possible combination of A380 Airbuses could be aircrafts coded D, G, I and J, but only if the repairing cost of aircraft coded J was Rs 60 crores and the repairing cost of aircraft coded I was Rs 30 crores, as $50+60+30+60 = \text{Rs } 200 \text{ crores}$.

From the options, only aircraft coded J matches.

Hence, aircraft coded J can be correctly considered to be an A380 Airbus.

29. 100

2002 was a non-leap year.

Thus the number of days, and hence the target of content creation, in January, February, March and April 2002 was 31, 28, 31 and 30 respectively.

Case 1 :

Let us assume that the total number of contents created by Mr Piyush Pandey in the four months from January 2002 to April 2002 be α .

Sub-case 1A :

In January 2002, his creation was 0.18 of the total contents created in the four months.

But because it was January, the maximum content he could have created would be 31.

Let us assume that he achieved the maximum.

$$\text{Hence } 0.18\alpha = 31$$

$$\text{or, } \alpha = 31/0.18 = 172.22$$

Hence achievements in the four months were :

$$\text{January 2002} = 31$$

$$\text{February 2002} = 0.28 \times 172.22 = 48.22$$

$$\text{March 2002} = 0.29 \times 172.22 = 49.94$$

$$\text{April 2002} = 0.25 \times 172.22 = 43.26$$

But none of the achievements except that of January 2002 were possible as they were strictly forbidden to create more than a single content per day.

Sub-case 1B :

In February 2002, his creation was 0.28 of the total contents created in the four months.

But because it was February of a non leap year, the maximum content he could have created would be 28.

Let us assume that he achieved the maximum.

$$\text{Hence } 0.28\alpha = 28$$

$$\text{or, } \alpha = 28/0.28 = 100$$

Hence achievements in the four months were :

$$\text{January 2002} = 0.18 \times 100 = 18$$

$$\text{February 2002} = 28$$

$$\text{March 2002} = 0.29 \times 100 = 29$$

$$\text{April 2002} = 0.25 \times 100 = 25$$

All the achievements were possible.

Sub-case 1C :

In March 2002, his creation was 0.29 of the total contents created in the four months.

But because it was March, the maximum content he could have created would be 31.

Let us assume that he achieved the maximum.

$$\text{Hence } 0.29\alpha = 31$$

$$\text{or, } \alpha = 31/0.29 = 106.90$$

Hence achievements in the four months were :

$$\text{January 2002} = 0.18 \times 106.90 = 19.24$$

$$\text{February 2002} = 0.28 \times 106.90 = 29.93$$

$$\text{March 2002} = 31$$

$$\text{April 2002} = 0.25 \times 106.90 = 26.72$$

But the achievement of February 2002 was not possible as they were strictly forbidden to create more than a single content per day.

Sub-case 1D :

In April 2002, his creation was 0.25 of the total contents created in the four months.

But because it was April, the maximum content he could have created would be 30.

Let us assume that he achieved the maximum.

Hence $0.25\alpha = 30$

or, $\alpha = 30/0.25 = 120$

Hence achievements in the four months were :

January 2002 = $0.18 \times 120 = 21.60$

February 2002 = $0.28 \times 120 = 33.60$

March 2002 = $0.29 \times 120 = 34.80$

April 2002 = 30

But the achievements of February and March 2002 were not possible as they were strictly forbidden to create more than a single content per day.

Hence the maximum content that Mr Piyush Pandey could have created in the four months together was 100.

Case 2 :

Let us assume that the total number of contents created by Mr Archit Gadyar in the four months from January 2002 to April 2002 be β .

Sub-case 2A :

In January 2002, his creation was 0.50 of the total contents created in the four months.

But because it was January, the maximum content he could have created would be 31.

Let us assume that he achieved the maximum.

Hence $0.50\beta = 31$

or, $\beta = 31/0.50 = 62$

Hence achievements in the four months were :

January 2002 = 31

February 2002 = $0.25 \times 62 = 15.50$

March 2002 = $0.15 \times 62 = 9.30$

April 2002 = $0.10 \times 62 = 6.20$

All the achievements were possible.

Sub-case 2B :

In February 2002, his creation was 0.25 of the total contents created in the four months.

But because it was February of a non leap year, the maximum content he could have created would be 28.

Let us assume that he achieved the maximum.

Hence $0.25\beta = 28$

or, $\beta = 28/0.25 = 112$

Hence achievements in the four months were :

January 2002 = $0.50 \times 112 = 56$

February 2002 = 28

March 2002 = $0.15 \times 112 = 16.80$

April 2002 = $0.10 \times 112 = 11.20$

But the achievement of January 2002 was not possible as they were strictly forbidden to create more than a single content per day.

Sub-case 2C :

In March 2002, his creation was 0.15 of the total contents created in the four months.

But because it was March, the maximum content he could have created would be 31.

Let us assume that he achieved the maximum.

Hence $0.15\beta = 31$

or, $\beta = 31/0.15 = 206.67$

Hence achievements in the four months were :

January 2002 = $0.50 \times 206.67 = 103.34$

February 2002 = $0.25 \times 206.67 = 51.67$

March 2002 = 31

April 2002 = $0.10 \times 206.67 = 20.67$

But the achievement of January and February 2002 was not possible as they were strictly forbidden to create more than a single content per day.

Sub-case 2D :

In April 2002, his creation was 0.10 of the total contents created in the four months.

But because it was April, the maximum content he could have created would be 30.

Let us assume that he achieved the maximum.

Hence $0.10\beta = 30$

or, $\beta = 30/0.10 = 300$

Hence achievements in the four months were :

January 2002 = $0.50 \times 300 = 150$

February 2002 = $0.25 \times 300 = 75$

March 2002 = $0.15 \times 300 = 45$

April 2002 = 30

But none of the achievements except that of April 2002 were possible as they were strictly forbidden to create more than a single content per day.

Hence the maximum content that Mr Archit Gadyar could have created in the four months together was 62.

Case 3 :

Let us assume that the total number of contents created by Mr Sonal Dabral in the four months from January 2002 to April 2002 be γ .

Sub-case 3A :

In January 2002, his creation was 0.25 of the total contents created in the four months.

But because it was January, the maximum content he could have created would be 31.

Let us assume that he achieved the maximum.

Hence $0.25\gamma = 31$

or, $\gamma = 31/0.25 = 124$

Hence achievements in the four months were :

January 2002 = 31

February 2002 = $0.40 \times 124 = 49.60$

March 2002 = $0.15 \times 124 = 18.60$

April 2002 = $0.04 \times 124 = 4.96$

But the achievement of February 2002 was not possible as they were strictly forbidden to create more than a single content per day.

Sub-case 3B :

In February 2002, his creation was 0.40 of the total contents created in the four months.

But because it was February of a non leap year, the maximum content he could have created would be 28.

Let us assume that he achieved the maximum.

Hence $0.40\gamma = 28$

or, $\gamma = 28/0.40 = 70$

Hence achievements in the four months were :

January 2002 = $0.25 \times 70 = 17.50$

February 2002 = 28

March 2002 = $0.15 \times 70 = 10.50$

April 2002 = $0.04 \times 70 = 2.80$

All the achievements were possible.

Sub-case 3C :

In March 2002, his creation was 0.15 of the total contents created in the four months.

But because it was March, the maximum content he could have created would be 31.

Let us assume that he achieved the maximum.

Hence $0.15\gamma = 31$

or, $\gamma = 31/0.15 = 206.67$

Hence achievements in the four months were :

January 2002 = $0.25 \times 206.67 = 51.67$

February 2002 = $0.40 \times 206.67 = 82.67$

March 2002 = 31

April 2002 = $0.04 \times 206.67 = 9.27$

But the achievement of January and February 2002 was not possible as they were strictly forbidden to create more than a single content per day.

Sub-case 3D :

In April 2002, his creation was 0.04 of the total contents created in the four months.

But because it was April, the maximum content he could have created would be 30.

Let us assume that he achieved the maximum.

Hence $0.04\gamma = 30$

or, $\gamma = 30/0.04 = 750$

Hence achievements in the four months were :

January 2002 = $0.25 \times 750 = 187.50$

February 2002 = $0.40 \times 750 = 300$

March 2002 = $0.15 \times 750 = 112.50$

April 2002 = 30

But none of the achievements except that of April 2002 were possible as they were strictly forbidden to create more than a single content per day.

Hence the maximum content that Mr Sonal Dabral could have created in the four months together was 70.

Case 4 :

Let us assume that the total number of contents created by Ms Nikita Goswami in the four months from January 2002 to April 2002 be δ .

Sub-case 4A :

In January 2002, her creation was 0.15 of the total contents created in the four months.

But because it was January, the maximum content she could have created would be 31.

Let us assume that she achieved the maximum.

$$\text{Hence } 0.15\delta = 31$$

$$\text{or, } \delta = 31/0.15 = 206.67$$

Hence achievements in the four months were :

$$\text{January 2002} = 31$$

$$\text{February 2002} = 0.10 \times 206.67 = 20.67$$

$$\text{March 2002} = 0.30 \times 206.67 = 62$$

$$\text{April 2002} = 0.45 \times 206.67 = 93$$

But the achievement of March and April 2002 was not possible as they were strictly forbidden to create more than a single content per day.

Sub-case 4B :

In February 2002, her creation was 0.10 of the total contents created in the four months.

But because it was February of a non leap year, the maximum content she could have created would be 28.

Let us assume that she achieved the maximum.

$$\text{Hence } 0.10\delta = 28$$

$$\text{or, } \delta = 28/0.10 = 280$$

Hence achievements in the four months were :

$$\text{January 2002} = 0.15 \times 280 = 42$$

$$\text{February 2002} = 28$$

$$\text{March 2002} = 0.30 \times 280 = 84$$

$$\text{April 2002} = 0.45 \times 280 = 126$$

But none of the achievements except that of February 2002 were possible as they were strictly forbidden to create more than a single content per day.

Sub-case 4C :

In March 2002, her creation was 0.30 of the total contents created in the four months.

But because it was March, the maximum content she could have created would be 31.

Let us assume that she achieved the maximum.

$$\text{Hence } 0.30\delta = 31$$

$$\text{or, } \delta = 31/0.30 = 103.33$$

Hence achievements in the four months were :

$$\text{January 2002} = 0.15 \times 103.33 = 15.50$$

$$\text{February 2002} = 0.10 \times 103.33 = 10.33$$

$$\text{March 2002} = 31$$

$$\text{April 2002} = 0.45 \times 103.33 = 46.50$$

But the achievement of April 2002 was not possible as they were strictly forbidden to create more than a single content per day.

Sub-case 4D :

In April 2002, her creation was 0.45 of the total contents created in the four months.
But because it was April, the maximum content she could have created would be 30.
Let us assume that she achieved the maximum.

Hence $0.45\delta = 30$

or, $\delta = 30/0.45 = 66.67$

Hence achievements in the four months were :

January 2002 = $0.15 \times 66.67 = 10$

February 2002 = $0.10 \times 66.67 = 6.67$

March 2002 = $0.30 \times 66.67 = 20$

April 2002 = 30

All the achievements were possible.

Hence the maximum content that Ms Nikita Goswami could have created in the four months together was 66.67.

Hence, Mr Piyush Pandey himself had created the maximum number of contents out of all four of them in the months from January to April 2002, and the number was 100.

30. 2.5

The maximum content that Mr Piyush Pandey could have created in the four months together was 100 (Case 1B in previous sum)

Hence achievement in January 2002 = 18 contents

The maximum content that Mr Archit Gadyar could have created in the four months together was 62 (Case 2A in previous sum)

Hence achievement in February 2002 = 15.50 contents

Hence the difference between the number of contents = $18 - 15.50 = 2.50$

31. C

The maximum content that Mr Piyush Pandey could have created in the four months together was 100.

Hence,

His achievements in the four months were :

January 2002 = $0.18 \times 100 = 18$

February 2002 = $0.28 \times 100 = 28$

March 2002 = $0.29 \times 100 = 29$

April 2002 = $0.25 \times 100 = 25$

The maximum content that Mr Archit Gadyar could have created in the four months together was 62.

Hence,

His achievements in the four months were :

January 2002 = $0.50 \times 62 = 31$

February 2002 = $0.25 \times 62 = 15.50$

March 2002 = $0.15 \times 62 = 9.30$

April 2002 = $0.10 \times 62 = 6.20$

The maximum content that Mr Sonal Dabral could have created in the four months together was 70.

Hence,

His achievements in the four months were :

$$\text{January 2002} = 0.25 \times 70 = 17.50$$

$$\text{February 2002} = 0.40 \times 70 = 28$$

$$\text{March 2002} = 0.15 \times 70 = 10.50$$

$$\text{April 2002} = 0.04 \times 70 = 2.80$$

The maximum content that Ms Nikita Goswami could have created in the four months together was 67.67.

Hence,

Her achievements in the four months were :

$$\text{January 2002} = 0.15 \times 66.67 = 10$$

$$\text{February 2002} = 0.10 \times 66.67 = 6.67$$

$$\text{March 2002} = 0.30 \times 66.67 = 20$$

$$\text{April 2002} = 0.45 \times 67.67 = 30$$

From the above data it can be seen that in January 2002 all four of them created at least ten contents each.

32. 1

The maximum content that Mr Piyush Pandey could have created in the four months together was 100.

Hence,

His achievements in the four months were :

$$\text{January 2002} = 0.18 \times 100 = 18$$

$$\text{February 2002} = 0.28 \times 100 = 28$$

$$\text{March 2002} = 0.29 \times 100 = 29$$

$$\text{April 2002} = 0.25 \times 100 = 25$$

The maximum content that Mr Archit Gadyar could have created in the four months together was 62.

Hence,

His achievements in the four months were :

$$\text{January 2002} = 0.50 \times 62 = 31$$

$$\text{February 2002} = 0.25 \times 62 = 15.50$$

$$\text{March 2002} = 0.15 \times 62 = 9.30$$

$$\text{April 2002} = 0.10 \times 62 = 6.20$$

The maximum content that Mr Sonal Dabral could have created in the four months together was 70.

Hence,

His achievements in the four months were :

$$\text{January 2002} = 0.25 \times 70 = 17.50$$

$$\text{February 2002} = 0.40 \times 70 = 28$$

$$\text{March 2002} = 0.15 \times 70 = 10.50$$

$$\text{April 2002} = 0.04 \times 70 = 2.80$$

The maximum content that Ms Nikita Goswami could have created in the four months together was 67.67.

Hence,

Her achievements in the four months were :

$$\text{January 2002} = 0.15 \times 66.67 = 10$$

$$\text{February 2002} = 0.10 \times 66.67 = 6.67$$

$$\text{March 2002} = 0.30 \times 66.67 = 20$$

$$\text{April 2002} = 0.45 \times 67.67 = 30$$

From the above data it can be seen that :

In January 2002, Mr Archit Gadyar could have fulfilled his target of monthly content creation.

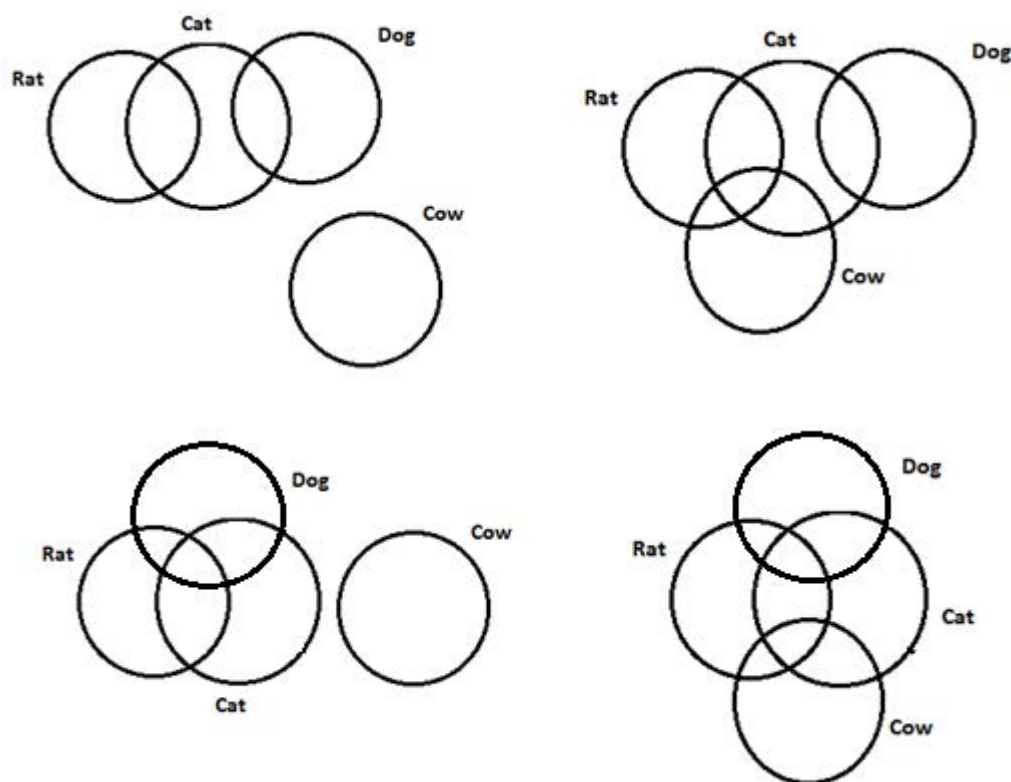
In February 2002, Mr Piyush Pandey and Mr Sonal Dabral could have fulfilled his target of monthly content creation.

In April 2002, Ms Nikita Goswami could have fulfilled her target of monthly content creation.

However in March 2002, no one could have fulfilled his target of monthly content creation.

Hence, 1 month is the answer.

33. D

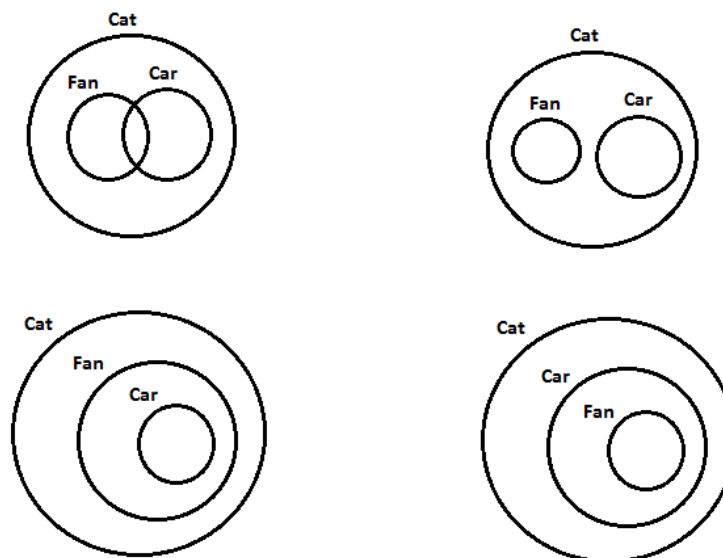


The above are the four cases that can happen.

Hence, only conclusion III follows.

CAREERS360

34. D



The above are the four cases that can happen.
Hence, neither conclusion I nor conclusion II follows.

35. 55,200

From the first condition given, we know that each volunteer collected the maximum cumulative subscription from distinct localities out of the four.

Hence, considering the four different arrangements that the above condition produces, there are four Cases, named Case 1A, 1B, 2A and 2B respectively as shown below.

The selection of the maximum cumulative subscription from distinct localities is shaded in green, the resultant second phase of calculation by column wise addition and subtraction is shaded in yellow, and the resultant third phase of calculation by further row wise addition and subtraction is shaded in pink.

CASE 1A	Total Cumulative Subscription from four localities	Maximum Cumulative Subscription from any locality	Cumulative Subscription from Barisha	Cumulative Subscription from Bakultala	Cumulative Subscription from Sarsuna	Cumulative Subscription from Adarshapally
Mr Abhik Mishra	Rs 4,11,600	Rs 1,17,600	Rs 74,400	Rs 1,17,600	Rs 1,21,200	Rs 98,400
Mr Biplab Das	Rs 2,78,400	Rs 91,200	Rs 91,200			Rs 21,600
Mr Chinmoy Sen	Rs 3,45,600	Rs 1,12,800	Rs 36,000			Rs 1,12,800
Mr Dilip Palit	Rs 1,29,600	Rs 57,600	Rs 43,200	Rs 14,400	Rs 57,600	Rs 14,400
TOTAL	Rs 11,65,200		Rs 2,44,800	Rs 3,44,400	Rs 3,28,800	Rs 2,47,200

CASE 1B	Total Cumulative Subscription from four localities	Maximum Cumulative Subscription from any locality	Cumulative Subscription from Barisha	Cumulative Subscription from Bakultala	Cumulative Subscription from Sarsuna	Cumulative Subscription from Adarshapally
Mr Abhik Mishra	Rs 4,11,600	Rs 1,17,600	Rs 74,400	Rs 1,21,200	Rs 1,17,600	Rs 98,400
Mr Biplab Das	Rs 2,78,400	Rs 91,200	Rs 91,200			Rs 21,600
Mr Chinmoy Sen	Rs 3,45,600	Rs 1,12,800	Rs 36,000			Rs 1,12,800
Mr Dilip Palit	Rs 1,29,600	Rs 57,600	Rs 43,200	Rs 57,600	Rs 14,400	Rs 14,400
TOTAL	Rs 11,65,200		Rs 2,44,800	Rs 3,44,400	Rs 3,28,800	Rs 2,47,200

CASE 2A	Total Cumulative Subscription from four localities	Maximum Cumulative Subscription from any locality	Cumulative Subscription from Barisha	Cumulative Subscription from Bakultala	Cumulative Subscription from Sarsuna	Cumulative Subscription from Adarshapally
Mr Abhik Mishra	Rs 4,11,600	Rs 1,17,600	Rs 74,400			Rs 1,17,600
Mr Biplab Das	Rs 2,78,400	Rs 91,200	Rs 76,800	Rs 91,200	Rs 88,800	Rs 21,600
Mr Chinmoy Sen	Rs 3,45,600	Rs 1,12,800	Rs 36,000	Rs 1,03,200	Rs 1,12,800	Rs 93,600
Mr Dilip Palit	Rs 1,29,600	Rs 57,600	Rs 57,600			Rs 14,400
TOTAL	Rs 11,65,200		Rs 2,44,800	Rs 3,44,400	Rs 3,28,800	Rs 2,47,200

CASE 2B	Total Cumulative Subscription from four localities	Maximum Cumulative Subscription from any locality	Cumulative Subscription from Barisha	Cumulative Subscription from Bakultala	Cumulative Subscription from Sarsuna	Cumulative Subscription from Adarshapally
Mr Abhik Mishra	Rs 4,11,600	Rs 1,17,600	Rs 74,400			Rs 1,17,600
Mr Biplab Das	Rs 2,78,400	Rs 91,200	Rs 76,800	Rs 88,800	Rs 91,200	Rs 21,600
Mr Chinmoy Sen	Rs 3,45,600	Rs 1,12,800	Rs 36,000	Rs 1,12,800	Rs 1,03,200	Rs 93,600
Mr Dilip Palit	Rs 1,29,600	Rs 57,600	Rs 57,600			Rs 14,400
TOTAL	Rs 11,65,200		Rs 2,44,800	Rs 3,44,400	Rs 3,28,800	Rs 2,47,200

But Case 1A is not possible.

Because Mr Abhik Mishra had a maximum cumulative collection of Rs 1,17,600, while his collection at Sarsuna comes out to Rs 1,21,200, which is impossible. Also in the second condition it is given that no volunteer collected equal subscriptions from any two localities. But that is exactly what results with Mr Dilip Palit at Bakultala and Adarshapally.

Case 1B is also not possible.

Because Mr Abhik Mishra had a maximum cumulative collection of Rs 1,17,600, while his collection at Bakultala comes out to Rs 1,21,200, which is impossible. Also in the second condition it is given that no volunteer collected equal subscriptions from any two localities. But that is exactly what results with Mr Dilip Palit at Sarsuna and Adarshapally.

Case 2B is also not possible.

In the third condition it is given that Mr Biplab Das collected more subscription from Bakultala than Sarsuna. But here his collection at Bakultala (Rs 88,800) is less than the collection at Sarsuna (Rs 91,200).

So, only Case 2A is possible.

Let the unknown subscriptions of Mr Abhik Mishra and Mr Dilip Palit in Case 2A be denoted by m , n , o and p as shown below :

CASE 2A	Total Cumulative Subscription from four localities	Maximum Cumulative Subscription from any locality	Cumulative Subscription from Barisha	Cumulative Subscription from Bakultala	Cumulative Subscription from Sarsuna	Cumulative Subscription from Adarshapally
Mr Abhik Mishra	Rs 4,11,600	Rs 1,17,600	Rs 74,400	m	n	Rs 1,17,600
Mr Biplab Das	Rs 2,78,400	Rs 91,200	Rs 76,800	Rs 91,200	Rs 88,800	Rs 21,600

Mr Chinmoy Sen	Rs 3,45,600	Rs 1,12,800	Rs 36,000	Rs 1,03,200	Rs 1,12,800	Rs 93,600
Mr Dilip Palit	Rs 1,29,600	Rs 57,600	Rs 57,600	o	p	Rs 14,400
TOTAL	Rs 11,65,200		Rs 2,44,800	Rs 3,44,400	Rs 3,28,800	Rs 2,47,200

Hence,

$$m + n = 411600 - (74400 + 117600) = \text{Rs } 2,19,600$$

$$o + p = 129600 - (57600 + 14400) = \text{Rs } 57,600$$

$$m + o = 344400 - (91200 + 103200) = \text{Rs } 1,50,000$$

$$n + p = 328800 - (88800 + 112800) = \text{Rs } 1,27,200$$

In the third condition it is given that the subscription collected by all four volunteers from each locality was a multiple of Rs 1,200.

Hence the upper limit of m or n is $117600 - 1200 = \text{Rs } 1,16,400$, and will decrease with a difference of Rs 1,200.

The lower limit of n or m is $74400 + 1200 = \text{Rs } 75,600$, and will increase with a difference of Rs 1,200.

Also the upper limit of o + p = $57600 - 1200 = \text{Rs } 56,400$, and will decrease with a difference of Rs 1,200.

The lower limit of p + o = $14400 + 1200 = \text{Rs } 15,600$, and will increase with a difference of Rs 1,200.

Hence the probable twelve values of m, n, o and p can be as follows :

	m	n	o	p
1	Rs 1,16,400	$(219600 - 116400)$ = Rs 1,03,200	$(150000 - 116400)$ = Rs 33,600	$(57600 - 33600)$ = Rs 24,000
2	Rs 1,03,200	Rs 1,16,400	$(150000 - 103200)$ = Rs 46,800	$(57600 - 46800)$ = Rs 10,800
3	Rs 1,15,200	$(219600 - 115200)$ = Rs 1,04,400	$(150000 - 115200)$ = Rs 34,800	$(57600 - 34800)$ = Rs 22,800
4	Rs 1,04,400	Rs 1,15,200	$(150000 - 104400)$ = Rs 45,600	$(57600 - 45600)$ = Rs 12,000
5	Rs 1,14,000	$(219600 - 114000)$ = Rs 1,05,600	$(150000 - 114000)$ = Rs 36,000	$(57600 - 36000)$ = Rs 21,600
6	Rs 1,05,600	Rs 1,14,000	$(150000 - 105600)$ = Rs 44,400	$(57600 - 44400)$ = Rs 13,200
7	Rs 1,12,800	$(219600 - 112800)$ = Rs 1,06,800	$(150000 - 112800)$ = Rs 37,200	$(57600 - 37200)$ = Rs 20,400
8	Rs 1,06,800	Rs 1,12,800	$(150000 - 106800)$ = Rs 43,200	$(57600 - 43200)$ = Rs 14,400
9	Rs 1,11,600	$(219600 - 111600)$ = Rs 1,08,000	$(150000 - 111600)$ = Rs 38,400	$(57600 - 38400)$ = Rs 19,200
10	Rs 1,08,000	Rs 1,11,600	$(150000 - 108000)$ = Rs 42,000	$(57600 - 42000)$ = Rs 15,600

11	Rs 1,10,400	(219600-110400) = Rs 1,09,200	(150000-110400) = Rs 39,600	(57600-39600) = Rs 18,000
12	Rs 1,09,200	Rs 1,10,400	(150000-109200) = Rs 40,800	(57600-40800) = Rs 16,800

However numbers 2, 4, 6 and 8 cannot be probable values as the value of p becomes less than or equal to the lowest subscription collected by Mr Dilip Palit from any locality.

Hence the final figures of all the subscriptions collected by the four volunteers from the four localities are :

CASE 2A	Total Cumulative Subscription from four localities	Maximum Cumulative Subscription from any locality	Cumulative Subscription from Barisha	Cumulative Subscription from Bakultala	Cumulative Subscription from Sarsuna	Cumulative Subscription from Adarshapally
Mr Abhik Mishra	Rs 4,11,600	Rs 1,17,600	Rs 74,400	m	n	Rs 1,17,600
Mr Biplab Das	Rs 2,78,400	Rs 91,200	Rs 76,800	Rs 91,200	Rs 88,800	Rs 21,600
Mr Chinmoy Sen	Rs 3,45,600	Rs 1,12,800	Rs 36,000	Rs 1,03,200	Rs 1,12,800	Rs 93,600
Mr Dilip Palit	Rs 1,29,600	Rs 57,600	Rs 57,600	o	p	Rs 14,400
TOTAL	Rs 11,65,200		Rs 2,44,800	Rs 3,44,400	Rs 3,28,800	Rs 2,47,200

with the eight different combination of values of m, n, o and p being :

	m	n	o	p
1	Rs 1,16,400	Rs 1,03,200	Rs 33,600	Rs 24,000
2	Rs 1,15,200	Rs 1,04,400	Rs 34,800	Rs 22,800
3	Rs 1,14,000	Rs 1,05,600	Rs 36,000	Rs 21,600
4	Rs 1,12,800	Rs 1,06,800	Rs 37,200	Rs 20,400
5	Rs 1,11,600	Rs 1,08,000	Rs 38,400	Rs 19,200
6	Rs 1,08,000	Rs 1,11,600	Rs 42,000	Rs 15,600
7	Rs 1,10,400	Rs 1,09,200	Rs 39,600	Rs 18,000
8	Rs 1,09,200	Rs 1,10,400	Rs 40,800	Rs 16,800

Hence, the difference (in Rs) between the amounts collected as subscription by Mr Biplab Das from Barisha and Adarshapally
 = 76800 – 21600
 = Rs 55,200

36. B

The final figures of all the subscriptions collected by the four volunteers from the four localities are :

CASE 2A	Total Cumulative Subscription from four localities	Maximum Cumulative Subscription from any locality	Cumulative Subscription from Barisha	Cumulative Subscription from Bakultala	Cumulative Subscription from Sarsuna	Cumulative Subscription from Adarshapally
Mr Abhik Mishra	Rs 4,11,600	Rs 1,17,600	Rs 74,400	m	n	Rs 1,17,600
Mr Biplab Das	Rs 2,78,400	Rs 91,200	Rs 76,800	Rs 91,200	Rs 88,800	Rs 21,600
Mr Chinmoy Sen	Rs 3,45,600	Rs 1,12,800	Rs 36,000	Rs 1,03,200	Rs 1,12,800	Rs 93,600
Mr Dilip Palit	Rs 1,29,600	Rs 57,600	Rs 57,600	o	p	Rs 14,400
TOTAL	Rs 11,65,200		Rs 2,44,800	Rs 3,44,400	Rs 3,28,800	Rs 2,47,200

with the eight different combination of values of m, n, o and p being :

	m	n	o	p
1	Rs 1,16,400	Rs 1,03,200	Rs 33,600	Rs 24,000
2	Rs 1,15,200	Rs 1,04,400	Rs 34,800	Rs 22,800
3	Rs 1,14,000	Rs 1,05,600	Rs 36,000	Rs 21,600
4	Rs 1,12,800	Rs 1,06,800	Rs 37,200	Rs 20,400
5	Rs 1,11,600	Rs 1,08,000	Rs 38,400	Rs 19,200
6	Rs 1,08,000	Rs 1,11,600	Rs 42,000	Rs 15,600
7	Rs 1,10,400	Rs 1,09,200	Rs 39,600	Rs 18,000
8	Rs 1,09,200	Rs 1,10,400	Rs 40,800	Rs 16,800

Hence, the difference (in Rs) between the amounts collected as subscription by Mr Chinmoy Sen from Bakultala and Sarsuna
 $= 112800 - 103200$
 $= \text{Rs } 9,600$

37. C

The final figures of all the subscriptions collected by the four volunteers from the four localities are :

CASE 2A	Total Cumulative Subscription from four localities	Maximum Cumulative Subscription from any locality	Cumulative Subscription from Barisha	Cumulative Subscription from Bakultala	Cumulative Subscription from Sarsuna	Cumulative Subscription from Adarshapally
Mr Abhik Mishra	Rs 4,11,600	Rs 1,17,600	Rs 74,400	m	n	Rs 1,17,600

Mr Biplab Das	Rs 2,78,400	Rs 91,200	Rs 76,800	Rs 91,200	Rs 88,800	Rs 21,600
Mr Chinmoy Sen	Rs 3,45,600	Rs 1,12,800	Rs 36,000	Rs 1,03,200	Rs 1,12,800	Rs 93,600
Mr Dilip Palit	Rs 1,29,600	Rs 57,600	Rs 57,600	o	p	Rs 14,400
TOTAL	Rs 11,65,200		Rs 2,44,800	Rs 3,44,400	Rs 3,28,800	Rs 2,47,200

with the eight different combination of values of m, n, o and p being :

	m	n	o	p
1	Rs 1,16,400	Rs 1,03,200	Rs 33,600	Rs 24,000
2	Rs 1,15,200	Rs 1,04,400	Rs 34,800	Rs 22,800
3	Rs 1,14,000	Rs 1,05,600	Rs 36,000	Rs 21,600
4	Rs 1,12,800	Rs 1,06,800	Rs 37,200	Rs 20,400
5	Rs 1,11,600	Rs 1,08,000	Rs 38,400	Rs 19,200
6	Rs 1,08,000	Rs 1,11,600	Rs 42,000	Rs 15,600
7	Rs 1,10,400	Rs 1,09,200	Rs 39,600	Rs 18,000
8	Rs 1,09,200	Rs 1,10,400	Rs 40,800	Rs 16,800

The subscription collected by Mr Dilip Palit from Bakultala is o, and the subscription collected by him from Sarsuna is p.

o is a natural number multiple of p only in the combination numbered 5, as $38400 = 2 \times 19200$

Hence, his collection as subscription (in Rs) from the locality of Sarsuna = Rs 19,200

38. D

The final figures of all the subscriptions collected by the four volunteers from the four localities are :

CASE 2A	Total Cumulative Subscription from four localities	Maximum Cumulative Subscription from any locality	Cumulative Subscription from Barisha	Cumulative Subscription from Bakultala	Cumulative Subscription from Sarsuna	Cumulative Subscription from Adarshapally
Mr Abhik Mishra	Rs 4,11,600	Rs 1,17,600	Rs 74,400	m	n	Rs 1,17,600
Mr Biplab Das	Rs 2,78,400	Rs 91,200	Rs 76,800	Rs 91,200	Rs 88,800	Rs 21,600
Mr Chinmoy Sen	Rs 3,45,600	Rs 1,12,800	Rs 36,000	Rs 1,03,200	Rs 1,12,800	Rs 93,600
Mr Dilip Palit	Rs 1,29,600	Rs 57,600	Rs 57,600	o	p	Rs 14,400

TOTAL	Rs 11,65,200		Rs 2,44,800	Rs 3,44,400	Rs 3,28,800	Rs 2,47,200

with the eight different combination of values of m, n, o and p being :

	m	n	o	p
1	Rs 1,16,400	Rs 1,03,200	Rs 33,600	Rs 24,000
2	Rs 1,15,200	Rs 1,04,400	Rs 34,800	Rs 22,800
3	Rs 1,14,000	Rs 1,05,600	Rs 36,000	Rs 21,600
4	Rs 1,12,800	Rs 1,06,800	Rs 37,200	Rs 20,400
5	Rs 1,11,600	Rs 1,08,000	Rs 38,400	Rs 19,200
6	Rs 1,08,000	Rs 1,11,600	Rs 42,000	Rs 15,600
7	Rs 1,10,400	Rs 1,09,200	Rs 39,600	Rs 18,000
8	Rs 1,09,200	Rs 1,10,400	Rs 40,800	Rs 16,800

The amount collected as subscription by Mr Abhik Mishra from the locality of Sarsuna is denoted by n.

Of all the values given in the options, only Rs 1,00,800 is not an amount collected as subscription by Mr Abhik Mishra from the locality of Sarsuna

39. B

The final figures of all the subscriptions collected by the four volunteers from the four localities are :

CASE 2A	Total Cumulative Subscription from four localities	Maximum Cumulative Subscription from any locality	Cumulative Subscription from Barisha	Cumulative Subscription from Bakultala	Cumulative Subscription from Sarsuna	Cumulative Subscription from Adarshapally
Mr Abhik Mishra	Rs 4,11,600	Rs 1,17,600	Rs 74,400	m	n	Rs 1,17,600
Mr Biplab Das	Rs 2,78,400	Rs 91,200	Rs 76,800	Rs 91,200	Rs 88,800	Rs 21,600
Mr Chinmoy Sen	Rs 3,45,600	Rs 1,12,800	Rs 36,000	Rs 1,03,200	Rs 1,12,800	Rs 93,600
Mr Dilip Palit	Rs 1,29,600	Rs 57,600	Rs 57,600	o	p	Rs 14,400
TOTAL	Rs 11,65,200		Rs 2,44,800	Rs 3,44,400	Rs 3,28,800	Rs 2,47,200

with the eight different combination of values of m, n, o and p being :

	m	n	o	p
1	Rs 1,16,400	Rs 1,03,200	Rs 33,600	Rs 24,000
2	Rs 1,15,200	Rs 1,04,400	Rs 34,800	Rs 22,800
3	Rs 1,14,000	Rs 1,05,600	Rs 36,000	Rs 21,600

4	Rs 1,12,800	Rs 1,06,800	Rs 37,200	Rs 20,400
5	Rs 1,11,600	Rs 1,08,000	Rs 38,400	Rs 19,200
6	Rs 1,08,000	Rs 1,11,600	Rs 42,000	Rs 15,600
7	Rs 1,10,400	Rs 1,09,200	Rs 39,600	Rs 18,000
8	Rs 1,09,200	Rs 1,10,400	Rs 40,800	Rs 16,800

The summation of the subscriptions collected by Mr Abhik Mishra and Mr Dilip Palit from the locality of Bakultala would be denoted by $m + o$.

As calculated previously, $m + o = \text{Rs } 1,50,000$

Hence, the summation of the subscriptions collected (in Rs) by Mr Abhik Mishra and Mr Dilip Palit from the locality of Bakultala is Rs 1,50,000.

40. A

The final figures of all the subscriptions collected by the four volunteers from the four localities are :

CASE 2A	Total Cumulative Subscription from four localities	Maximum Cumulative Subscription from any locality	Cumulative Subscription from Barisha	Cumulative Subscription from Bakultala	Cumulative Subscription from Sarsuna	Cumulative Subscription from Adarshapally
Mr Abhik Mishra	Rs 4,11,600	Rs 1,17,600	Rs 74,400	m	n	Rs 1,17,600
Mr Biplab Das	Rs 2,78,400	Rs 91,200	Rs 76,800	Rs 91,200	Rs 88,800	Rs 21,600
Mr Chinmoy Sen	Rs 3,45,600	Rs 1,12,800	Rs 36,000	Rs 1,03,200	Rs 1,12,800	Rs 93,600
Mr Dilip Palit	Rs 1,29,600	Rs 57,600	Rs 57,600	o	p	Rs 14,400
TOTAL	Rs 11,65,200		Rs 2,44,800	Rs 3,44,400	Rs 3,28,800	Rs 2,47,200

with the eight different combination of values of m , n , o and p being :

	m	n	o	p
1	Rs 1,16,400	Rs 1,03,200	Rs 33,600	Rs 24,000
2	Rs 1,15,200	Rs 1,04,400	Rs 34,800	Rs 22,800
3	Rs 1,14,000	Rs 1,05,600	Rs 36,000	Rs 21,600
4	Rs 1,12,800	Rs 1,06,800	Rs 37,200	Rs 20,400
5	Rs 1,11,600	Rs 1,08,000	Rs 38,400	Rs 19,200
6	Rs 1,08,000	Rs 1,11,600	Rs 42,000	Rs 15,600
7	Rs 1,10,400	Rs 1,09,200	Rs 39,600	Rs 18,000
8	Rs 1,09,200	Rs 1,10,400	Rs 40,800	Rs 16,800

The summation of the subscriptions collected by Mr Abhik Mishra from the localities of Bakultala and Sarsuna would be denoted by $m + n$.

As calculated previously, $m + n = \text{Rs } 2,19,600$

Hence, the summation of the subscriptions collected (in Rs) by Mr Abhik Mishra from the localities of Bakultala and Sarsuna is Rs 2,19,600

41. B

Actresses 2 and 3 possess most of the required traits. They both have black hair and brown eyes, have average height and build, and are in their thirties.

Actress 1 is very tall and is only in her mid-twenties. She also has an olive complexion. Actress 4 is of very slight build and is in her early thirties. She also has blue eyes.

42. B

The four women seem to agree that the plate starts out with the letters WB.

Three of them agree that the plate ends with 269, and that there is M before 269 (may not be immediately before)

Three of them think that the third and fourth number is 02.

Three of them think that the sixth and seventh number is 62.

The licence plate description that has all of these common elements is WB02M6269

43. B

Take note of the incident and subsequently report the matter to the concerned authorities

44. D

Inform Mr Bhunia politely that his nephew cannot be made a manager immediately and that he is willing to take him on as a management trainee and make him a manager as soon as his nephew is ready for the role.

A professional favour is always to be returned without violating company rules or without the favour being detrimental to the company's interests.

Hence Option D is the best option.

Section - Quantitative Aptitude

45. D

Let A's 1 day Work = 3 Units

B's 1 day Work = 2 Units

C's 1 day Work = 1 Unit

A, B and C's 1 day work = 6 units

Total Work = $30 \times 6 = 180$ days

In every six days A work for 3 days, B work for 4 days and C work for 5 days.

Work done in 6 days = $3 \times 3 + 2 \times 4 + 1 \times 5 = 22$ Units

So, work done in 6×8 (48 days) = $22 \times 8 = 176$ Units

On 49th days all the three are working, so remaining 4 units work be completed in $4/6 = 0.66$ days.

Total time = 48.66 days

46. 10

$$f(y) + f(y^2) = y^2 - f(y)$$

$$\Rightarrow f(y^2) = y^2 - 2f(y)$$

$$\text{Put } y = 1$$

$$f(1) = 1 - 2f(1)$$

$$\Rightarrow f(1) = 1/3$$

$$\text{So, } f(2) = 3f(1)/2 = 1/2$$

$$\text{and } f(3) = 3f(1) = 1$$

Put $y = 2$ in given function

$$f(4) = 4 - 2f(2) = 4 - 1 = 3$$

Put $y = 3$ in given function

$$f(9) = 9 - 2f(3) = 9 - 2 = 7$$

$$\text{So, } f(4) + f(9) = 3 + 7 = 10$$

47. B

$$p + q = \sqrt{45}$$

$$p - q = \sqrt{20}$$

Squaring and subtracting both, we get

$$4pq = 25$$

$$\Rightarrow pq = 25/4$$

$$\log_{5/2}^{pq} = \log_{5/2}^{25/4} = 2$$

48. A

Using the concept of sum of zeroes and product of zeroes, we get

$$p + q = -1/p \quad \text{-----(1)}$$

$$\text{and } pq = pq/p = q$$

$$\text{So, } pq - q = 0$$

$$\Rightarrow q(p - 1) = 0$$

$$\Rightarrow q = 0 \text{ or } p = 1$$

If $q = 0$; Put in equation 1, we get $p^2 = -1$ which is not possible since p is a real number.

If $p = 1$; Put in equation 1, we get $q = -2$

$$\text{So, } p + q = 1 - 2 = -1$$

49. C

Let the marks obtained are 100, 90, 80, 60.

She must pass in the subject in which she gets 90 marks.

So, maximum marks in each subject = 180

$$\text{Percentage marks she gets} = (100 + 90 + 80 + 60) \times 100 / 720 = 45.83\%$$

50. 33

Total 18 mangoes divided among three. So, A must have given 4 mangoes and B has given 2 mangoes to third person.

Ratio of amount received by A and B is $4:2 = 2:1$

So, if third person have Rs 99 then B can receive Rs 33 at maximum.

51. 5040

$$N = \text{HCF} \{854-2, 974-2, 1094-2\} = 12$$

$$\text{Quotients are } [854/12] = 70; [974/12] = 80; [1094/12] = 90$$

$$\text{LCM } \{70, 80, 90\} = 5040$$

52. B

Collision can be avoided only if two trains A and B completely cross each other before the train C reach.

$$\text{Relative speed of A and B} = (40 + 32) \text{ kmph} = 72 \text{ kmph} = 72(5/18) \text{ m/s} = 20 \text{ m/s}$$

$$\text{Time taken by A and B to cross each other} = (1000 + 137 + 63) / 20 = 60 \text{ sec}$$

$$\text{Speed of train C} = 90 \text{ kmph} = 25 \text{ m/s}$$

$$\text{Time taken by C to reach at mid-point of the track} = 500 / 25 = 20 \text{ sec}$$

To avoid collision train C should reach there just after 60 sec, so it should reduce its speed to $1/3^{\text{rd}}$ of its initial speed.

$$\text{Percentage reduction} = (2/3)100 = 66.66\%$$

53. 14

$$\text{Time taken by Amit to reach P is } 12/6 = 2 \text{ hrs}$$

In 2 hrs Bhuvan travels $2 \times 8 = 16 \text{ km}$ i.e. 12 KM tfrom M to P, 2 KM P to N and 2 KM N to P. So, distance between M to N is 14 KM.

54. 40

$$0.\underline{10} = \frac{10}{99}; 0.\underline{11} = \frac{11}{99}; 0.\underline{12} = \frac{12}{99}; \text{ and so on up to } \frac{89}{99}$$

$$\text{Sum} = \frac{10}{99} + \frac{11}{99} + \frac{12}{99} + \dots + \frac{89}{99}$$

$$\text{Sum} = \frac{1}{99} (10 + 11 + 12 + \dots + 89)$$

$$\text{Sum} = \frac{1}{99} (\text{sum of 1st 89 natural numbers} - \text{sum of 1st 9 natural numbers})$$

$$\text{Sum} = \frac{1}{99} (89 * \frac{90}{2} - 9 * \frac{10}{2})$$

$$\text{Sum} = \frac{1}{99} (4005 - 45)$$

$$\text{Sum} = 40$$

55. A

Cost of bike will be after 3 years = $(9/10)^3$ of its initial value

$$= 729/1000 \text{ of its initial value}$$

$$\text{Percentage increase in the cost to avoid loss} = [(1000 - 729)/729] * 100 = 37.17\%$$

56. D

$$\text{Let CP} = 100x$$

So, SP must be in the range of $140x$ to $150x$.

Since 50% discount is given

If $SP = 140x$ then $MP = 280x$

If $SP = 150x$ then $MP = 300x$

So, MP must be in the range of $280x$ and $300x$

Therefore, Markup percent must be in the range of $(280x - 100x) \cdot 100 / 100x$ to $(300x - 100x) \cdot 100 / 100x$ i.e. 180% to 200%.

57. 100

$\angle BAD = \angle BCD = 40^\circ$ (angle made by the same arc)

$\angle ADB = 180^\circ - \angle ABD - \angle DAB = 180^\circ - 90^\circ - 40^\circ = 50^\circ$

[$\angle ABD = 90^\circ$ since angle made in semicircle is 90°]

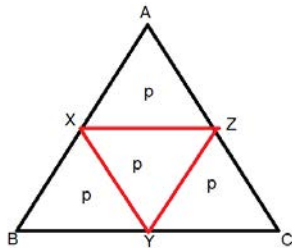
$\angle DBP = 180^\circ - \angle ABD = 180^\circ - 90^\circ = 90^\circ$

$\angle PDB = 180^\circ - \angle PBD - \angle BPD = 180^\circ - 90^\circ - 20^\circ = 70^\circ$

$\angle CDA = 180^\circ - \angle ADP = 180^\circ - 120^\circ = 60^\circ$

$\angle BED = \angle CDA + \angle BCD = 60^\circ + 40^\circ = 100^\circ$ [Exterior angle sum property]

58. 30



Since X , Y and Z are mid points of the sides AB , BC and AC of the triangle ABC respectively, Area of all small triangles is equal i.e. p

So, $4p = 40$

$\Rightarrow p = 10$

Area of trapezium $BXZC = 3p = 30$ sq cm

59. 10

Case 1: Unit digit is 0

Sum of the remaining 2 digits must be divisible by 3, so the remaining 2 digits must be any two out of 3, 6, and 9. Since unit place is 0, number will be divisible by 6.

Numbers formed = ${}^3P_2 = 6$

Case 2: Unit digit is 2

There will not be any possible combination so that the number is divisible by 6.

Case 3: Unit digit is 6 and digit at 10th place is 0

The remaining digit must be any out of 3 and 9.

Numbers formed = ${}^2P_1 = 2$

Case 4: Unit digit is 6 and digit at 10th place is not 0

Sum of the remaining 2 digits must be divisible by 3, so the remaining 2 digits must be any two out of 3 and 9.

Numbers formed = ${}^2P_2 = 2$

Total possible numbers are $6 + 2 + 2 = 10$

60. B

Height of cylinder = 6 x diameter of 1 sphere = 6 x 10 = 60 cm

Radius of cylinder = 5 cm

Volume of cylinder = $\pi r^2 h = \pi 5^2 (60) = 1500\pi$

Volume of 1 spherical marble = $(4/3)\pi r^3 = 500\pi/3$

Volume of 6 spherical marbles = 1000π

Vacant space of cylinder = $1500\pi - 1000\pi = 500\pi$

61. A

$$X = (100 - p) Y/100$$

$$Z = (100 + p) Y/100$$

$$X = (100 + 2.5p) Z/100$$

From 1st and 2nd relation, we get $X = Z (100 - p) / (100 + p)$

$$\text{So, } Z (100 - p) / (100 + p) = (100 + 2.5p) Z/100$$

$$\Rightarrow 100(100 - p) = (100 + p) (100 + 2.5p)$$

$$\Rightarrow -100p = 100p - 250p + 2.5p^2$$

$$\Rightarrow p = 20.$$

62. D

For real roots; $a^2 - 4(3 - b) \geq 0$

$$\Rightarrow a^2 + 4b - 12 \geq 0$$

$$\Rightarrow a^2 + 4b + b^2 - b^2 - 12 \geq 0$$

$$\Rightarrow a^2 + b^2 \geq b^2 - 4b + 12$$

$$\Rightarrow a^2 + b^2 \geq b^2 - 4b + 4 + 8$$

$$\Rightarrow a^2 + b^2 \geq (b - 2)^2 + 8$$

At $b = 2$, $a^2 + b^2$ has the minimum value i.e. 8

63. 0

$$|x^2 - 7x| > 5$$

$$\Rightarrow x^2 - 7x > 5 \text{ or } x^2 - 7x < -5$$

Case 1:

$$\Rightarrow x^2 - 7x > 5$$

$$\Rightarrow x^2 - 7x - 5 > 0$$

$$\Rightarrow x > [(7 \pm \sqrt{69})/2] \text{ which gives two solutions } x > 7 \text{ or } x < 0 \text{ (for } x \text{ to be integer).}$$

Case 2:

$$\Rightarrow x^2 - 7x < -5$$

$$\Rightarrow x^2 - 7x + 5 < 0$$

$$\Rightarrow x < [(7 \pm \sqrt{29})/2] \text{ which gives two solutions } x < 7 \text{ or } x > 0 \text{ (for } x \text{ to be integer).}$$

$$x = [1, 2, 3, 4, 5, 6]$$

There is no common solution in both cases. So, answer is 0.

64. C

$$\text{Profit} = 720 - \text{CP}$$

$$\text{Loss} = \text{CP} - 540$$

According to condition;

Loss = 2 x Profit

CP - 540 = 2 (720 - CP)

So, CP = Rs 660.

64. D

Let Principal = 100

Interest in 15 yrs = 600 (Since amount becomes 7 times of principal)

Rate of Interest = (600/15) = 40%

$\frac{A}{P} = \left(\frac{7}{5}\right)^5$ Since rate of interest is compounded annually

$$\frac{A}{P} = \frac{16807}{3125} = 5.38$$

A = 5.38P

66. C

Due amount after down payment- 20000 - 12 % of 20000 for 4 years - 20000 - 12% of 20000 for 3 years - 20000 - 12% of 20000 for 2 years - 20000 - 12% of 20000 for 1 years - 20000 = 0

⇒ Due amount - 100000 - 12% of 20000 (4 + 3 + 2 + 1) = 0

⇒ Due amount = 100000 + 12% of 20000 (4 + 3 + 2 + 1) = 124000

Therefore, Cost of Electric Car = 615000 + 124000 = Rs 839000

MOCK TEST – 16

Section - 1 - Verbal Ability & Reading Comprehension

Directions for Questions 1 to 4: Read the passage given below and answer the questions that follow.

Passage 1

Racism is the belief that characteristics and abilities can be attributed to people simply on the basis of their race and that some racial groups are superior to others. Racism and discrimination have been used as powerful weapons encouraging fear or hatred of others in times of conflict and war, and even during economic downturns.

Racism is also a very touchy subject for some people, as issues concerning free speech and Article 19 of the Universal Declaration of Human Rights come into play. Some people argue that talking about supporting racial discrimination and prejudice is just words and that free speech should allow such views to be aired without restriction. Others point out that these words can lead to some very dire and serious consequences (the Nazi government policies being one example).

In a short introductory video the Understanding Race project from the American Anthropological Association says race is a powerful idea and an enduring concept, invented by society. It has also fostered inequality and discrimination for centuries, as well as influencing how we relate to other human beings.

Europe is often one of the first places people think of when racism is discussed. From institutionalized racism, especially in colonial times, when racial beliefs — even eugenics — were not considered something wrong, to recent times where the effects of neo-Nazism is still felt. Europe is a complex area with many cultures in a relatively small area of land that has seen many conflicts throughout history. (Many of these conflicts have had trade, resources and commercial rivalry at their core, but national identities have often added fuel to some of these conflicts.)

In its modern form, racism evolved in tandem with European exploration and conquest of much of the rest of the world, and especially after Christopher Columbus reached the Americas. As new peoples were encountered, fought, and ultimately subdued, theories about “race” began to develop, and these helped many to justify the differences in position and treatment of people whom they categorized as belonging to different races. Another possible source of racism is the misunderstanding of Charles Darwin’s theories of evolution. Some took Darwin’s theories to imply that since some “races” were more civilized, there must be a biological basis for the difference. At the same time they appealed to biological theories of moral and intellectual traits to justify racial oppression. There is a great deal of controversy about race and intelligence, in part because the concepts of both race and IQ are themselves controversial.

Q1. According to the information provided in the passage, which out of the following, is not an outcome of racism?

- A. It has been used as a powerful weapon encouraging fear or hatred of others in times of conflict and war.
- B. It has been used as a powerful weapon to counter economic downturns.

- C. It has influenced how we relate to other human beings.
- D. It has also fostered inequality for centuries.

Q2. Which of the following best describes the organization of the passage?

- A. A societal paradox is stated, discussed, and left unresolved.
- B. Multiple explanations for a societal phenomenon are presented, argued and reconciled.
- C. A theory is proposed and is then followed by descriptions of possible outcomes that support the theory
- D. A contentious issue is described and is then followed by the various constituents that define its multiple facets.

Q3. The possible sources for the evolution and development of racism are:

- I. The misinterpretation of the theories of evolution of Darwin.
- II. The use of racism to justify exploitation
- III. As a source for justifying the differences in position and treatment of people

- A. I & II
- B. II & III
- C. I & III
- D. All of the above

Q4. According to the information in the passage, racism is a:

- A. belief attributed to particular human attributes
- B. an ideal that forms the virtue systems of some
- C. concept that some nations are built on
- D. powerful idea and an enduring concept invented by society.

Direction for questions 5 to 7: Answer the questions on the basis of the information provided in the passage.

Passage 2

In “the century of total war”, and the new millennium, Europe is seeing an alarming resurgence in xenophobia and racial hatred. A short review from the Inter Press Service highlights the rise of neo-Nazism in 2000 in Europe and suggests that “far from being a fringe activity, racism, violence and neo-nationalism have become normal in some communities. The problems need to be tackled much earlier, in schools and with social programmes.”

Ethnic minorities and different cultures in one country can often be used as a scapegoat for the majority during times of economic crisis. That is one reason why Nazism became so popular. In France, May 2002, the success of far right politician Le Pen in the run for leadership (though he lost out in the end) sent a huge shockwave throughout Europe, about how easy it was for far right parties to come close to getting power if there is complacency in the democratic processes and if participation is reduced.

In various places throughout Western Europe, in 2002, as Amnesty International highlights, there has been a rise in racist attacks and sentiments against both Arabs and Jews, in light of the increasing hostilities in the Middle East. Earlier in 1998, in an area of Germany a right wing racist party won an unprecedented number of votes. In Austria, the Freedom Party was able to secure the majority of the cabinet posts. The party is an extreme far right party, whose leader, Jorg Heider, has been accused of sympathetic

statements towards the Nazis. The European Union has reacted to this indicating that Austria's participation may be in jeopardy. This Guardian Special Report has much more in-depth coverage. In Italy, there are attempts to try and deal with the rise in undocumented immigrants from Tunisia. The reactions from the right wing have been labeled by some as being "openly racist".

Into 2010 and problems of racism in Italy continue. For example, a wave of violence against African farm workers in southern Italy left some 70 people injured. This resulted in police having to evacuate over 300 workers from the region. The workers were easy targets being exploited as fruit pickers living in difficult conditions. They earn "starvation wages" according to a BBC reporter, doing "backbreaking work which Italians do not want" in a labor market controlled by the local mafia.

Spain has seen increased racial violence. The growing economy invites immigrants from North African countries such as Morocco. However, the poor conditions that immigrants have had to endure and the already racially charged region has led to friction and confrontations.

In 1997, Human Rights Watch noted that, "The U.K. has one of the highest levels of racially-motivated violence and harassment in Western Europe, and the problem is getting worse." In April 1999, London saw two bombs explode in predominantly ethnic minority areas, in the space of one week, where a Nazi group claimed responsibility. The summer of 2001 saw many race-related riots in various parts of northern England.

So far, the above represents an incredibly tiny number of examples and details. Many, many more events haven't been mentioned, as it is admittedly difficult to keep up with all the different items.

Q5. The primary purpose of the author of the passage can be labeled as:

- A. To highlight the plight of migrants and immigrants who are suffering racial abuse at the hands of their European counterparts.
- B. To outline in a chronological and geographical order the instances of racism taking place across Europe.
- C. To mention the various kinds of racial abuse that exist in Europe.
- D. To outline racism and its various instances that have been practiced in Europe in recent times.

Q6. *Neo-Nazism* in the passage can be identified with which out of the following:

- I. Racial hatred
- II. Xenophobia
- III. Neo-nationalism
- IV. Violence

- A. I, II & III
- B. II, III & IV
- C. I, III & IV
- D. All of the above

Q7. Which of the following, if true, would not strengthen the author's assertion about the alarming resurgence in xenophobia and racial hatred in Europe?

- A. The cause of the increased violence in Europe is in fact the increased economic disparity between the Europeans and the immigrants.
- B. The Europeans view the immigrants as competition and people who are taking away their jobs.

- C. In times such as the economic depression, every race wishes to protect its own interests and so do the Europeans.
- D. The poor conditions that immigrants have to live in mean that they have to resort to violence for their justified rights.

Directions for Questions 8 to 11: Read the passage given below and answer the questions that follow.

Passage 3

One of the many things that the powerful nations (through the IMF, World Bank, etc.) prescribe is that the developing nations should open up to allow more imports and export more of their commodities. However, this is precisely what contributes to poverty and dependency. If a society spends one hundred dollars to manufacture a product within its borders, the money that is used to pay for materials, labor and other costs moves through the economy as each recipient spends it. Due to this multiplier effect, a hundred dollars worth of primary production can add several hundred dollars to the Gross National Product (GNP) of that country. If money is spent in another country, circulation of that money is within the exporting country. This is the reason an industrialized product-exporting/commodity-importing country is wealthy and an undeveloped product-importing/commodity-exporting country is poor. Developed countries grow rich by selling capital-intensive (thus cheap) products for a high price and buying labor-intensive (thus expensive) products for a low price. This imbalance of trade expands the gap between the rich and the poor. The wealthy sell products to be consumed, not tools to produce. This maintains the monopolization of the tools of production, and assures a continued market for the product. Such control of tools of production is a strategy of a mercantilist process. That control often requires military might.

As seen above as well, one of the effects of structural adjustment is that developing countries must increase their exports. Usually commodities and raw materials are exported. But as Smith noted above, poor countries lose out when they

- export commodities (which are cheaper than finished products)
- are denied or effectively blocked from industrial capital and real technology transfer, and
- import finished products (which are more expensive due to the added labor to make the product from those commodities and other resources)

This leads to less circulation of money in their own economy and a smaller multiplier effect. Yet, this is not new. Historically this has been a partial reason for dependent economies and poor nations. This was also the role enforced upon former countries under imperial or colonial rule. Those same third world countries find themselves in a similar situation. This can also be described as unequal trade:

“At first glance it may seem that the growth in development of export goods such as coffee, cotton, sugar, and lumber, would be beneficial to the exporting country, since it brings in revenue. In fact, it represents a type of exploitation called unequal exchange. A country that exports raw or unprocessed materials may gain currency for their sale, but they lose it if they import processed goods. The reason is that processed goods—goods that require additional labor—are more costly. Thus a country that exports lumber but does not have the capacity to process it must then re-import it in the form of finished lumber products, at a cost that is greater than the price it received for the raw product. The country that processes the materials gets the added revenue contributed by its laborers.(Emphasis is original)” — Richard Robbins, Global Problems and the Culture of Capitalism.

Q8. The theme of the passage can be said to be:

- A. To highlight the inherent injustice of the capitalist system.
- B. To highlight the naivety with which the developing world does its business transaction.
- C. To highlight a fundamental flaw in the business transactions of the present and how they are skewed in favor of one particular side.
- D. To showcase the plight of some nations and how they suffer at the hands of unequal trade practices.

Q9. As per the passage, the multiplier effect is:

- A. A method by which any nation can multiply the assets it has.
- B. An economic principle used to explain the workings of GNP of a country and how it is affected by certain chain reactions in trade.
- C. A way by which the GNP of a country can be expanded by an increase in final income arising from any new injection of spending.
- D. An economic justification which shows how the GNP of a country is affected by certain chain reactions in trade.

Q10. The statement of Richard Robbins can be labeled as which of the following:

- A. prophetic
- B. theoretical
- C. axiomatic
- D. explicatory

Q11. According to the passage, structural adjustment leads to which out of the following: Loss of revenue in the form of lack of skill enhancement.

- I. Loss of revenue in the form of lack of skill enhancement.
- II. Skewing the trade imbalance further by importing finished products rather than raw materials.
- III. Lack of technological improvements in developing countries

- A. I & II
- B. II & III
- C. I & III
- D. I, II & III

Directions for Questions 12 to 16: Read the passage given below and answer the questions that follow.

Passage 4

Materialism and its theories can be traced as far back as the poem *The Nature of Things*, written in the first century B.C. by Lucretius. Other defining works include *The System of Nature* by Paul d'Holbach, *Force and Matter* by Ludwig Buchner, and the more recent research done by Richard Vitzthum, *An Affirmative History and Definition* (1996).

Materialism as a philosophy is held by those who maintain that existence is explainable solely in material terms, with no accounting of spirit or consciousness. Individuals who hold to this belief see the universe as a huge device held together by pieces of matter functioning in subjection to naturalistic laws. Since materialism denies all concepts of Special Creation, it relies on the Theory of Evolution to explain itself, making beliefs in materialism and evolution interdependent.

The first question this worldview should cause most of us to ask is, "If all that exists is matter only, where did the natural laws that govern it come from?" New scientific discoveries in the areas of biological complexity, cosmological design, quantum physics, and information theory bring these materialistic assumptions into doubt. A massive quantity of evidence demonstrates that the universe and its material aspects are connected by a network of energy, design and information. We now see much more than matter - we see the result of conscious creation.

Materialism, at its simpler level, involves the focus on material "things" as opposed to that which is spiritual or intellectual in nature. We live in a world surrounded by and composed of matter. It is natural, therefore, that we may become distracted from spiritual or intellectual pursuits by material possessions, but this is frequently where problems occur. We can become obsessed by a desire to obtain them, or simply frustrated by the need to maintain them.

The questions this attitude should cause us to ask are, "Are material things really more important than anything else? Is material success the highest goal? If things are all there are, what's life all about? Why am I here at all? If life is really just about materialism, why should I even try to live a moral life? What does it matter how I treat others or how I live, as long as I have what I want? Why does what I believe about the origin of life matter?"

In a court of criminal law, a conviction arrived at by any jury requires proof beyond a shadow of a doubt. Current theories of materialism appear to be clouded by shadows and doubts. We needn't conclude that it is necessary to take a completely opposite view. After all, as C.S. Lewis once said, "God ... likes matter. He invented it." Consider, instead, how what you choose to believe affects how you live, for as Lewis also said, "different beliefs about the universe lead to different behaviour." What we believe must either be true or false. Before settling on the position you choose, you owe it to yourself to keep seeking the truth about life, death and the universe.

Q12. The purpose of the second paragraph of the passage is:

- A. To introduce a contradictory voice to what has been stated in general in the passage.
- B. To bring to surface the logical opposition against the primary subject of the passage, which is defined in this paragraph.
- C. To prove the author's point conclusively.
- D. To highlight the basics of the primary subject of the passage against which a logical opposition is built.

Q13. The statement of C.S.Lewis, "God ... likes matter. He invented it.", is used by the author to:

- A. prove that materialism is something we cannot get rid of.
- B. show how different beliefs about the universe lead to different behaviour.
- C. provide a little support for materialism and show that it is not completely irrelevant.
- D. prove that materialism is in fact a gift from God.

Q14. Materialism depends on/is related to which of the following?

- I. Theory of evolution
- II. Spirit
- III. Consciousness
- IV. Naturalistic law
- V. Concepts of Special creation

- A. All of the above
- B. I, II & V
- C. I & IV
- D. I, III, IV & V

Q15. It can be inferred from the passage that the author wishes that the reader should approach materialism:

- A. with a circumspect approach
- B. with informed skepticism
- C. with contemptuous dismissal
- D. with reverential prudence

Q16. The primary purpose of the passage is:

- A. To introduce to the reader the basic precepts of materialism.
- B. To highlight to the reader the fundamental flaws of materialistic approach in life.
- C. To introduce to the reader the basic concepts of materialism along with its shortcomings.
- D. To portray materialism in the light it needs to be, with all its shortcomings exposed.

Directions for the Question: Identify the apt summary for the given paragraph. Enter the option number you deem as the correct answer.

Q17. Fossil fuels have two major problems that paint a dim picture for their future energy dominance. These problems are inter-related but still should be discussed separately. First, they cause climate change. We know that, we've known it for decades, and we know that continued use of fossil fuels will cause enormous worldwide economic and social consequences. Second, fossil fuels are expensive. Much of their costs are hidden, however, as subsidies. If people knew how large their subsidies were, there would be a backlash against them from so-called financial conservatives.

- A. The use of fossil fuels is deleterious and Machiavellian.
- B. The use of fossil fuels is damaging and insidious
- C. The use of fossil fuels is harmful and pragmatic.
- D. The use of fossil fuels is unhindered and destructive.

Directions for the Question: Identify the apt summary for the given paragraph. Enter the option number you deem as the correct answer.

Q18. On 22 July, the Hungarian prime minister Viktor Orbán stood before university students and delivered a speech titled "Will Europe belong to Europeans?" It contained rambling passages about how a "Soros plan" was in place to bring in "hundreds of thousands of migrants every year – if possible, a million – to the territory of the European Union from the Muslim world". The aim was to transform the continent into "a new, Islamised Europe". This, Orbán argued, was what lay behind "Brussels' continuous and stealthy withdrawal of powers from the nation states". Orbán has form when it comes to this kind of paranoid vision. He's an authoritarian populist who has made a habit of stoking xenophobia and anti-Muslim sentiment. He eagerly amplifies far-right conspiracy theories about the Christian majority being threatened by demographic "replacement". His message isn't just fake news about the present, however. It comes laced with historical distortion.

- A. The radical vision of a leader can stir up the masses and create problems of distortion of reality.
- B. The populist exhortations of a leader not only represent fake news but also distort history.

- C. The inspiring words of a leader can not only stir the masses but also change history.
- D. The populist sentiments of a leader can sway the population and lead them to change and alter history.

Directions for the Question: Identify the apt summary for the given paragraph. Enter the option number you deem as the correct answer.

Q19. On 23 September 2013, the Supreme Court, in response to a writ petition filed by the former judge KS Puttaswamy, challenging the government's mission of universal Aadhaar enrolment, and of linking various benefit schemes to the programme, ruled that "no person should suffer for not getting the Aadhaar card," despite the fact that some authorities had issued circulars making it mandatory. On 24 March 2014, in another case, it ruled that the biometrics collected for Aadhaar are to be confidential, and, additionally, that "no person shall be deprived of any service for want of Aadhaar number ... All the authorities are directed to modify their forms/circulars/likes so as to not compulsorily require the Aadhaar number..."

- A. The Supreme court has ruled unambiguously on the matter of Aadhaar number being mandatory.
- B. The judiciary has passed some judgement related to Aadhaar number.
- C. The Supreme court is of the opinion that Aadhaar number is not a scheme in the interest of the country.
- D. The judiciary has blocked the implementation of Aadhaar number in India.

Directions for the Question: The question below has a paragraph given with one sentence missing in at the end. From among the answer choices given, select the sentence that can fill the blank to form a coherent paragraph.

Q20. In Shashanka Ghosh's *Veere Di Wedding*, a female bonding dramedy that plays strictly by standard rules of the genre, four girls, friends since their school days in Delhi, reunite for an obscenely ostentatious wedding and expend all their time and energy on the task of growing "some balls" in the face of personal crises and social pressures, some self-created, others imposed. They mimic the men. Not a great idea at all! The actors are quite far away from their budding youth era. The feisty quartet use the F-word liberally, smoke, drink, do drugs and generally make a nuisance of themselves in order to prove that they are no pushovers. They could surely have done better. When women set the bar so low that they end up looking like wannabe rebels without either a pause or a cause, the impact that they have is exactly the opposite of the one that is intended. They cut sorry figures.

(_____)

- a. The movie will not fetch any good gains in the box office.
- b. The audience can be made to comment on the movie as we do not expect anything positive coming our way.
- c. They are portraying the culture of girls in the posh circle successfully.
- d. Who would take women nearing 30 seriously if they still insist on acting like a gaggle of girls just out of school?

Directions for the Question: The question below has a paragraph given with one sentence missing in at the end. From among the answer choices given, select the sentence that can fill the blank to form a coherent paragraph.

Q21. The Honda Forza 125 is one of the most popular maxi-scooters in Europe, and now Honda will release an updated version of the Forza 125 for 2018, with updated styling, electrically adjustable

windscreen, LED indicators, new instrumentation, new colours and increased underseat storage. The 2018 Forza 125 will have enough space under the seat to store two full-face helmets, and the revised instrument panel will include an analogue speedometer and tachometer, with a digital display with three modes. (_____)

- a. The new scooter industry has been setting up examples with the adaptation of innovative technologies.
- b. There has been a rise in road accidents in the country and the Ministry is pretty much concerned about the safety features.
- c. The display of the scooter will be controlled via a switch in the handlebar, as will the new adjustable screen.
- d. The overall package can be a value-for-money purchase and hence the company aims to find success with its new model.

Directions for questions 22: In the following question, rearrange the five sentences in order to form a meaningful paragraph.

TITA

Q22.

1. The outcome was liberating and purging, a glimpse below the surface of modern power.
2. We do not yet know.
3. Last year, the media exulted over the WikiLeaks revelations of what American soldiers said in battle and what diplomats said about their host governments.
4. But the test should be whether diplomacy improved as a result.

Directions for questions 23: In the following question, rearrange the five sentences in order to form a meaningful paragraph.

TITA

Q23.

1. "This allegation is completely baseless and the evidence collected does not count. How can they (EOU officials) say so without verifying the signatures of the district magistrates? The bank official used to call every time cheques were submitted to the bank for the transfer of money to the account of Srijan," said a senior official of Bank of Baroda.
2. Inspector-general, economic offences unit, Jitendra Singh Gangwar had said on Friday that the signatures of the DMs were forged to make the transactions and he said that they had collected evidence for the same.
3. The economic offences unit (EOU) had, during the raid, recovered three cheques containing forged signatures of three former DMs.
4. Senior officials of the two banks which are in the eye of the storm over the Bhagalpur scam have questioned the police claim that the money had been transferred to the account of Srijan Mahila Vikas Sahyog Samiti Ltd by using forged signatures of the district magistrates concerned.

Directions for questions 24: In the following question, rearrange the five sentences in order to form a meaningful paragraph.

TITA

Q24.

1. It has been held by the Supreme Court time and again that the right to free speech cannot be used as a weapon to wage war against the country and also to incite some violent ideology.
2. For example, the route in which militancy has spread its wings in India, in which at times we may blame the affected individual, basically involves the wrongful utilization of free speech at times.

3. The Right to Speech is a fundamental right according to the Constitution of India but there are certain limitations imposed on it in the constitution itself as the makers were very aware of the misuse that the citizens can make of this provision.
4. It is to be noted that the government often tries to muzzle the voices of such anti-nationals inciting violence and this is not considered as an illegal act by the courts.

Section - 2 - Data Interpretation and Logical Reasoning

Directions for questions from 25 to 28:

Mr Ghosh of PTPC Courier wanted to finish his delivery job as early as possible on a certain day. On that day he was asked to make a delivery of five parcels, one each, to five people named P, Q, R, S, and T, each having a different address. He had to take possession of the parcels from the office of PTPC at 9.30 am when the office opened. On consulting Google Maps, Mr Ghosh found the distance in kilometers between the addresses to be as follows :

Distance in km	P	Q	R	S	T
P	0	12	6	6	2
Q	12	0	4	14	16
R	6	4	0	10	8
S	6	14	10	0	6
T	2	16	8	6	0
PTPC Courier Office	8	14	10	12	6

It is also known that Mr Ghosh drives his bike at a constant speed of 24 km/hour, and takes 2 minutes at each address to make the delivery.

Q 25 (TITA)

If Mr Ghosh takes possession of the parcels exactly at 9.30 am, what is the earliest time (in am) by which he can complete all the deliveries ?

Q 26 (TITA)

What is the difference between the earliest and latest time (in minutes) that Mr Ghosh takes to make all the deliveries ?

Q 27 (TITA)

If on that very day the employees of a company located on the 2 km stretch of road connecting addresses of P and T had blocked the road by sitting for a dharna, what would be the earliest time (in am) by which Mr Ghosh could complete all the deliveries ?

Q 28 (TITA)

At the last moment before 9.30 am, Mr Ghosh, found out that he had also got to make two urgent deliveries to the address of Q and R within 10.24 am. What is the minimum time taken (in minutes) by Mr Ghosh to make the urgent delivery on time plus the parcels ?

Directions for questions from 29 to 34 :

On 1st February 2022, Ms Dipali Goenka, MD & CEO of Christy's, a subsidiary of Gujarat based M/s Welspun India, received a large order for supplying handmade players' towels for the centenary Wimbledon Tennis tournament in July 2022, and the ICC Men's T-20 World Cup in October 2022, both to be delivered by the last date of June 2022.

Christy's have

- Twenty cutters whose job is to cut the towel fabric supplied from M/s Welspun India
- Fifty printers who do the dyeing and screen printing on the towels
- Twenty stitchers whose job is to do the border stitching and monogramming on the towels
- Five packers who fold, pack and seal the towels

Each of the hundred employees mentioned above work for ten hours per day.

Each of the Wimbledon towels require forty minutes for cutting the towel fabric, two hours for dyeing and screen printing, forty minutes for border stitching and monogramming, and ten minutes for folding,

packing and sealing. Whereas the ICC World Cup towels require one hour, two hours, eighty minutes and fifteen minutes respectively for the same above mentioned activities.

At Christy's, the following steps are followed in order, after the arrival of the towel fabric, till the final packed product is obtained :

Step I: Cutting of towel fabric by the cutters

Step II: Dyeing and screen printing on the towels by the printers

Step III: Stitching and monogramming on the towels by the stitchers

Step IV: Folding, packing and sealing of towels by the packers

Q 29 (TITA)

What is the maximum number of the ICC World Cup towels that Christy's can complete in a day ?

Q 30 (TITA)

What is the maximum number of the Wimbledon towels that Christy's can complete in a day ?

Q 31 On a particular day Christy's decided to complete a hundred ICC World Cup towels. How many Wimbledon towels can be completed on that day ?

- A) 150
- B) 125
- C) 100
- D) 75

Q 32 If Christy's decides to make two hundred Wimbledon towels only and no other towels on a particular day, how many total man-hours will remain unutilized on that day ? (Man-hours for a task = number of men who can do the task * number of hours for the task)

- A) 100
- B) 133.33
- C) 200
- D) 250

Q 33 What is the maximum total number of towels Christy's can complete in a day if the target is to complete at least eighty towels for both Wimbledon and ICC World Cup every day ?

- A) 180
- B) 190
- C) 220
- D) 260

Q 34 If Christy's would like to complete equal number of Wimbledon and ICC World Cup towels in a day, then what would be the total number of towels of both types it can complete within the stipulated time of the order, assuming that the first consignment of towel fabric arrived at Christy's from M/s Welspun India on 1st March 2022 and that production continued on all seven days of a week ?

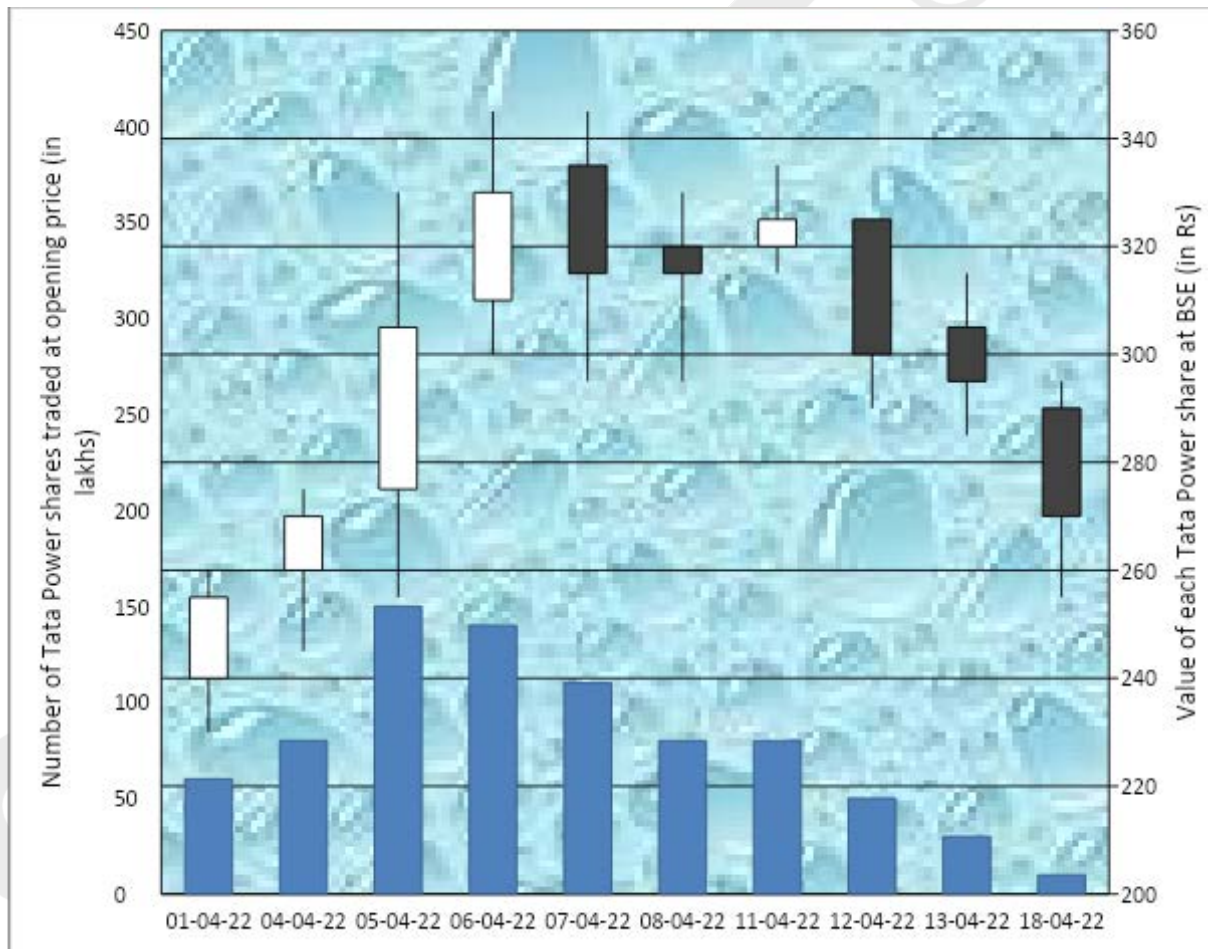
- A) 18300
- B) 24400
- C) 27450
- D) 30500

Directions for questions from 35 to 40 :

The following candle-stick graph shows the prices of the shares of M/s Tata Power at the Bombay Stock Exchange (BSE) for the first ten working days of the current financial year of 2022-23, that is for 1st, 4th, 5th, 6th, 7th, 8th, 11th, 12th, 13th and 18th April 2022, the in-between blank portions being no working days at BSE.

The associated bar-chart shows the number of Tata Power shares traded on the above days at the opening price at 9.30 am of each working day, with the left hand vertical axis indicating the number of shares.

All the figures indicated on the right hand vertical axis are the values attained by a Tata Power share at BSE in rupees. The top end and the bottom end of the candle-stick (vertical line on the top and bottom of every candle) depict the maximum and minimum values attained by the share price during the particular day within 9.30 am to 3.30 pm. The ceiling and floor of the candles depict the opening price and the closing price for the day within 9.30 am to 3.30 pm respectively for the dark shaded candles, and the opposite (that is the closing price and the opening price for the day within 9.30 am to 3.30 pm) for the light shaded candles.



BSE charges a fee of 5% on the total value of Tata Power shares as trading charges if the number of Tata Power shares traded (bought or sold) is below fifty lakhs. That is either 5% extra on the total value of the shares has to be paid to BSE while buying if the number of Tata Power shares bought is below fifty lakhs, or 5% is deducted by BSE on the total value of the shares while selling if the number of Tata Power shares

sold is below fifty lakhs, by a person. However for trading in quantities equal or above fifty lakhs the trading charges are 3% on the total value of Tata Power shares.

Q 35 On which date within 1st April 2022 to 18th April 2022, was the percentage change in the price of a Tata Power share at BSE, from opening price to closing price, the second to minimum ?

- A) 6th April 2022
- B) 11th April 2022
- C) 12th April 2022
- D) 18th April 2022

Q 36 What was the highest average (in Rs) of the closing value on three consecutive working days at BSE from 1st April 2022 to 18th April 2022 of a Tata Power share ?

- A) Rs 317.33
- B) Rs 315.00
- C) Rs 320.00
- D) Rs 325.00
- E)

Q 37 What was the average range (in Rs) of the daily fluctuation in value of the price of a Tata Power share at BSE from 1st April 2022 to 18th April 2022 ?

- A) 30
- B) 39
- C) 45
- D) 50

Q 38 Mr Rakesh Marketwallah purchased sixty percent of the number of Tata Power shares traded on 1st April 2020 and twenty percent of the number of Tata Power shares traded on 4th April 2020, both at exactly 9.30 am on the dates mentioned. He understood that the market would show a downward trend and sold the total purchase on 8th April 2022 at the maximum value attained by the share on that day. What was the approximate profit percentage earned by Mr Marketwallah in the entire transaction ?

- A) 24%
- B) 26.50%
- C) 27%
- D) 29.20%

Q 39 Mr Harshad Mohta purchased thirty lakh units of Tata Power shares on a single day at BSE within 1st April 2022 to 18th April 2022 at the closing price of the share at 3.30 pm. He then sold seventy percent of the stocks purchased on 18th April 2022 at the price of share at 9.30 am, and the remaining on the same day at the minimum price attained by the share. He found that his loss was Rs 16,41,75,000. On which date had Mr Mohta purchased the Tata Power stocks ?

- A) 1st April 2022
- B) 5th April 2022
- C) 7th April 2022
- D) 13th April 2022

Q 40 On which date within 1st April 2022 to 18th April 2022 at BSE, is the ratio of the maximum price attained to the opening price at 9.30 am of a Tata Power share, the maximum ?

- A) 11th April 2022
- B) 8th April 2022
- C) 7th April 2022
- D) 6th April 2022

Directions for questions from 41 to 44 :

Q 41 How many different colouring combinations are possible using the red and yellow colours as specified ?

- A) ${}^6C_3 * 3!$
- B) ${}^6C_3 * 2!$
- C) 2
- D) None of the above

Q 42 What will be the minimum number of coplanar and non-concurrent dices of the knife required to create the 729 identical small cubes ?

- A) 24
- B) 27
- C) 81
- D) 243

Q 43 Taking into consideration all the different colouring combinations possible as in question number 1, what will be the difference between the maximum and the minimum number of small identical cubes having both red and yellow colour on them ?

- A) 9
- B) 16
- C) 45
- D) 68

Q 44 If the whole cube were to be covered with a single layer of green coloured small cubes, identical in size to the 729 small cubes obtained by dicing, how many green coloured small cubes were required ?

- A) 81
- B) 294
- C) 486
- D) 602

Section - 3 - Quantitative Aptitude

Q45.(TITA)

LCM of highest powers of 24 and 72 in $200!$ is

Q46. A quadrilateral is randomly chosen from a grid of 7×7 , Probability of the quadrilateral being a square is

- (a) 1 (b) $\frac{2}{3}$ (c) $\frac{105}{196}$ (d) $\frac{1}{2}$

Q47. Salaries of A, B & C are in the ratio of 3: 5: 7. If A switches his job, his salary becomes twice of that of B and C. If C's salary is Rs 3500 more than the salary of B, the percentage increase in the salary of A is

- (a) -1 (b) 2 (c) 1 (d) $\frac{1}{2}$

Q48.(TITA)

The minimum value of $f(x) = |10 - x| + |x - 2| - |4 - x|$ is

Q49. 12 men or 16 boys can do a piece of work in 5 days. In how many days the work be completed if 1 man and 2 boys worked alternatively if boy works on day 1?

- (a) 24 days (b) 30 days (c) 48 days (d) 60 days

Q50.(TITA)

For how many positive integral values of N, less than 25 does the equation $5 - |2N/3| \leq 2$, have integer solution?

Q51.(TITA)

$7\sin x - 24\cos x - r$ is always less than or equal to 0. What is the greatest value 'r' can take?

Q52(TITA)

A motorcyclist covers two stretches of x km each at the speeds of 20 kmph, 30 kmph respectively. He then, covers two equal stretches of $2x$ km each at the speeds of 30 kmph and 40 kmph. Find the difference between average speeds during first two stretches and last two stretches. (in kmph)

- (a) 9.72 (b) 10.28 (c) 0 (d) Cannot be determined

Q53.(TITA)

Find the remainder when $76^{65} + 65^{76}$ is divided by 7.

- (a) 4 (b) 3 (c) 2 (d) 1

Q54. In a survey conducted by a multilevel marketing company to know people's preference for beauty products and Accessories, 74 preferred beauty products while 67 preferred accessories. There were 18 who liked both and may prefer any. If there was no one who didn't prefer at least one of the phones, then on how many people was the survey conducted?

- (a) 120 (b) 40 (c) 123 (d) 159

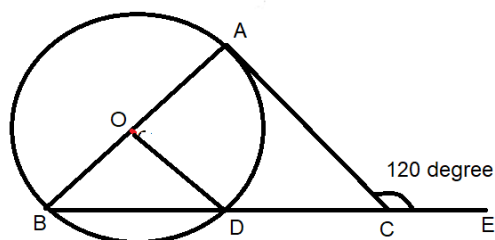
Q55. (TITA)

Sum of first 20 terms of an AP is equal to the sum of the first 40 terms in the same AP. The arithmetic mean of last 20 terms is

Q56. Two cones have their heights in the ratio 2: 1 and the diameters of base of both are 50% of their respective heights. What will be the ratio of their volumes?

- (a) 1: 24 (b) 2: 1 (c) 24: 1 (d) 8: 1

Q57. In the figure given below (not drawn to scale), A, B and D are three points on a circle with centre O. AC is a tangent to the circle at point A. If $\angle ACE = 120^\circ$, then the $\angle ODC$ is



- (a) 120° (b) 150° (c) 80° [4] Cannot be determined

Q58.(TITA)

Anshuman runs $\frac{5}{3}$ times as fast as Mukesh. In a race, if Anshuman gives a lead of 50m to Mukesh, find the distance (in metres) from the starting point where both of them will meet.

Q59. A dealer sold two Radio Sets for Rs 1100 each, gaining 10% on one and losing 20% on the other set. At what minimum rate per radio set, he should sell the two radios so that he will get any loss?

- (a) Rs 1000 (b) Rs 1187.5 (c) Rs 2375 (d) Rs 2000

Q60. If the simple interest is 10% annual and compound interest is 11.25% annual, find the difference between the interests after 2 years on a sum of Rs 2400.

- (a) Rs 50.4 (b) Rs 84.4 (c) Rs 24 (d) Rs 60.3

Q61. Let $g(x)$ be a function such that $g(x+1)g(x) = 12$ for every real x . Then what is value of $g(11)g(0)$?

- (a) 1 (b) 12 (c) $1/12$ (d) 6

Q62.(TITA)

How many 5-digit odd numbers can be formed using $[1, 4, 9, 5]$ such that exactly 1 digit is repeated?

Q63. (TITA)

The number of the integers in the solution set of $|x^2 - 4x| > 6$ and $x^2 \leq 143$ is:

Q64. A person has x chocolates. He gave 2 more than half of the chocolates to 1 child and 2 more than the half of the remaining to the second child. Then the third child also gets half the remaining plus 2 chocolates. Thereafter, no chocolates is left with him. Which of the following best describes the value of x ?

- (a) $2 \leq x \leq 16$ (b) $5 \leq x \leq 18$ (c) $9 \leq x \leq 24$ (d) $18 \leq x \leq 30$

Q65. Maneesh borrowed \$5000 from Suneel. Suneel charges a simple interest of 10 pa. Maneesh returned \$2300 after 1.5 years which included the interest for the 1.5 years. He returned the remaining amount after 2.5 more years. Total interest paid by Maneesh in 4 years is

- (a) \$1050 (b) \$2000 (c) \$750 (d) \$1500

Q66. Anuj looked up at the top of a flag on a lighthouse from his boat and found the angle of elevation to be 45 degrees and at the bottom of the flag he found the angle of elevation 30 degrees. After sailing in a straight line 30 m towards the lighthouse, he found that the angle of elevation from the top of the flag changed to 60 degrees. Find the height of the flag (in metres).

- (a) 30 (b) $30\sqrt{3}$ (c) $30(\sqrt{3}-1)$ (d) $30(\sqrt{3}+1)$

Answer Key - Mock Test 16

Section - Verbal Ability & Reading Comprehension

1-B, 2-D, 3-D, 4-A, 5-D, 6-D, 7-D, 8-D, 9-C, 10-D, 11-D, 12-D, 13-C, 14-C, 15-A, 16-C, 17-D, 18-B, 19-A, 20-D, 21-C, 22-3142, 23-4231, 24-3124

Section - Data Interpretation & Logical Reasoning

25-10.50, 26-65, 27-10.50, 28-105, 29-150, 30-250, 31-C, 32-D, 33-C, 34-B, 35-D, 36-C, 37-B, 38-A, 39-B, 40-D, 41-C, 42-A, 43-B, 44-D

Section - Quantitative Aptitude

45- 4656, 46-C, 47-B, 48-2, 49-C, 50-21, 51-25, 52-B, 53-D 54-3, 55-0, 56-D, 57-B, 58-125, 59-B, 60-B, 61-B, 62-240, 63-16, 64-D, 65-A, 66-A

Solutions - Mock Test 16

Section - Verbal Ability & Reading Comprehension

1. B

The answer to this question can be established from two sentences. These are highlighted with their accompanying paragraphs below:

Paragraph 1: *'Racism and discrimination have been used as powerful weapons encouraging fear or hatred of others in times of conflict and war, and even during economic downturns.'*

Paragraph 3: *'It has also fostered inequality and discrimination for centuries, as well as influencing how we relate to other human beings.'*

2. D

This is a tricky question. The reason being that a clear structure for this passage is hard to identify other than the fact that the passage introduces the contentious issue of racism, and then goes on to discuss it from the different/diverse angles that define racism. The correct answer can be identified by establishing what the author is doing: is he establishing a paradox, phenomenon, theory, generalization or issue? The obvious answer is issue. The only option which comes close is option B but then the word used in the option is 'reconciled', something that does not make sense in the given context.

3. D

Each of the above can be found in the last paragraph of the passage. The trick with solving 'roman numeral questions' is that one keeps a balanced head and a discerning eye while solving these questions. In general, most of these questions are focused on facts but the only problem with solving them is that they consume a lot of time. This is something that can be countered by maintaining a high degree of concentration while reading the question as well as the statements. In this case, the statements are either direct pick-ups or paraphrases from the passage and should not cause any problem.

4. A

The correct answer to this question can be found in the first paragraph of the passage itself: '*Racism is the belief that characteristics and abilities can be attributed to people simply on the basis of their race and that some racial groups are superior to others.*' The only reason for solving this question incorrectly can be the fact that we might have overlooked this information at first sight and by the time we solve the question, we have forgotten this direct reference made by the author of the passage. Option D is the contentious one in the batch. But then remember the passage says: 'race is a powerful idea and an enduring concept, invented by society.' Now the word in question here is race and not racism, this effectively rules out option D.

5. D

The most appropriate answer in this case is option D.

It covers all aspects of the passage in the most succinct manner.

Let us look at the other options:

Option A changes the perspective being presented by the author.

Option B is clearly attempting to take focus away from the real issue at hand.

Option C is too general in nature.

6. D

The answer for this fact-based question can be easily established from the first paragraph of the passage. The author takes the name of the four sentiments mentioned here in the same breath as Neo-Nazism, implying the relationship that exists among all these terms.

7. D

There is only one option that introduces a slight change in perspective and distorts the argument. Option D, though may be valid, is from the immigrants perspective and mentions how they resort to violence. Well, if they do, then it is not a problem of racism, is it?

8. D

This is one question based on the overall context of the passage. While answering the question, we need to keep in mind all possible factors and points elucidated in the passage. We can summarize the passage in one line as 'one explaining the trade issues that developing nations suffer at the hands of developed ones and the unfair trade practices that exist'. Which option encapsulates this complete thought? Option D

9. C

The question before is 'what is the multiplier effect'. Our sole focus should be to answer this question and not look into the effects this might have or the way this might be used by nations to manipulate the situation (though that might be true according to the situation). The multiplier effect refers to the increase in final income arising from any new injection of spending. Now relate it to this line in the passage: Due to this multiplier effect, a hundred dollars worth of primary production can add several hundred dollars to the Gross National Product (GNP) of that country

The question asks us to define the effect and combining the above two pieces of information, we arrive at option C as the answer.

10. D

What is the role played by the statement of Richard Robbins? In simple terms, it explains in detail the multiplier effect and its doings, and this makes option D the correct answer. Explicatory means 'to make lucid or clear; throw light upon; explain'.

Let's look at the meanings of the other three words.

PROPHETIC - correctly stating or showing what will happen in the future

THEORETICAL -

1. concerned with the ideas and principles on which a particular subject is based, rather than with practice and experiment
 2. that could possibly exist, happen or be true, although this is unlikely
- AXIOMATIC - true in such an obvious way that you do not need to prove it

11. D

The answer can be found in the lines: *'As seen above as well, one of the effects of structural adjustment is that developing countries must increase their exports. Usually commodities and raw materials are exported. But as Smith noted above, poor countries lose out when they*

- *export commodities (which are cheaper than finished products)*
- *are denied or effectively blocked from industrial capital and real technology transfer, and*
- *import finished products (which are more expensive due to the added labor to make the product from those commodities and other resources)'*

As we can see, there is only one statement that cannot be inferred directly from the passage: statement 1. But read closely the second bullet point and co-relate it with structural adjustment, we reach option D as the answer.

Statement I is derived from the lines:

PART-1: Due to this multiplier effect, a hundred dollars worth of primary production can add several hundred dollars to the Gross National Product (GNP) of that country. If money is spent in another country, circulation of that money is within the exporting country.

PART-2: are denied or effectively blocked from industrial capital and real technology transfer,

PART-3 (this explains what happens when knowledge is not transferred): Thus a country that exports lumber but does not have the capacity to process it must then re-import it in the form of finished lumber products, at a cost that is greater than the price it received for the raw product. The country that processes the materials gets the added revenue contributed by its laborers. (Emphasis is original)

Add these three parts to derive the sentiment in statement I. Effectively, it is a sum total of your understanding of the passage.

12. D

There are two options which should lead to some confusion: option D and option B. Option B is correct in its assessment that materialism is defined in this part of the passage. But the objective of this definition is stated in option D. Option B actually states the purpose of the third paragraph of the passage.

13. C

What is the purpose of the statement? Does it highlight the irony in the existence of materialism or it is to provide it with much needed support? When in doubt, go back to the lines: 'We needn't conclude that it is necessary to take a completely opposite view. After all, as C.S. Lewis once said, "God ... likes matter. He invented it." This should clarify matters sufficiently.

14. C

There are two concepts on which materialism depends: theory of evolution and naturalistic law. The other options are opposite actually and are the things to which materialism does not bear any relation.

15. A

The question is an easy one from one angle: it places such options in front of us that do not quite make complete sense (though they might use some heavy vocabulary). An option like logical forethought makes no sense, as it really does not pinpoint the attitude that should be adopted by the reader. One

option we can safely choose is option A. It simply states one to view materialism with a circumspect approach, which in other words means that one should give deep thought to it.

16. C

Option C is the correct answer. Option D is the one option that comes close to it but it commits the mistake of being an opinion; this is something that the answer option cannot be in the given scenario.

17.D

Let's look at the meanings of words in the answer options to decipher the answer:

Deleterious: Harmful to living things

Machiavellian: cunning, scheming, and unscrupulous, especially in politics (the context of this word is political; it is used in those contexts and hence, not applicable here).

Damaging: (sometimes followed by 'to') causing harm or injury

Insidious: Beguiling but harmful/ Working or spreading in a hidden and usually injurious way.

Pragmatic: Concerned with practical matters

Unhindered: Not slowed, blocked or interfered with

Destructive: Causing destruction or much damage

Now we can clearly rule out pragmatic (positive sentiment not expressed in the passage).

Unhindered is also another sentiment that does not convey how deceptive the use of fossil fuels is.

Insidious does the job for us. It conveys the second point of the paragraph.

18. B

Key points to keep in mind:

1. Orban's viewpoints are populist in nature.

2. These viewpoints represent fake news and more importantly, distort history.

You need to be on the lookout for these points in the paragraph. We get these points in option 2, which highlights these two points perfectly.

Option A is incorrect as Orban does not have a radical vision. Also, distortion of history is the topic and not distortion of reality.

Option C represents a positive sentiment not exhibited in the passage.

Option D is incorrect as the passage does not imply that the population is changing history (the 'them' in option D refers to the population).

19. A

The passage mentions that the Supreme Court has passed specific judgements that are clear in their intent relating to Aadhaar number not being mandatory in government schemes. However, there is no discussion related to the country's interest or blocking complete implementation. Hence, options C and D are incorrect. Since there is more than one judgement quoted, option B is also incorrect. Option A is the correct option.

20.D

We need to know that the line which states that "the actors are quite far away from their budding youth era" plays an important role here. Now looking from a critic's point of view, the mention about their age is actually kept reserved for a negative note.

"The feisty quartet use the F-word liberally, smoke, drink, do drugs and generally make a nuisance of themselves in order to prove that they are no pushovers." - This sentence literally brings in the life of the very common metro girls these days.

A critic will link these two things together.

Option A speaks about the box-office record. We are indifferent towards this as we are cross referring

the content of the film.

Option B leaves the power to comment to the audience. Are we in charge of doing this?

Option C is redundant as we can already gather the idea from the line "The feisty quartet use the F-word liberally, smoke, drink, do drugs and generally make a nuisance of themselves in order to prove that they are no pushovers." Hence this won't be the answer.

Option D is a perfect criticism summing up the two cases-the age of the actors and the young girl life of the character. These two things do not go hand in hand. Hence we are free to mark this option as the answer.

21.C

The entire passage is about a new scooter. The last few lines of the passage are based on the features.

Option C is also highlighting a feature. Hence this has got the proximity to be the right answer choice.

Option A is a general statement. This can come at the end of the article or after mentioning the main ideas of the passage. This definitely cannot be placed ahead of option C.

Option B talks about road safety. We are unaware of this as the passage we have with us is a description of a bike.

Option C is the answer.

Option D can come only after mentioning all the features which make up value for the money that the customer is going to pay. Hence this definitely cannot come before option C.

22. 3142

Statement 3 is the generic opening sentence in this case.

Statement 1 then takes forward the positive sentiment expressed about Wikileaks in statement 3.

Statement 4 then questions whether this was actually effective and raises a doubt.

Statement 2 then provides an answer for statement 2.

Thus, we have our order: 3142.

23. 4231

This is where you need to read very closely. Statement 4 is the generic opening sentence that introduces the given paragraph. Now the other three statements are tied together by the common reference to some opinion on the 'evidence' collected.

Statement 2 introduces that the evidence exists.

Statement 3 provides us with details about this evidence.

Statement 4 challenges the veracity of this evidence.

This is how the logical order in this thread of thought is developed.

Also, it's easy to identify what comes before or after judging by acronyms, that is, the sentence having District magistrate will quite likely precede the one having "DM".

24. 3124

Exp: Statement 3 is the generic opening sentence of the passage as it is about the making of the constitution in the country and the birth of the concept of free speech in India. It is followed by statement 1 since it gives the judicial view of the issue thereby strengthening the point made in the first sentence of the passage. Statement 2 comes after this as it is about the negative effects of this right in India and here the right is linked to militancy and violence further. Statement 4 finishes off the passage by pointing out the fact that the voices of such anti-nationals are not spared by the courts. This makes the proper sequence of sentences as 3-1-2-4

Section - Data Interpretation & Logical Reasoning

25. 10.50

To make all the deliveries at the earliest, especially because Mr Ghosh can drive his bike at a constant speed only, he must select the shortest route.

On observation of the chart, we can conclude that :

- a) Mr Ghosh will go to the address of T first, as it is nearest to the PTPC office
- b) From T's place he will go to P's place, as it is the nearest
- c) From P's address he can go either to R or S's address, as they are equidistant.
- d) Let us consider he has gone to R's address from P. Then in the next transit he will go to Q and then to S, who is the last. Distance covered from R = $4 + 14 = 18$ km
- e) Let us consider he has gone to S's address from P. Then in the next transit he will go to R and then Q, who is the last. Distance covered from S = $10 + 4 = 14$ km, which is lower in value.

Hence route followed by Mr Ghosh must be PTPC Office – T – P – S – R – Q of a total distance of $6 + 2 + 6 + 10 + 4 = 28$ km

Time taken to transit = $28/24 = 1$ hour 10 minutes.

Also, he takes $5 \times 2 = 10$ minutes for delivery.

So minimum time taken = 1 hour 20 minutes.

Hence the earliest time taken to complete all the deliveries = 9.30 am + 1 hour 20 minutes = 10.50 am

26. 65

For the minimum time to make all the deliveries, the route taken must be PTPC Office – T – P – S – R – Q of a total distance of $6 + 2 + 6 + 10 + 4 = 28$ km

For the maximum time to make all the deliveries, the route taken must be PTPC Office – Q – T – R – S – P of a total distance of $14 + 16 + 8 + 10 + 6 = 54$ km

Difference = $54 - 28 = 26$ km

Time to transit 26 km = $26/24 = 1$ hour 5 mins = 65 mins

Hence the difference between the earliest and latest time that Mr Ghosh takes to make all the deliveries = 65 mins

27. 10.50

For the minimum time to make all the deliveries, but not being able to use the road between T and P, the route taken must be PTPC Office – T – S – P – R – Q of total distance $6 + 6 + 6 + 6 + 4 = 28$ km

Time taken to transit = $28/24 = 1$ hour 10 minutes.

Also, he takes $5 \times 2 = 10$ minutes for delivery.

Hence the earliest time taken to complete all the deliveries = 9.30 am + 1 hour 20 minutes = 10.50 am

28. 105

For the minimum time to make all the deliveries, and also making the urgent deliveries to Q and R, the route taken must be PTPC Office – P – Q – R – T – S of a total distance of $8 + 12 + 4 + 8 + 6 = 38$ km

Time taken to transit for urgent delivery = $20/24 = 50$ minutes.

Also, he takes $2 \times 2 = 4$ minutes for delivery.

So time taken for urgent delivery = 9.30 am + 54 minutes = 10.24 am

So 10.24 am condition is fulfilled.

Time taken to transit for complete assignment = $38/24 = 1$ hour 35 minutes.

Also, he takes $5 \times 2 = 10$ minutes for delivery.

So minimum time taken = 1 hour 45 minutes = 105 mins

29. 150

Each of the ICC World Cup towels require one hour for cutting the towel fabric, two hours for dyeing and screen printing, eighty minutes for border stitching and monogramming, and fifteen minutes for folding, packing and sealing.

There are twenty cutters with Christy's, who will put in $10 \times 20 = 200$ man hours of work per day, which is equivalent to cutting $200/1 = 200$ towel fabrics for ICC World Cup towels.

There are fifty printers with Christy's, who will put in $10 \times 50 = 500$ man hours of work per day, which is equivalent to dyeing and screen printing on $500/2 = 250$ ICC World Cup towels.

There are twenty stitchers with Christy's, who will put in $10 \times 20 = 200$ man hours of work per day, which is equivalent to stitching and monogramming on $200/(80/60) = 150$ ICC World Cup towels.

There are five packers with Christy's, who will put in $10 \times 5 = 50$ man hours of work per day, which is equivalent to folding, packing and sealing of $50/(15/60) = 200$ ICC World Cup towels.

Hence the maximum number of ICC World Cup towels that Christy's can complete in a day = 150

30. 250

Each of the Wimbledon towels require forty minutes for cutting the towel fabric, two hours for dyeing and screen printing, forty minutes for border stitching and monogramming, and ten minutes for folding, packing and sealing.

There are twenty cutters with Christy's, who will put in $10 \times 20 = 200$ man hours of work per day, which is equivalent to cutting $200/(40/60) = 300$ towel fabrics for Wimbledon towels.

There are fifty printers with Christy's, who will put in $10 \times 50 = 500$ man hours of work per day, which is equivalent to dyeing and screen printing on $500/2 = 250$ Wimbledon towels.

There are twenty stitchers with Christy's, who will put in $10 \times 20 = 200$ man hours of work per day, which is equivalent to stitching and monogramming on $200/(40/60) = 300$ Wimbledon towels.

There are five packers with Christy's, who will put in $10 \times 5 = 50$ man hours of work per day, which is equivalent to folding, packing and sealing of $50/(10/60) = 300$ Wimbledon towels.

Hence the maximum number of Wimbledon towels that Christy's can complete in a day = 250

31. C

Each of the ICC World Cup towels require one hour for cutting the towel fabric, two hours for dyeing and screen printing, eighty minutes for border stitching and monogramming, and fifteen minutes for folding, packing and sealing.

To complete 100 ICC World Cup towels in a day :

Cutters, who cut the towel fabric, will need $100 \times 1 = 100$ man hours in the day

Printers, who dye and screen print on the towels, will need $100 \times 2 = 200$ man hours in the day

Stitchers, who stitch and monogram on the towels, will need $100 \times (80/60) = 133.33$ man hours in the day

Packers, who fold, pack and seal the towels, will need $100 \times (15/60) = 25$ man hours in the day

But,

There are twenty cutters with Christy's, who will put in a total of $10 \times 20 = 200$ man hours of work per day
 There are fifty printers with Christy's, who will put in a total of $10 \times 50 = 500$ man hours of work per day
 There are twenty stitchers with Christy's, who will put in a total of $10 \times 20 = 200$ man hours of work per day
 There are five packers with Christy's, who will put in a total of $10 \times 5 = 50$ man hours of work per day

Thus, after completing 100 ICC World Cup towels in a day,
 Man hours of cutters left in the day = $200 - 100 = 100$
 Man hours of printers left in the day = $500 - 200 = 300$
 Man hours of stitchers left in the day = $200 - 133.33 = 66.67$
 Man hours of packers left in the day = $50 - 25 = 25$

Each of the Wimbledon towels require forty minutes for cutting the towel fabric, two hours for dyeing and screen printing, forty minutes for border stitching and monogramming, and ten minutes for folding, packing and sealing.

Thus, after completing 100 ICC World Cup towels in a day,
 Number of Wimbledon towels for which the towel fabric can be cut = $100 / (40/60) = 150$
 Number of Wimbledon towels for which the dyeing and screen printing on the towel can be done = $300 / 2 = 150$
 Number of Wimbledon towels for which the stitching and monogramming on the towel can be done = $66.67 / (40/60) = 100$
 Number of Wimbledon towels for which the folding, packing and sealing of the towel can be done = $25 / (10/60) = 150$

Hence, the number of Wimbledon towels can be completed on that day that Christy's decided to complete a hundred ICC World Cup towels = 100

32. D

Each of the Wimbledon towels require forty minutes for cutting the towel fabric, two hours for dyeing and screen printing, forty minutes for border stitching and monogramming, and ten minutes for folding, packing and sealing.

To complete 200 Wimbledon towels in a day :

Cutters, who cut the towel fabric, will need $200 \times (40/60) = 133.33$ man hours in the day
 Printers, who dye and screen print on the towels, will need $200 \times 2 = 400$ man hours in the day
 Stitchers, who stitch and monogram on the towels, will need $200 \times (40/60) = 133.33$ man hours in the day
 Packers, who fold, pack and seal the towels, will need $200 \times (10/60) = 33.33$ man hours in the day

But,

There are twenty cutters with Christy's, who will put in a total of $10 \times 20 = 200$ man hours of work per day
 There are fifty printers with Christy's, who will put in a total of $10 \times 50 = 500$ man hours of work per day
 There are twenty stitchers with Christy's, who will put in a total of $10 \times 20 = 200$ man hours of work per day
 There are five packers with Christy's, who will put in a total of $10 \times 5 = 50$ man hours of work per day

Thus, after completing 200 Wimbledon towels in a day,
 Man hours of cutters left in the day = $200 - 133.33 = 66.67$
 Man hours of printers left in the day = $500 - 400 = 100$
 Man hours of stitchers left in the day = $200 - 133.33 = 66.67$
 Man hours of packers left in the day = $50 - 33.33 = 16.67$

Hence, if Christy's decides to make two hundred Wimbledon towels only and no other towels on a particular day, the total number of man-hours that will remain unutilized on that day = $66.67 + 100 + 66.67 + 16.67 = 250$

33. C

Each of the Wimbledon towels require forty minutes for cutting the towel fabric, two hours for dyeing and screen printing, forty minutes for border stitching and monogramming, and ten minutes for folding, packing and sealing. Whereas the ICC World Cup towels require one hour, two hours, eighty minutes and fifteen minutes respectively for the same above mentioned activities.

To complete 80 Wimbledon towels in a day :

Cutters, who cut the towel fabric, will need $80 \times (40/60) = 53.33$ man hours in the day

Printers, who dye and screen print on the towels, will need $80 \times 2 = 160$ man hours in the day

Stitchers, who stitch and monogram on the towels, will need $80 \times (40/60) = 53.33$ man hours in the day

Packers, who fold, pack and seal the towels, will need $80 \times (10/60) = 13.33$ man hours in the day

To complete 80 ICC World Cup towels in a day :

Cutters, who cut the towel fabric, will need $80 \times 1 = 80$ man hours in the day

Printers, who dye and screen print on the towels, will need $80 \times 2 = 160$ man hours in the day

Stitchers, who stitch and monogram on the towels, will need $80 \times (80/60) = 106.67$ man hours in the day

Packers, who fold, pack and seal the towels, will need $80 \times (15/60) = 20$ man hours in the day

But,

There are twenty cutters with Christy's, who will put in a total of $10 \times 20 = 200$ man hours of work per day

There are fifty printers with Christy's, who will put in a total of $10 \times 50 = 500$ man hours of work per day

There are twenty stitchers with Christy's, who will put in a total of $10 \times 20 = 200$ man hours of work per day

There are five packers with Christy's, who will put in a total of $10 \times 5 = 50$ man hours of work per day

Thus, after completing 80 Wimbledon towels and 80 ICC World Cup towels in a day,

Man hours of cutters left in the day = $200 - (53.33 + 80) = 66.67$

Man hours of printers left in the day = $500 - (160 + 160) = 180$

Man hours of stitchers left in the day = $200 - (53.33 + 106.67) = 40$

Man hours of packers left in the day = $50 - (13.33 + 20) = 16.67$

For every aspect, except dyeing and screen printing on the towels, the Wimbledon towels take lesser time. So to maximize the completion of the number of towels in the day, Christy's should choose to complete more Wimbledon towels.

Thus, after completing 80 Wimbledon towels and 80 ICC World Cup towels in a day,

Number of Wimbledon towels for which the towel fabric can be cut = $66.67 / (40/60) = 100$

Number of Wimbledon towels for which the dyeing and screen printing on the towel can be done = $180 / 2 = 90$

Number of Wimbledon towels for which the stitching and monogramming on the towel can be done = $40 / (40/60) = 60$

Number of Wimbledon towels for which the folding, packing and sealing of the towel can be done = $16.67 / (10/60) = 100$

Hence, the maximum number of Wimbledon towels that Christy's can complete in the left-over man hours = 60

Hence, the maximum total number of towels Christy's can complete in a day if the target is to complete at least eighty towels for both Wimbledon and ICC World Cup every day = $80+80+60 = 220$

34. B

Since an equal number of Wimbledon and ICC World Cup towels are to be completed in a day, let us consider a combo of one Wimbledon towel and one ICC World Cup towel as a unit of towels.

So, each unit consisting of one Wimbledon towel and one ICC World Cup towel would require :

- $(40+60) = 100$ minutes for cutting the towel fabric
- $(2+2) = 4$ hours for dyeing and screen printing
- $(40+80) = 120$ minutes for border stitching and monogramming
- $(10+15) = 25$ minutes for folding, packing and sealing.

But,

There are twenty cutters with Christy's, who will put in a total of $10 \times 20 = 200$ man hours of work per day

There are fifty printers with Christy's, who will put in a total of $10 \times 50 = 500$ man hours of work per day

There are twenty stitchers with Christy's, who will put in a total of $10 \times 20 = 200$ man hours of work per day

There are five packers with Christy's, who will put in a total of $10 \times 5 = 50$ man hours of work per day

Thus,

Number of units for which the towel fabric can be cut = $200 / (100/60) = 120$

Number of units for which the dyeing and screen printing on the towels can be done = $500 / 4 = 125$

Number of units for which the stitching and monogramming on the towels can be done = $200 / (120/60) = 100$

Number of units for which the folding, packing and sealing of the towels can be done = $50 / (25/60) = 120$

Hence the maximum number of units of towels that can be completed in a day = 100

Number of days from 1st March 2022 to 30th June 2022 = $31+30+31+30 = 122$

Thus total number of units of towels that can be completed within the above time span = $100 \times 122 = 12200$

Hence, the total number of towels of both types it can complete within the stipulated time of the order = $12200 \times 2 = 24400$

35. D

Tabulating the data given in the candle-stick graph about the Tata Power shares at BSE from 1st April 2022 to 18th April 2022 and the vis-à-vis information given, we get :

Dates	Opening Price (Rs)	Closing Price (Rs)	Maximum Share Price (Rs)	Minimum Share Price (Rs)	Number of shares traded at opening price (lakhs)
01-04-22	240	255	260	230	60
04-04-22	260	270	275	245	80

05-04-22	275	305	330	255	150
06-04-22	310	330	345	300	140
07-04-22	335	315	345	295	110
08-04-22	320	315	330	295	80
11-04-22	320	325	335	315	80
12-04-22	325	300	325	290	50
13-04-22	305	295	315	285	30
18-04-22	290	270	295	255	10

Now,

Dates	Opening Price (Rs)	Closing Price (Rs)	Maximum Share Price (Rs)	Minimum Share Price (Rs)	Number of shares traded at opening price (lakhs)	Percentage change in price from opening price to closing price
01-04-22	240	255	260	230	60	$(255-240)*100/240 = 6.25\%$
04-04-22	260	270	275	245	80	$(270-260)*100/260 = 3.85\%$
05-04-22	275	305	330	255	150	$(305-275)*100/275 = 10.90\%$
06-04-22	310	330	345	300	140	$(330-310)*100/310 = 6.45\%$
07-04-22	335	315	345	295	110	$(315-335)*100/335 = -5.97\%$
08-04-22	320	315	330	295	80	$(315-320)*100/320 = -1.56\%$
11-04-22	320	325	335	315	80	$(325-320)*100/320 = 1.56\%$
12-04-22	325	300	325	290	50	$(300-325)*100/325 = -7.69\%$
13-04-22	305	295	315	285	30	$(295-305)*100/305 = -3.28\%$
18-04-22	290	270	295	255	10	$(270-290)*100/290 = -6.90\%$

We can see that on 12th April 2022 the change was the minimum, and on 18th April 2022 the change was second to minimum.

36. C

If we look closely at the value of the Closing Prices of a Tata Power share on all the working days at BSE from 1st April 2022 to 18th April 2022, we can notice that the three consecutive values of Rs 330, Rs 315 and Rs 315 on 6th, 7th and 8th April 2022 respectively are the highest in value compared to any other combination of three consecutive values.

Hence their average will also be the highest.

Hence, the highest average (in Rs) of the closing value on three consecutive working days at BSE from 1st April 2022 to 18th April 2022 of a Tata Power share = $(330+315+315)/3 = \text{Rs } 320$

37. B

We can conclude the following from the data given :

Dates	Opening Price (Rs)	Closing Price (Rs)	Maximum Share Price (Rs)	Minimum Share Price (Rs)	Number of shares traded at opening price (lakhs)	Daily fluctuation range in the value of the price (Rs)
01-04-22	240	255	260	230	60	$260-230 = 30$
04-04-22	260	270	275	245	80	$275-245 = 30$
05-04-22	275	305	330	255	150	$330-255 = 75$
06-04-22	310	330	345	300	140	$345-300 = 45$
07-04-22	335	315	345	295	110	$345-295 = 50$
08-04-22	320	315	330	295	80	$330-295 = 35$
11-04-22	320	325	335	315	80	$335-315 = 20$
12-04-22	325	300	325	290	50	$325-290 = 35$
13-04-22	305	295	315	285	30	$315-285 = 30$
18-04-22	290	270	295	255	10	$295-255 = 40$

Hence, the average range (in Rs) of the daily fluctuation in value of the price of a Tata Power share at BSE from 1st April 2022 to 18th April 2022 = $(30+30+75+45+50+35+20+35+30+40)/10 = 390/10 = \text{Rs } 39$

38. A

We know :

Dates	Opening Price (Rs)	Closing Price (Rs)	Maximum Share Price (Rs)	Minimum Share Price (Rs)	Number of shares traded at opening price (lakhs)
01-04-22	240	255	260	230	60
04-04-22	260	270	275	245	80
05-04-22	275	305	330	255	150
06-04-22	310	330	345	300	140
07-04-22	335	315	345	295	110
08-04-22	320	315	330	295	80
11-04-22	320	325	335	315	80
12-04-22	325	300	325	290	50

13-04-22	305	295	315	285	30
18-04-22	290	270	295	255	10

We also know that BSE charges a fee of 5% on the total value of Tata Power shares as trading charges if the number of Tata Power shares traded (bought or sold) is below fifty lakhs, and 3% on the total value of Tata Power shares as trading charges if the number of Tata Power shares traded (bought or sold) is fifty lakhs and above.

Thus, number of Tata Power shares purchased by Mr Marketwallah on 1st April at 9.30 am = 60% of 60 = 36 lakhs

Number of Tata Power shares purchased by Mr Marketwallah on 4th April at 9.30 am = 20% of 80 = 16 lakhs

Since the purchase was made at 9.30 am, the Opening Price of the share on that day would be in effect.
 Thus value paid to BSE for the shares purchased on 1st April = $(36 \text{ lakhs} \times 240) \times (105/100) = \text{Rs } 9072 \times 10^5$
 Value paid to BSE for the shares purchased on 4th April = $(16 \text{ lakhs} \times 260) \times (105/100) = \text{Rs } 4368 \times 10^5$
 Total value paid by Mr Marketwallah for the Tata Power sales = $(9072 + 4368) \times 10^5 = \text{Rs } 13440 \times 10^5$

The sale of $36 + 16 = 52$ lakh Tata Power shares was made at BSE at the maximum price of the day on 8th April 2022.

Thus the value received from BSE for the shares sold on 8th April 2022 = $(52 \text{ lakhs} \times 330) \times (97/100) = \text{Rs } 16645.2 \times 10^5$

Hence, profit percentage earned by Mr Marketwallah in the entire transaction
 $= \{(16645.2 - 13440) \times 10^5\} \times 100 / 13440 \times 10^5$
 $= 23.85\%$

The nearest option is 24%

39. B

We know :

Dates	Opening Price (Rs)	Closing Price (Rs)	Maximum Share Price (Rs)	Minimum Share Price (Rs)	Number of shares traded at opening price (lakhs)
01-04-22	240	255	260	230	60
04-04-22	260	270	275	245	80
05-04-22	275	305	330	255	150
06-04-22	310	330	345	300	140
07-04-22	335	315	345	295	110
08-04-22	320	315	330	295	80
11-04-22	320	325	335	315	80
12-04-22	325	300	325	290	50
13-04-22	305	295	315	285	30
18-04-22	290	270	295	255	10

70% of thirty lakh unit of Tata Power stock = 21 lakh units

Remaining = 9 lakh units

Revenue obtained from BSE by Mr Mohta on selling 21 lakh shares at Rs 290 per share (opening price of share at 9.30 am on 18th April 2022) and 9 lakh shares at Rs 255 per share (minimum value of the share on 18th April 2022)

$$= \{(21 \text{ lakhs} \times 290) + (9 \text{ lakhs} \times 255)\} \times (95/100)$$

$$= \{6090 \text{ lakhs} + 2295 \text{ lakhs}\} \times (95/100)$$

$$= \text{Rs } 7965.75 \times 10^5$$

Amount of loss incurred by Mr Mohta = Rs 1641.75×10^5

So total expenditure made by Mr Mohta to purchase the total 30 lakh shares together

$$= (7965.75 + 1641.75) \times 10^5$$

$$= \text{Rs } 9607.50 \times 10^5$$

If the closing price at 3.30 pm of per unit of Tata Power shares were Rs x, then

$$(30 \text{ lakhs} \times x) \times (105/100) = 9607.50 \times 10^5$$

$$\text{or, } 31.5x \times 10^5 = 9607.50 \times 10^5$$

$$\text{or, } x = 305$$

Thus, Rs 305 was the closing price at 3.30 pm of the Tata Power shares.

Hence Mr Mohta had purchased the 30 lakh units of Tata Power shares from BSE on 5th April 2022

40. D

We can say :

Dates	Opening Price (Rs)	Closing Price (Rs)	Maximum Share Price (Rs)	Minimum Share Price (Rs)	Number of shares traded at opening price	Ratio of Maximum price to the Opening price
01-04-22	240	255	260	230	60	$260/240 = 1.08$
04-04-22	260	270	275	245	80	$275/260 = 1.06$
05-04-22	275	305	330	255	150	$330/275 = 1.20$
06-04-22	310	330	345	300	140	$345/310 = 1.11$
07-04-22	335	315	345	295	110	$345/335 = 1.03$
08-04-22	320	315	330	295	80	$330/320 = 1.03$
11-04-22	320	325	335	315	80	$335/320 = 1.05$
12-04-22	325	300	325	290	50	$325/325 = 1.00$
13-04-22	305	295	315	285	30	$315/305 = 1.03$
18-04-22	290	270	295	255	10	$295/290 = 1.02$

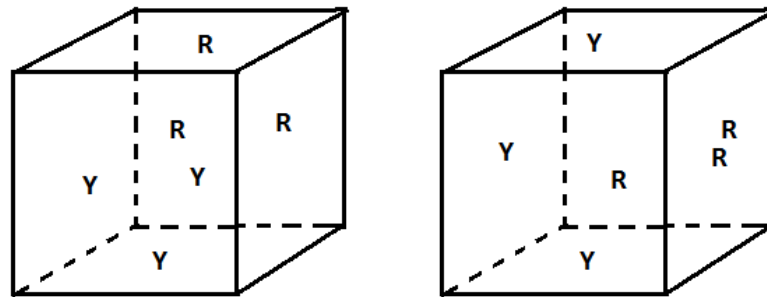
Hence, the ratio of the maximum price attained to the opening price at 9.30 am of a Tata Power share is the maximum on 6th April 2022.

41. C

Since the large cube is not a fixed one, there are no specific front, back, left, right, top or bottom faces.

Also each face is coloured with only one colour, and minimum three faces are of the same colour. This implies that exactly three faces of the cube must be red and three faces yellow

Hence there can be only two colouring combinations. They are as shown below :



The left hand combination appears as if both the colours are originating from both the ends of one of the principal diagonals of the cube

The right hand combination appears as if red is on three adjacent sides and yellow on the other three adjacent ones.

42. A

Cube root of 729 = 9

Thus on each edge of the cube there are 9 identical cubical pieces created

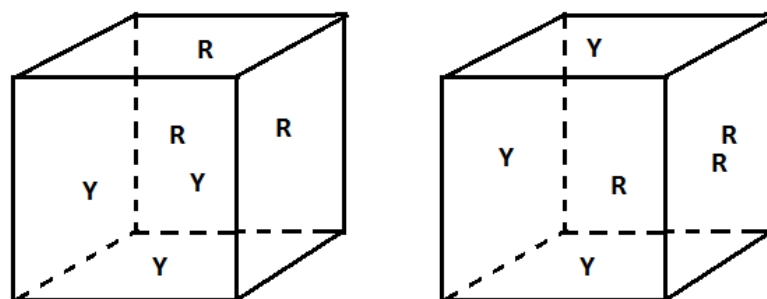
To achieve that, on each plane there must be $9 - 1 = 8$ coplanar and non-concurrent cuts made with the knife

Thus along the three planes there must be $8 \times 3 = 24$ coplanar and non-concurrent cuts made with the knife

Hence, the minimum number of coplanar and non-concurrent dices of the knife required to create the 729 identical small cubes = 24

43. B

As per question number 1, where a cubical block of wood is coloured on all the faces using two colours red and yellow, so that each face is coloured with only one colour, and minimum three faces are of the same colour, we already know that there can be only two colouring combinations as shown below :



When both are divided into 729 identical small cubes, we get small

i) Cubes from the core that have no colour on them,

- ii) Cubes from the surface layer of the faces that have exactly one face coloured,
- iii) Cubes from the edges that have exactly two faces coloured, and
- iv) Cubes present at the vertices that have exactly three faces coloured

Since each face of the large cube is coloured with only one colour, to get both red and green colour on a small cube we have to look at the small cubes from the edges that have exactly two faces coloured, and cubes present at the vertices that have exactly three faces coloured

Left hand side diagram colour combination :

Leaving aside the vertices, each edge of the cube has $9 - 2 = 7$ small cubes that have exactly two faces coloured

Out of the 12 edges, only 6 edges possess both red and yellow.

Hence small cubes with exactly two faces coloured which have both red and yellow colour = $6 \times 7 = 42$

Also out of the 8 vertices 3 have two faces red and one face yellow and 3 have two faces yellow and one face red.

Hence small cubes with exactly three faces coloured which have both red and yellow colour = $3 + 3 = 6$

Hence small cubes which have both red and yellow colour = $42 + 6 = 48$

Right hand side diagram colour combination :

Leaving aside the vertices, each edge of the cube has $9 - 2 = 7$ small cubes that have exactly two faces coloured

Out of the 12 edges, only 8 edges possess both red and yellow.

Hence small cubes with exactly two faces coloured which have both red and yellow colour = $8 \times 7 = 56$

Also out of the 8 vertices 4 have two faces red and one face yellow and 4 have two faces yellow and one face red.

Hence small cubes with exactly three faces coloured which have both red and yellow colour = $4 + 4 = 8$

Hence small cubes which have both red and yellow colour = $56 + 8 = 64$

Hence taking into consideration all the different colouring combinations possible, the difference between the maximum and the minimum number of small identical cubes having both red and yellow colour on them = $64 - 48 = 16$

44. D

The original cube was a $(9 \times 9 \times 9)$ dimensioned cube, taking into consideration the 729 identical small cubes it was diced into.

If the whole cube were to be covered with a single layer of green coloured small cubes, identical in size to the 729 small cubes obtained by dicing, the dimension would become $(11 \times 11 \times 11)$

Thus the number of green coloured small cubes required to do so

$$= 11 \times 11 \times 11 - 9 \times 9 \times 9$$

$$= 1331 - 729$$

$$= 602$$

Section - Quantitative Aptitude

45. 4656

$$24 = 2^3 \times 3$$

$$72 = 2^3 \times 3^2$$

Highest powers of 24 in $200!$ = number of 3's in $200!$ = $[200/3] + [200/9] + [200/27] + [200/81] + [200/243]$ where $[x]$ is greatest integer less than or equal to x

$$\text{Highest powers of 24 in } 200! = 66 + 22 + 7 + 2 + 0 = 97$$

Highest powers of 72 in $200!$ = {number of 3's in $200!$ }/2

number of 3's in $200!$ = $[200/3] + [200/9] + [200/27] + [200/81] + [200/243]$ where $[x]$ is greatest integer less than or equal to x

$$\text{number of 3's in } 200! = 97$$

$$\text{Highest powers of 72 in } 200! = [97/2] = 48$$

$$\text{LCM } [48, 97] = 4656$$

46. C

Number of quadrilaterals in a grid of $7 \times 7 = {}^8C_2 \times {}^8C_2 = 784$

Number of squares in a grid of $7 \times 7 = 1^2 + 2^2 + 3^2 + \dots + 7^2 = 420$

$$\text{Probability} = 420/784 = 105/196$$

47. B

Let salaries of A, B and C are $3x$, $5x$ and $7x$.

$$\text{So, } 7x - 5x = 3500$$

$$\Rightarrow x = \text{Rs } 1750$$

$$\text{Old salary of A} = 3 \times 1750 = \text{Rs } 5250$$

$$\text{New salary of A} = 5x + 7x = 12x = \text{Rs } 21000$$

$$\text{Percentage increase in salary of A} = (21000 - 5250) * 100 / 5250 = 300\%$$

48. 2

$$f(x) = |10 - x| + |x - 2| - |4 - x|$$

$$f(x) = \begin{cases} x - 8; & x \geq 10 \\ 12 - x; & 4 \leq x < 10 \\ x + 4; & 2 \leq x < 4 \\ 8 - x; & x < 2 \end{cases}$$

Minimum value is obtained at $x = 10$, i. e. 2

49. C

$$12M = 16B$$

$$M/B = 4/3$$

If 1 man does 4 units work in 1 day then 1 boy does 3 units work in 1 day.

$$\text{Total work} = 12 \times 4 \times 5 = 240 \text{ units}$$

$$\text{Work done in every 2 days} = 4 + 2 \times 3 = 10 \text{ units}$$

$$\text{So, work will be completed in } 2 \times 240 / 10 = 48 \text{ days}$$

50. 21

$$5 - |2N/3| \leq 2$$

$$\Rightarrow -|2N/3| \leq -3$$

$$\Rightarrow |2N/3| \geq 3$$

$$\Rightarrow 2N/3 \geq 3 \text{ (since N is positive)}$$

$$\Rightarrow 2N \geq 9$$

$$\Rightarrow N \geq 9/2$$

N will be 5, 6, 7, ..., 25 (total 21 values are possible)

51. 25

$$7\sin x - 24\cos x - r \leq 0$$

$$\Rightarrow \frac{7}{25}\sin x - \frac{24}{25}\cos x \leq \frac{r}{25}$$

$$7/25 = \cos A$$

$$24/25 = \sin A$$

$$\text{So, } \cos A \sin x - \sin A \cos x \leq \frac{r}{25}$$

$$\Rightarrow \sin(A - x) \leq \frac{r}{25}$$

Since maximum value of $\sin(\text{angle})$ is $= 1$

$$\text{So, } r/25 = 1$$

$$\Rightarrow r = 25$$

52. B

$$\text{Average speed during first two stretches} = \frac{2 \times 20 \times 30}{20 + 30} = 24 \text{ Kmph}$$

$$\text{Average speed during first two stretches} = \frac{2 \times 30 \times 40}{30 + 40} = 34.28 \text{ Kmph}$$

$$\text{Difference} = 34.28 - 24 = 10.28 \text{ kmph}$$

53. D

$$\text{Rem}(76/7) \quad -1$$

$$(-1)^{65} \quad -1$$

$$\text{Rem}((-1)/7) \quad -1 \text{ or } 6$$

where $\text{Rem}(x/y)$ represents the value of remainder when x is divided by y .

$$\text{Rem}(65/7) \quad 2$$

$$2^{76} \quad (2^3)^{25} \times 2$$

$$\text{Rem}((2^3)/7) \quad 1$$

$$\text{Rem}(1^{25}/7) \quad 1$$

$$\text{Rem}[(2 \times (2^3)^{25})/7] \quad 2 \times 1 = 2;$$

Total remainder $= 6 + 2 = 8$ when divided by 7 again remainder is 1.

54. 3

Using formula

$$n(A \cup B) = n(A) + n(B) - n(A \cap B)$$

$$\text{Here, } n(A) = 74; n(B) = 67; n(A \cap B) = 18$$

$$\text{So, } n(A) = 74 + 67 - 18 = 123$$

55. 0

Sum of last 20 terms must be 0.

$$\text{So, } 20(a_{21} + a_{40})/2 = 0$$

$$\text{So, } (a_{21} + a_{40})/2 = 0$$

$$\text{AM of last 20 terms} = 0$$

56. D

Let the heights of cones are 20 cm and 10 cm, then their diameters are 10 and 5 cm respectively.

$$\frac{\text{Volume of cone 1}}{\text{Volume of cone 2}} = \frac{R^2}{r^2} \times \frac{H}{h}; R \text{ is radius of cone 1, } r \text{ is radius of cone 2, } H \text{ is height of cone 1, } h \text{ is height of cone 2}$$

$$\frac{\text{Volume of cone 1}}{\text{Volume of cone 2}} = \frac{5^2}{2.5^2} \times \frac{2}{1} = \frac{8}{1}$$

57. B

$\angle BAD = 90^\circ$ (Angle from radius to tangent at point of contact)
 $\angle B = 30^\circ$ (since $\angle ACE$ is the external angle of the triangle ABC)
 $\angle ODB = \angle B = 30^\circ$ (angles opposite to equal sides are equal)
 $\angle ODC = 180 - \angle B = 180 - 30 = 150^\circ$

58. 125

Let after time T, they will meet. Distance covered by Mukesh is 50 m less than that by Anshuman.

$$S_A / S_M = D_A / D_M$$

$$5/3 = D_A / D_M$$

If $D_A = 5x$, then $D_M = 3x$.

$$\text{So, } 5x - 3x = 50$$

$$\text{Therefore } x = 25$$

$$\text{Distance from starting point} = \text{Distance by Anshuman} = 25 \times 5 = 125 \text{ m.}$$

59. B

For first radio, profit is 10%. So,

$$\frac{SP}{CP} = \frac{11}{10}$$

$\Rightarrow$

$$\frac{1100}{CP} = \frac{11}{10}; CP = 1000$$

Similarly for 2nd radio

$$\frac{SP}{CP} = \frac{4}{5} \Rightarrow CP = 1375$$

Total selling price should be equal to total cost price to get no loss i.e. Rs (1000 + 1375) = Rs 2375

$$\text{Selling price per radio} = \text{Rs } 2375/2 = \text{Rs } 1187.5$$

60. B

$$\begin{aligned} \text{First calculate CI- SI for 3 years at 10\% per annum} &= P(R/100)^2 \\ &= 2400 (10/100)^2 \\ &= \text{Rs } 24 \end{aligned}$$

$$\text{Additional CI at } (11.25 - 10) \% \text{ for 2 years} = 1.25 \% \text{ compounded for 2 yrs on Rs } 2400 = \text{Rs } 60.375$$

$$\text{Net Difference between CI and SI for 3 years} = \text{Rs } (24 + 60.375) = \text{Rs } 84.4$$

61. B

$$\text{For } x = 0; g(1) = 12/g(0)$$

$$\text{Similarly } g(2) = 12/g(1), \text{ which gives } g(2) = g(0)$$

$$g(3) = g(1) \text{ and so on.}$$

$$\text{Therefore, } g(11) = g(9) = g(7) = \dots = g(1) = 12/g(0)$$

$$\Rightarrow g(11) g(0) = 12.$$

62. 240

Let digit '1' is repeated; so, set of digits will be 1, 1, 9, 5, 4

$$\text{Number of numbers formed} = 5!/2 = 60$$

Similarly for other digits; number of numbers formed = 60 for each case.

$$\text{Total numbers formed} = 4 \times 60 = 240$$

63. 16

$$|x^2 - 4x| > 6$$

$$\Rightarrow x^2 - 4x > 6 \text{ or } x^2 - 4x < -4$$

Case 1:

$$\Rightarrow x^2 - 4x > 6$$

$$\Rightarrow x^2 - 4x - 6 > 0$$

$$\Rightarrow x > [(2 \pm \sqrt{10})] \text{ which gives two solutions } x > 5 \text{ or } x < -1 \text{ (for } x \text{ to be integer).}$$

Case 2:

$$\Rightarrow x^2 - 4x < -6$$

$$\Rightarrow x^2 - 4x + 6 < 0 \text{ since Discriminant is less than 0, we will get no solutions from here.}$$

For equation 1 solution set is $(-\infty, -1) \cup (5, \infty)$

For equation 2

$$x^2 \leq 143$$

$$x < 12 \text{ or } x > -12$$

$$\text{solution set is } (-12, 12)$$

Common solutions are $(-12, -1) \cup (5, 12)$

Number of integer solutions are 16.

64. D

Third child gets half of the remaining plus 2 chocolates and the person left with no chocolates with him. So, clearly third child gets 4 chocolates.

Second child gets half of the remaining plus 2 chocolates and the person left with 4 chocolates with him. So, clearly second child gets 6 chocolates.

First child gets half of the remaining plus 2 chocolates and the person left with 10 chocolates with him. So, clearly first child gets $(2 \times 6 + 2 = 14)$ chocolates.

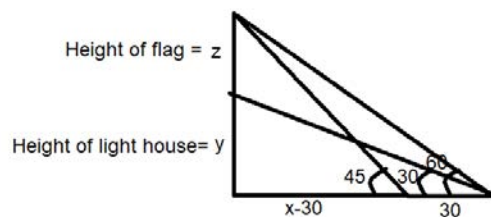
So, initially the person must have 28 chocolates with him.

65. A

For first 1.5 yrs, he paid 15% as interest. So, in \$2300, Principal = $(2300/115) \times 100 = \$2000$ and \$300 as interest.

In next 2.5 years, he will pay 25% as interest on \$3000. So, interest in 2.5 years will be \$750.

$$\text{Total interest paid} = 300 + 750 = 1050$$

66. A

$$\tan 30 = y/x \Rightarrow y = x \tan 30 \text{ ----- (1)}$$

$$\tan 45 = (y+z)/x \Rightarrow x = y + z \text{ ----- (2)}$$

$$\tan 60 = (y + z)/(x - 30) \Rightarrow y + z = (x - 30) \tan 60 \text{ ----- (3)}$$

From 2 and 3

$$x = (x - 30) \tan 60$$

$$\Rightarrow x = \frac{30\sqrt{3}}{\sqrt{3}-1}$$

$$\text{So, } y = \frac{30\sqrt{3}}{(\sqrt{3}-1)} * \frac{1}{\sqrt{3}} = \frac{30}{(\sqrt{3}-1)} \text{ m}$$

Also, $z = x - y$

$$\Rightarrow z = \frac{30\sqrt{3}}{(\sqrt{3}-1)} - \frac{30}{(\sqrt{3}-1)} = 30 \text{ m}$$

CAREERS360

MOCK TEST - 17

Section - 1 - Verbal Ability & Reading Comprehension

Directions for Questions 1 to 5: Read the passage given below and answer the questions that follow.

Passage 1

Surviving sources of information about women doctors in ancient Greece and Rome are fragmentary: some passing mentions by classical authors, scattered references in medical works, and about 40 inscriptions on tombs and monuments. Yet even from these fragments we can piece together a picture. The evidence shows that in ancient Greece and Rome there were, in fact, female medical personnel who were the ancient equivalent of what we now call medical doctors. So the history of women in medicine by no means begins in 1849 with Dr. Elizabeth Blackwell, the first woman to earn an M.D. in modern times, or even in 1321 with Francesca de Romana's licensure to practice general medicine, the earliest known officially recorded occurrence of this sort.

The very nature of the scant evidence tells us something. There is no list of women doctors in antiquity, no direct comment on the fact that there were such people. Instead, the scattering of references to them indicates that, although their numbers were probably small, women doctors were an unremarkable part of ancient life. For example, in *The Republic* (421 B.C.), the earliest known source attesting to the existence of women doctors in Greece, Plato argues that, for the good of the state, jobs should be assigned to people on the basis of natural aptitude, regardless of gender. To support his argument he offers the example that some women, as well as some men, are skilled in medicine, while others are not.

Here, Plato is not trying to convince people that there ought to be women doctors. Rather, he is arguing for an ideal distribution of roles within the state by pointing to something that everyone could already see—that there were female doctors as well as male.

Moreover, despite evidence that some of these women doctors treated mainly female patients, their practice was clearly not limited to midwifery. Both Greek and Latin have distinct terms for midwife and doctor, and important texts and inscriptions refer to female practitioners as the latter. Other references provide evidence of a broad scope of practice for women doctors. The epitaph for one named Domnina reads: "You delivered your homeland from disease." A tribute to another describes her as "savior of all through her knowledge of medicine."

Also pointing to a wider medical practice are the references in various classical medical works to a great number of women's writings on medical subjects. Here, too, the very nature of the evidence tells us something, for Galen, Pliny the elder, and other ancient writers of encyclopedic medical works quote the opinions and prescriptions of male and female doctors indiscriminately moving from one to the other and back again. As with the male doctors they cite, these works usually simply give excerpts from the female authority's writing without biographical information or special comment.

Q1. Which one of the following most accurately summarizes the passage?

- A. There is a range of textual evidence indicating that the existence and professional activity of women doctors were an accepted part of everyday life in ancient Greece and Rome.

- B. Some scholars in ancient Greece and Rome made little distinction in their writings between learned women and learned men, as can especially be seen in those scholars' reference to medical experts and practitioners.
- C. Although surviving ancient Greek and Roman texts about women doctors contain little biographical or technical data, important inferences can be drawn from the very fact that those texts pointedly comment on the existence of such doctors.
- D. Ancient texts indicate that various women doctors in Greece and Rome were not only practitioners but also researchers who contributed substantially to the development of medical science.

Q2. Which one of the following does the author mention in the passage?

- A. diseases that were not curable in ancient times but are readily cured by modern medicine
- B. a specialized field of medicine that was not practiced by women in ancient Greece and Rome
- C. a scholar who has argued that Francesca de Romana was the first female doctor in any Western society
- D. classical works that refer explicitly to the writings of women

Q3. Which one of the following could most logically be appended to the end of the final paragraph?

- A. So it is only by combining the previously mentioned fragments of ancient writings that historians have been able to construct a fairly complete account of some of these women's lives.
- B. That there were women doctors apparently seemed unremarkable to these writers who cited their works, just as it did to Plato.
- C. Although the content of each of these excerpts is of limited informative value, the very range of topics that they cover suggests that Plato's claims about women doctors should be re-evaluated.
- D. These texts indicate that during a certain period of ancient Greek and Roman history there were female medical scholars, but it is unclear whether at that time there were also female medical practitioners.

Q4. The tribute quoted in lines, "A tribute to another describes her as 'savior of all through her knowledge of medicine'", is offered primarily as evidence that at least some women doctors in ancient times were

- A. acknowledged as authorities by other doctors
- B. highly educated
- C. very effective at treating illness
- D. engaged in activities other than midwifery

Q5. The primary function of the third paragraph of the passage is to

- A. provide additional support for the argument presented in the paragraphs above.
- B. suggest that the implications of the argument presented in the first paragraph are unnecessarily broad
- C. acknowledge some exceptions to a conclusion defended in the second paragraph
- D. clarify the context provided in the second paragraph and strengthen it even more.

Directions for Questions 6 to 9: Read the passage given below and answer the questions that follow.

Passage 2

It's hard to dress up a meatball. Be they *polpette* in Italy, *kofta* in Lebanon, faggots in Britain, *kotlety* in Russia or *thitvien* in Vietnam, meatballs are a homely food wherever they are eaten. They should be made first at your mother's side, as the fire crackles and pans bubble, and then later to conjure up her memory.

Sweden's *köttbullar* are no different. Besides mixing a blend of beef and pork with some milk and breadcrumbs, the country's meatballs must be made with love. They are at the centre of any midsummer smorgasbord or Christmas *julbord*. Perched on top of mashed potato, doused in a creamy gravy and laced with lingonberry jam, they are a savoury reminder of the enduring devotion of Swedish mothers.

But Swedish meatballs are no longer just a domestic dish. They have gone global, thanks to the efforts not of Sweden's mothers but of one giant furniture company: IKEA.

IKEA started serving meatballs more than three decades ago. Concerned that customers navigating its endless aisles of flat-pack furniture would grow faint with hunger, the company opened restaurants in its stores. Severin Sjöstedt, the chef who spent almost a year developing the original recipe for IKEA, has said that the firm wanted to make something that was easy to serve, tasty and affordable for most people.

It succeeded. The Swedish behemoth flogs more than a billion meatballs each year at its stores around the world. IKEA serves meatballs in almost every one of its restaurants and most are made to the same recipe. The sheer number that it dishes up means it can keep the price of its meatballs as competitive as that of its bookcases. Today, no trip to IKEA is complete without the purchase of several hundred unnecessary tea lights, a vicious spat with your spouse and a keenly priced plate of meatballs – served as *mor* used to make them.

And yet, in a shocking revelation, in 2018 Sweden admitted that its meatballs are in fact an import. Forget the Swedish mothers – *köttbullar* are based on a recipe that King Charles XII brought back from Turkey in the early 18th century. "My whole life has been a lie," mourned an official Twitter account that promotes Sweden to the world. Such agonies are misplaced. The Swedes have adopted the comfort food of another country, made it their own and persuaded the rest of the world to love it too. Mother would approve.

Q6. All of the following is true about the meatballs EXCEPT:

- A. It is a popular dish served around the world.
- B. It has its origins from Turkey.
- C. It is easily served and is affordable.
- D. Swedish meatballs denote the devotion of Swedish mothers.

Q7. The reason why IKEA started restaurants serving meatballs in their showroom was:

- A. Meatball was easy to serve and was pocket friendly, so most people could afford it.
- B. It gave them a reason to increase their business by opening restaurants.
- C. To make sure that it makes maximum use of the space available inside the showroom.
- D. To make sure that their customers are not hungry while exploring their showrooms.

Q8. All of the following can be inferred from the passage EXCEPT:

- A. Meatballs is one of the dishes served during festivals.
- B. Meatballs are called with different names in different countries.

- C. Swedish mothers, along with the furniture giant IKEA, were responsible for the meatballs going global.
- D. Meatballs are comfort foods in most countries and are made by mothers at home too.

Q9. When the author says "Such agonies are misplaced", he does this on the basis of which one of the following sentiments?

- A. Because people are overreacting about it.
- B. Because the origin of the dish does matter.
- C. Because it is tough to make a dish your own and convince the rest of the world to like it when it is not even yours.
- D. Because the origin of the dish does not really matter, the one that makes it best matters.

Directions for Questions 10 to 13: Read the passage given below and answer the questions that follow.

Passage 3

America's real outsourcing crisis isn't the one Obama and Romney are arguing about. It's the talented immigrants who are prevented from setting up shop in America. The U.S. presidential election quickly seems to be turning into a battle of "who-outsources-least." President Barack Obama has taken to referring to Republican candidate Mitt Romney as an "outsourcing pioneer" during his tenure at private equity firm Bain Capital. The Republican National Committee has countered with a new website accusing Obama of enriching foreign firms and workers with U.S. stimulus money.

The concern over outsourcing certainly hits a political nerve among the electorate -- and it makes sense during a time of high unemployment. But if the campaigns want to really focus on what accounts for America's sluggish economy, they should spend less time focusing on who is sending jobs overseas and more on who can actually bring skilled workers into the United States -- or keep them there. America's real outsourcing crisis is not firms moving manufacturing to other countries, but the thousands of potential entrepreneurs and job creators who are prevented from setting up shop in America because of immigration laws. After years of stalemate, recent weeks have seen a number of developments give hope to advocates of U.S. immigration reform. First, Obama stirred the pot with an executive order on June 15 calling on federal law enforcement to stop prosecuting the offspring of illegal immigrants -- children who likely would have qualified for the perennially politically challenged DREAM Act, which would establish a path to citizenship for upstanding people brought into the country by illegal-immigrant parents. Obama's order at least ensures that these young people can remain in the United States and work without fear of deportation.

Then, the U.S. Supreme Court struck down key parts of Arizona's SB 1070, a draconian piece of legislation that turned the entire state into a "stop-and-frisk" zone for anyone unlucky enough to possess non-white ethnic facial features. The law also forced the hand of law enforcement agencies, essentially mandating arrest for anyone who failed to produce the precisely required papers. However, the most important reason to revisit immigration reform has largely remained off the political radar: namely, that high-skilled immigrants could provide a tremendous boost to the U.S. economy in a very short period at virtually no cost to taxpayers. It's taken as a truism in American politics that start-ups and small companies drive the majority of the country's new economic growth and job growth. The pundit class has repeated ad nauseam that the economy and unemployment numbers will likely make or break Obama's reelection campaign. But frozen by fears of a nativist backlash, both Obama and Romney have refused to discuss immigration as an economic issue.

Maybe they should. Research indicates that immigrant entrepreneurs have achieved astonishing inroads in launching technology start-ups in the United States. Foreign-born immigrants dominate the ranks of technology entrepreneurs in Silicon Valley. In U.S. postgraduate programs in hard sciences, foreign-born students comprise more than 50 percent of classes focused on science, technology, engineering, and mathematics (STEM). And these students want to remain and build businesses in America -- if the country lets them. So, it seems like a no-brainer. Let in more high-skilled immigrants to stoke the U.S. economy and pander to a fast-growing political base. In fact, the only constituencies that arguably would not benefit from America's allowing in more skilled workers would be countries like China, India, and Brazil, which are currently benefiting the most from the legions of U.S.-educated and U.S.-trained workers who are returning home and boosting innovation and entrepreneurship there.

Q10. It can be inferred from the passage that:

- A. America should focus on improving work conditions rather than streamlining jobs.
- B. America should focus on insourcing rather than outsourcing.
- C. America should focus on policies that streamline business costs and boost growth.
- D. America should focus on wealth creation through prudent policy making.

Q11. The author of the passage will agree with all of the following statements except:

- I. Immigrant entrepreneurs have a higher rate of success in the US than ones born in the US.
- II. In the US, start-ups generally have a very positive impact on job growth.
- III. Certain policies, though regressive, are dictated by fear of certain voter segments.

- a. I and II
- b. II and III
- c. I only
- d. III only

Q12. What does the author mean by "stop-and-frisk" zone?

- A. A law in Arizona that mandates ethnic and race checks for everyone.
- B. A place in Arizona that allows ethnic and race checks for anyone.
- C. A law that converts Arizona into a place that allows ethnic and race checks for anyone.
- D. A law in Arizona that allows unlimited power to the government to curb citizens.

Q13. All of the following are valid reasons to revisit the American immigration reform:

- I. Economy and unemployment numbers can possibly define Obama's re-election campaign.
- II. Immigrants hold the potential to launch technology start-ups in the US and drive job-growth.
- III. Immigrants bring-in skills to the system without adding any cost to the system.

- a. I & II
- b. II & III
- c. I & III
- d. All of the above

Directions for Questions 14 to 16: Read the passage given below and answer the questions that follow.

Passage 4

The *Discourse on Political Economy* originally appeared in Diderot and d'Alembert's Encyclopedia. In terms of its content the work seems to be, in many ways, a precursor to the *Social Contract*, which would appear in 1762. And whereas the *Discourse on the Sciences and Arts* and the *Discourse on the Origin of*

Inequality look back on history and condemn what Rousseau sees as the lack of morality and justice in his own present-day society, this work is much more constructive. That is, the *Discourse on Political Economy* explains what he takes to be a legitimate political regime.

The work is perhaps most significant because it is here that Rousseau introduces the concept of the “general will,” a major aspect of his political thought which is further developed in the *Social Contract*. There is debate among scholars about how exactly one ought to interpret this concept, but essentially, one can understand the general will in terms of an analogy. A political society is like a human body. A body is a unified entity though it has various parts that have particular functions. And just as the body has a will that looks after the well-being of the whole, a political state also has a will which looks to its general well-being. The major conflict in political philosophy occurs when the general will is at odds with one or more of the individual wills of its citizens.

With the conflict between the general and individual wills in mind, Rousseau articulates three maxims which supply the basis for a politically virtuous state: (1) Follow the general will in every action; (2) Ensure that every particular will is in accordance with the general will; and (3) Public needs must be satisfied. Citizens follow these maxims when there is a sense of equality among them, and when they develop a genuine respect for law. This again is in contrast to Hobbes, who says that laws are only followed when people fear punishment. That is, the state must make the penalty for breaking the law so severe that people do not see breaking the law to be of any advantage to them. Rousseau claims, instead, that when laws are in accordance with the general will, good citizens will respect and love both the state and their fellow citizens. Therefore, citizens will see the intrinsic value in the law, even in cases in which it may conflict with their individual wills.

Q14. According to the passage, ‘Discourse on Political Economy’, in a way, is:

- A. the most significant of the political works carried out by Rousseau wherein he details what an ideal political state should be.
- B. work that pre-dates *Discourse on the Sciences and Arts*, *Discourse on the Origin of Inequality* and the *Social Contract* and outlines the thoughts of Rousseau
- C. work that precedes the ‘*Social Contract*’ and essentially outlines the approach that Rousseau builds on in the ‘*Social Contract*’.
- D. all of the above

Q15. It can be inferred from the passage that the views of Rousseau and Hobbes are:

- A. in covenant with one another.
- B. are at variance with one another.
- C. are not pertinent to each other.
- D. majorly confluent with minor alterations.

Q16. Which of the following best describes the structure of the last paragraph of the passage?

- A. Two political methods are compared, and their contradictions are revealed.
- B. Two rival schools of thought are juxtaposed, and the better one is highlighted.
- C. An academic approach is defined, and a remedial method is called for.
- D. A political argument is described, and a thought counter to it is compared and analysed with it.

Directions for the Question: Identify the apt summary for the given paragraph. Enter the option number you deem as the correct answer.

Q17. Overall, the results showed that, while real-world social networks were positively associated with overall well-being, the use of Facebook was negatively associated with overall well-being. These results were particularly strong for mental health; most measures of Facebook use in one year predicted a decrease in mental health in a later year. We found consistently that both liking others' content and clicking links significantly predicted a subsequent reduction in self-reported physical health, mental health, and life satisfaction.

- A. Life satisfaction is greatly affected by the use of Facebook.
- B. Facebook strongly affects mental health negatively.
- C. Facebook results in decrease in overall well being, unlike real world social networks.
- D. People who believe in real world social networks are more productive than people who believe in online social networks.

Directions for the Question: Identify the apt summary for the given paragraph. Enter the option number you deem as the correct answer.

Q18. When pressed to the edge of panic, Trump will modify his behaviour. In the 1990s, for example, he became a quieter, less braggadocious Trump when his casinos went bankrupt and his airline business failed. The first sign that Trump was in panic mode last week came as he brought Anthony Scaramucci onto the stage, naming him White House communications chief. In Italian theater, a scaramuccia is a menacing court jester who inevitably falls from grace and Trump's jester fits the archetype perfectly.

- A. Trump becomes less arrogant when his business fails.
- B. Trump might change his behaviour as he did in the past because of panic as the first signs of panic are noticeable.
- C. Hiring Anthony Scaramucci is a hara-kiri committed by Donald Trump.
- D. Trump is managing his presidency the same way he managed his business, with effectiveness, flamboyance and the air of self-entitlement.

Directions for the Question: Identify the apt summary for the given paragraph. Enter the option number you deem as the correct answer.

Q19. When the practices are generalized in this way, beyond software development, they can be collectively described as dynamic linking, to distinguish them from the traditional practices of hierarchical bureaucracy, where individuals report to bosses to produce outputs. Teams using the practices that Sutherland and his colleagues had pioneered have been unexpectedly productive. These were not just improvements where the teams were just slightly better than the norm. The best teams routinely obtain productivity increases of 200 to 400 percent, changes that are potentially industry-disruptive improvements. Nevertheless, despite the enormous potential that individual teams and departments have shown with Scrum, the overall picture of implementation has been quite mixed. More than 70% of Scrum implementations have failed to achieve their goals. Most of these implementations with mixed results, which Sutherland derisively calls "Scrum-butt", are examples of a failure to implement the full array of Scrum practices. When only some of the practices are implemented, such as doing the work in short cycles but interrupting the team during the cycle, the potential gains in productivity don't occur.

- A. Implementing the primary suite of Scrum practices can lead to teams being more productive by orders of magnitude. However, most implementations don't include the primary suite.
- B. Implementing the key suite of Scrum practices can lead to teams being more productive by orders of magnitude. However, most implementations don't include the key suite.

- C. Implementing the essential suite of Scrum practices can lead to teams being more productive by orders of magnitude. However, most implementations don't include the essential suite.
- D. Implementing the full suite of Scrum practices can lead to teams being more productive by orders of magnitude. However, most implementations don't include the full suite.

Directions for the Question: The question below has a paragraph given with one sentence missing in at the end. From among the answer choices given, select the sentence that can fill the blank to form a coherent paragraph.

Q20. Railway meals may never be the same again. Having been scolded by the government auditor and a number of passengers for serving food that didn't quite pass muster, Indian Railways is planning to go for quality over quantity, starting with premium trains such as the Rajdhanis and the Shatabdis. (_____)

- a. The difference will be marked down by 150 grams in terms of weight.
- b. The evident growth in quality can thus be then assured.
- c. This will be implemented from next month.
- d. The government of the country will be held responsible for giving food below the minimum quantity prescribed by the WHO.

Directions for the Question: The question below has a paragraph given with one sentence missing in at the end. From among the answer choices given, select the sentence that can fill the blank to form a coherent paragraph.

Q21. Jaipur Municipal Corporation CEO Ravi Jain told ET. "We have 800 garbage collecting vehicles which move around the colonies daily. They are connected with a GPS-enabled vehicle tracking system. These vehicles dump the garbage at five transfer stations, from where garbage is taken to two landfill sites." The city treats its waste and converts it to compost, and the remaining to refuse derived fuel (RDF). It is now planning a waste-to-energy plant at Langdiya which would treat 600 metric tonnes of garbage to energy. The statistics may appear to be picture perfect but the situation on the ground turned out to be somewhat different. (_____)

- a. In Jawahar Nagar, an otherwise posh area, residents of slum areas, referred to as kutchi bastis in municipal parlance, complained that toilets were unusable and said they continued to use the forest area behind the basti to relieve themselves.
- b. The municipality has been successful enough to bring world class sanitation facilities in the outskirts of the city and hygienic city faces were opened up.
- c. Better methods were advised but the current situation has only slightly improved.
- d. The government should come up with better plans that cannot fail easily.

Directions for questions 22: In the following question, rearrange the five sentences in order to form a meaningful paragraph.

TITA

Q22.

1. "Think Charlottesville couldn't happen in the U.K.?" ran the headline in the prominent liberal magazine, *The New Statesman*, on Monday.

2. With the link drawn by U.S. President Donald Trump and others between his electoral campaign and that for Brexit, the events in Charlottesville have triggered some uncomfortable discussions in Britain.
3. He launched a stinging attack on Muslims, concluding with the question, "What will we do about The Muslim Problem then?"
4. It pointed, in particular, to a piece published in the right wing Rupert Murdoch-owned tabloid *The Sun*, by Trevor Kavanagh, the paper's former political editor

Directions for questions 23: In the following question, rearrange the five sentences in order to form a meaningful paragraph.

TITA

Q23.

1. Early on, the law of the conservation of energy – the principle that the quantity of energy in the physical universe remains constant – clashed with the notion that bodily movement is explained by a non-physical mind injecting energy into the physical world.
2. And Charles Darwin's theory of evolution supported the idea that every aspect of human beings – including their mental capacities – evolved in response to physical selection pressures.
3. During the course of the 19th century, the Cartesian concept of mind-body dualism came under increasing pressure.
4. The study of aphasia, disorders of speech caused by lesions to the brain, showed that the mental faculty of language was intimately bound up with particular regions of the ball of nerve tissue between our ears.

Directions for questions 24: In the following question, rearrange the five sentences in order to form a meaningful paragraph.

TITA

Q24.

1. This points out the disturbing fact that the present generation is not very interested in doing hard work and they want to get everything by hook or by crook but certainly not in the proper manner.
2. The Amazon Black Friday deals are going to come and once again there will be a crowd of online customers lining up for products at a cheaper price and that also within the convenience of being at their own homes.
3. It further points to the fact that most of the youngsters are very impatient and they do not want to wait for the right time to set in, instead they consider the present as the right time.
4. This mentality can bring a lot of tension to the individuals because they may not get everything they desire and that failure should not engulf the joy of getting whatever they have.

Section - 2 - Data Interpretation and Logical Reasoning

Directions for questions from 25 to 28 :

In the singing reality show Sa-Re-Ga-Ma-Pa 2018 (Bengali) telecast in the ZEE Bangla Television Channel, five of the contestants made it to the final rounds. They were Ankita, Bablu, Chinmoy, Debarati and Enakshi. The final round would be judged by five eminent Bengali singers and music directors namely Mr

Bappi Lahiri, Mr Arijit Singh, Ms Asha Bhosle, Mr Kedar Bhattacharya (Kumar Sanu) and Mr Srikanta Acharya.

Our story is based on the points awarded to the finalists by the judges in the final round.

The following table shows row-wise the number of points given to any three finalists out of the five by a particular judge, the points given being written within brackets beside the name of the finalist. The last right hand column with the heading of ' % ' is the sum of the points earned by the three finalists as a percentage of the sum of the points earned by all the five finalists from the same judge mentioned at the extreme left of the row. All the points given by each judge to the five finalists were distinct, non-negative integers which were multiples of 2.

Judge	Finalists			%
Mr Bappi Lahiri	Ankita (18)	Bablu (10)	Chinmoy (12)	80
Mr Arijit Singh	Ankita (8)	Debarati (16)	Enakshi (12)	90
Ms Asha Bhosle	Chinmoy (22)	Debarati (12)	Enakshi (14)	80
Mr Kedar Bhattacharya	Ankita (14)	Debarati (16)	Enakshi (4)	85
Mr Srikanta Acharya	Ankita (6)	Bablu (16)	Chinmoy (10)	80

Q 25 (TITA)

Which of the following options could be the minimum total number of points earned by Debarati in the final round of Sa-Re-Ga-Ma-Pa 2018 (Bengali) ?

Q 26 (TITA)

If Ms Asha Bhosle gave 8 points to Ankita, and Mr Arijit Singh and Mr Kedar Bhattacharya gave the same number of points to Chinmoy, how many points did Bablu earn in the final round of Sa-Re-Ga-Ma-Pa 2018 (Bengali) ?

Q 27 Who among the following could definitely not earn more points than Debarati in the final round of Sa-Re-Ga-Ma-Pa 2018 (Bengali) ?

- A) Bablu
- B) Chinmoy
- C) Enakshi
- D) Both Bablu and Enakshi

Q 28 (TITA)

If the summation of the total points earned by Bablu and Enakshi was 60, what could be the sum of the total points earned by Chinmoy and Debarati in the final round of Sa-Re-Ga-Ma-Pa 2018 (Bengali)?

Directions for questions from 29 to 32 :

The interview panel at IIM Calcutta decided to interview eight candidates – Mr Partha, Mr Quereshi, Dr Ratan (MBBS), Mr Subir, Mr Tanmoy, Mr Umesh, Mr Vittal and Mr William, on the 24th January 2023. All

the eight candidates were practicing professionals -- four being engineers, two being accountants, one being a professor in English and one being a general physician. Each candidate had scored a different percentile in CAT 2022.

It was decided that each candidate would be called at forty minute intervals starting from 11.00 am on 26th February 2023 at the Tata Hall in the IIM Calcutta campus.

It was also known that :

- a) Mr Williams was the English professor with a 99.97 percentile
- b) Mr Quereshi, who had a 98.87 percentile was called at 1.00 pm
- c) Mr Partha was the accountant who was called at 2.20 pm
- d) Dr Ratan (MBBS) was called after 2.20 pm
- e) Neither the first nor the last interviewee was an engineer
- f) Mr Umesh, who had scored 99.43 percentile was an engineer
- g) The engineer with a percentile of 98.35 was called at 12.20 pm

Q 29 If Mr Subir was an accountant who was called at 3.00 pm, then which of the following options may not be definitely correct ?

- A) Mr Umesh was called at 1.40 pm
- B) Dr Ratan (MBBS) was called at 3.40 pm
- C) Mr William was called at 11.00 am
- D) Mr Partha was called after Mr Vittal

Q 30 If Mr Vittal, an accountant with a percentile of 99.87, was called at 11.40 am, then which of the following options must be definitely correct ?

- A) Dr Ratan was called at 3.00 pm
- B) Mr Quereshi was an engineer
- C) Mr William was called at 1.40 pm
- D) Mr Umesh was called at 3.00 pm

Q 31 If Mr Vittal was an engineer who was immediately followed by Mr Tanmoy in the call timing, then which of the following options must be definitely correct ?

- A) Dr Ratan (MBBS) was the last candidate to be interviewed
- B) Mr William was the first candidate to be interviewed
- C) There were at least three candidates whose percentile was more than Mr Tanmoy in CAT 2022
- D) Mr Umesh was called at 1.40 pm

Q 32 If Mr Tanmoy was called at 1.40 pm and Mr Vittal at 3.00 pm, then which of the following options may not be definitely correct ?

- A) Dr Ratan (MBBS) was called more than four hours after Mr William
- B) Mr Subir had a percentile of 98.35
- C) Mr Umesh was called at 11.40 am
- D) Mr Quereshi was an engineer

Directions for questions from 33 to 34 :

Q 33 (TITA)

Complete the following series using the appropriate option :

23, 28, 44, 52, 62, 70, _____

Q 34 In the options there are four groups of letters listed as A, B, C and D. Unscramble the letters of the words and find the odd one out :

- A) PNGISR
- B) NERIWT
- C) REMUMS
- D) ELTNPA

Directions for questions from 35 to 40 :

The famous Indian nuclear physicist, Padma Vibhusan Dr Raja Ramanna, while researching during India's first nuclear bomb test -- Project 'Smiling Buddha', hit upon the secret of preparing a new radioactive material (Indianium X) using two secret compounds – compound Abra and compound Cadabra.

For preparing two kilograms of Indianium X, 880 gm of Abra and 540 gm of Cadabra were required. The preparation of the material happened only in batches of two kilograms and preparation of any batch of Indianium X could begin only if the quantity of secret compounds available were sufficient to prepare two kilograms of the material. Only when there was a shortfall in any secret compound because of which it was not possible to prepare the batch of Indianium X, that secret compound was purchased from the international market with the help of the Indian intelligence agency (RAW).

Dr Ramanna always noted down the details regarding the number of kilograms of Indianium X he prepared on each month and the type and quantity of secret compound he had to purchase, if any. Given below is an excerpt from his notes for the year 1970 :

Month of 1970	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct
Indianium X prepared (kg)	14	16	10	10	14	14	12	12	14	12
Abra purchased (kg)	nil	nil	10	nil	12	nil	16	nil	nil	6
Cadabra purchased (kg)	nil	nil	nil	8	nil	6	nil	8	nil	nil

Q 35 Which of the following could be the amount of Abra Dr Ramanna already had as stock before he started to prepare the first two kilogram batch of Indianium X in Jan 1970 ?

- A) 17.82 kg
- B) 18.24 kg
- C) 18.36 kg
- D) 18.52 kg

Q 36 What was the minimum total amount of Abra and Cadabra put together that could have been available as stock before the first two kilogram batch of Indianium X were prepared by Dr Ramanna in Jan 1970 ?

- A) 29.56 kg
- B) 31.10 kg
- C) 31.86 kg
- D) 32.24 kg

Q 37 Which of the following could be the quantity of stock of Abra left after exactly 128 kg of Indianium X had been prepared ?

- A) 0.156 kg
- B) 0.878 kg
- C) 0.880 kg
- D) 3.000 kg

Q 38 Which of the following could be the quantity of stock of Cadabra left after exactly 128 kg of Indianium X had been prepared ?

- A) 0.893 kg
- B) 0.939 kg
- C) 0.994 kg
- D) 1.053 kg

Q 39 Which of the following could be the total quantity of stock of Abra and Cadabra combined after exactly 76 kg of Indianium X had been prepared ?

- A) 7.78 kg
- B) 7.86 kg
- C) 8.00 kg
- D) 8.12 kg

Q 40 If the immediately next entry in Dr Raja Ramanna's notes in Nov 1970 was "Prepared n kg of Indianium X", what was the maximum possible value of n in kilograms ?

- A) 8
- B) 6
- C) 4
- D) 2

Directions for questions from 41 to 44 :

Four young men and fast friends – Anirban, Bhaskar, Shubhayu and Sugato, who had been placed in top companies at their hometown Kolkata directly from college in 2021, decided to splurge their 2022 Durga Puja bonus payments on themselves. They went shopping together and each purchased at least one out of the three items -- an iPhone-14, a Bose Music System and an LG Microwave Oven.

The costs of these three items were Rs 78,750, Rs 33,750 and Rs 45,000, in no particular order.

It was also known that :

- a) No friend purchased more than one item of any type.
- b) Also, it was known that one of the friends did not purchase an iPhone-14, one of them did not purchase the Bose Music System, and two of them did not purchase the LG Microwave Oven.
- c) Anirban spent the most and Shubhayu spent the least.
- d) No two friends spent the same amount.

Q 41 (TITA)

If the cost of the LG Microwave Oven was not Rs 78,750, then what was the amount definitely spent (in Rs) by one friend out of the options given ?

Q 42 (TITA)

What was the maximum possible difference (in Rs) between the amount spent by Bhaskar and Sugato ?

Q 43 If Shubhayu spent Rs 33,750 and Sugato spent the second highest amount among the four friends, then what could be the minimum amount that Bhaskar had spent ?

- A) Rs 123750
- B) Rs 112500
- C) Rs 78750
- D) Rs 45000

Q 44 What was the total amount spent by Anirban ?

- A) Rs 112500
- B) Rs 135000
- C) Rs 123750
- D) Rs 157500

Section - 3 - Quantitative Aptitude

Q45. If $4^{2n+1} + x$ and $4^n - x$ are divisible by 5, n being an even integer, find the least value of x .

- (a) 1
- (b) 2
- (c) 3
- (d) 0

Q46. Read the following and answer the questions that follow.

Vande Bharat express has 4 AC-I coaches having 24 berths each, 6 AC-II Coaches having 45 berths each, 3 AC-III Coaches having 64 berths each. There are no general Coaches in the train. If Rs 2000 is the cost of an AC -III berth from Delhi to Jammu. Following information in addition to above information is given:

1. AC-I berth is 20% expensive than AC-II berths.
2. AC-II berth is 20% expensive than AC-III berths.

answer the following questions:

The value of the maximum revenue possible from Vande Bharat Express between Delhi to Jammu is

- (a) More than Rs.1.5 million
- (b) less than Rs.1.5 million
- (c) More than Rs. 1 million
- (d) Between Rs 1 to 1.5 million

Q47. (TITA)

How many ordered pairs in p, q is there if LCM of p and q is $5^{47}3^{11}11^4$?

Q48. (TITA)

How many integer solutions exist for the equation $7x - 3y = 122$ such that $x \times y < y$

- (a) 4
- (b) 5
- (c) 6
- (d) 8

Q49. A dealer professes to sell at cost price but unknowingly he uses a 550-gram weight instead of a 500-gram weight. By what percent he should increase the price so that he will get no loss.

- (a) 9.09%
- (b) 11.11%
- (c) 12.5%
- (d) 8.33%

Q50. Two equal sums were lent at 8.5% simple interest per annum for 2.5 years and 3 years respectively. The difference in the interest was Rs 200 less than the total sum lent. The total sum lent was nearest to

- (a) Rs 690
- (b) Rs 800
- (c) Rs 420
- (d) Rs 780

Q51. (TITA)

The difference of a fraction and its reciprocal equals $48/7$. Find the fraction _____

Q52. 'Green & Fresh' purchases y liters of fruit juice from the 'Juice n Fruits' for a total price of \$ $6y^2$ and sells the entire y liters at a total price of \$ $10 \times (7 + 8y/5)$. Find the minimum value of y so that the 'Green & Fresh' makes do not make any loss.

- (a) \$ 50
- (b) \$ 5
- (c) \$ 15
- (d) \$ $7/3$

Q53. If $\cos^4\theta - \sin^4\theta = 3/4$, then the value of $\sin 2\theta - \cos 2\theta$ is:

- (a) $(\sqrt{7} - 3)/4$
- (b) $(\sqrt{7} + 3)/4$
- (c) $\sqrt{7}/4$
- (d) $3/4$

Q54. (TITA)

The value of base of a triangle for which Area is minimum if the relation between perpendicular distance from the vertex and the base is $p = 7b^2 - 84$ is _____ (where b represents base and p represents perpendicular distance)

Q55. Let $f(x) = \max(2x + 1, 3 - 4x)$, where x is any real number. Value of $f(x)$ at $x = 7.5$ is:

- (a) -11 (b) -27 (c) 16 (d) 43

Q56. $\log_{49}(7\log_2(2 + \log_3(1 + 2\log_2 x))) = 1/2$. Find x.

- (a) 4 (b) 1 (c) 2 (d) $\frac{1}{2}$

Q58. (TITA)

A family consists of a mother, a father, and some children. The average age of the members of the family is 30, the father's age is 50 years, and the average age of the mother and children is 20. Children in the family are _____

Q58. (TITA)

Ashok takes 12 hours to walk to a certain place and returned on a bike. While returning, he stopped for two hours to meet his old friend. He would have taken 8 hours if he had covered both routes on bike. How long [in hours] would he have taken to walk both ways?

Q59. Sonia can do a job in 10 days, Raveena in 15 days and Kareena in 18 days. Raveena and Kareena both worked together for 4 days. Sonia worked for 2 days alone. What fraction of work will remain incomplete?

- (a) $57/90$ (b) $14/45$ (c) $31/45$ (d) $16/45$ days

Q60. Two types of flour costing in the ratio 2: 1 are mixed in a particular ratio such that mixture on selling at the rate of Rs 35 per Kg gives a profit of 25%. Which of the following can be the ratio of mixing them, If the quantities of flours are integral values in Kg?

- (a) 1: 1 (b) 12: 5 (c) 3: 1 (d) 1: 4

Q61. (TITA)

Amit started a business with 30, 000. After 3 months Bijay joined him with 40, 000. Caesar joined them after one more month with 1, 20,000 and left the partnership after 4 more months. At the end of the year, out of a total profit of 3, 61, 000, share of Caesar is _____

Q62. After receiving two successive raises, Harish's salary became equal to $21/7$ times of his initial salary. By how much percent was the salary raised the first time if the second raise was twice as high (in percent) as the first?

- (a) 15% (b) 20% (c) 25% (d) 50%

Q63. How many three- digit numbers can be formed using digits {1, 2, 3, 4, 5, 6, 7, 8, 9} such that digits used are consecutive terms of a Geometric progression but not necessarily be in the order in the number formed as they are in GP and no digit is repeated?

- (a) 6 (b) 18 (c) 216 (d) 3

Q64. (TITA)

Anshuman runs $\frac{5}{3}$ times as fast as Mukesh. In a race, if Anshuman gives a lead of 50m to Mukesh, find the distance from the starting point where both of them will meet.

Q65. If ABC is a quarter circle of radius 1 cm and a circle is inscribed in it, find radius of smaller circle inscribed.

- (a) $-1+2\sqrt{2}$ (b) $\frac{1}{2}$ (c) $-1+\sqrt{2}$ (d) $1-\sqrt{2}$

Q66. If the curved surface area of a cone is twice that of another cone and slant height of the second cone is thrice that of the first, find the ratio of the area of their base.

- (a) 81: 1 (b) 1: 36 (c) 36: 1 (d) 16: 1

CAREERS360

Answer Key - Mock Test 17

Section - Verbal Ability & Reading Comprehension

1-A, 2-D, 3-B, 4-D, 5-D, 6-B, 7-D, 8-C, 9-C, 10-B, 11-C 12-C, 13-D, 14-C, 15-B, 16-D, 17-C, 18-B, 19-D, 2-A, 21-A, 22-2143, 23-3142, 24-2134

Section - Data Interpretation & Logical Reasoning

25-46, 26-40, 27-D, 28-114, 29-A, 30-B, 31-C, 32-D, 33-70, 34-D, 35-C, 36-B, 37-A, 38-D, 39-C, 40-D, 41-112500, 42-45000, 43-C, 44-D

Section - Quantitative Aptitude

45-A, 46-D, 47-567, 48-C, 49-D, 50-C, 51-7, 52-B, 53-A, 54-2, 55-C, 56-B, 57-1, 58-12, 59-B, 60-C, 61-228000, 62-D, 63-B, 64-125, 65-D, 66-C

Solutions - Mock Test 17

Section - Verbal Ability & Reading Comprehension

1. A

The most complete answer in this case is option A. It is the only option which provides us with the complete reference that is used in the passage and completes the passage in the appropriate manner. Every other option missed some or the other part of the passage and focused only on one point being made in the passage.

This is where you need to be careful.

One fact given to us is that there is scant information.

But this is not the central thread of thought.

The central thread tying the different parts of the passage is that women had a role to play in ancient Greece and Rome.

Remember, ask yourself: what ties up the whole passage?

That has to be your answer. This is not a single point question; this revolves around the whole passage.

This is a tough question where you need to understand the meaning of the option itself.

The option says: There is a range of textual evidence indicating that the existence and professional activity of women doctors were an accepted part of everyday life in ancient Greece and Rome.

In this case, when we say that there is a range of textual evidence, we are not pointing to the nature of this scant evidence here.

We are simply pointing to the fact that there are different kinds of references mentioned in the passage.

Here the word 'range' refers to the fact that there are mentions across different texts.

Next thing that you need to keep in mind here: the part which tells us that these doctors were an accepted part of everyday life. This simply highlights that these doctors played a role and were a definite part of society, something which is not acknowledged as it should be.

Also, the other options are nowhere close to the context of the passage.

Combination of these leads us to option A as the correct answer.

2. D

This is a tricky question because it does not make any direct references, and its correct answer is also an indirect reference from passage. The correct option is a derivative from the lines: "Also pointing to a wider medical practice are the references in various classical medical works to a great number of women's writings on medical subjects."

3. B

The last line of the paragraph states: 'As with the male doctors they cite, these works usually simply give excerpts from the female authority's writing without biographical information or special comment.' What the authors state is that there was no special mention or comments in these works, both of which allude to option B as the answer. This option further takes up the author's tone and explains how the mention of women in these writings was simply a matter of fact occurrence.

4. D

This is one question that should not take a lot of time to solve. It is a direct inference from the subject of the paragraph from where this line is taken. It clearly indicates how female doctors played a far greater role than just being midwives.

The context is critical in this.

Go through this paragraph: Moreover, despite evidence that some of these women doctors treated mainly female patients, their practice was clearly not limited to midwifery. Both Greek and Latin have distinct terms for midwife and doctor, and important texts and inscriptions refer to female practitioners as the latter. Other references provide evidence of a broad scope of practice for women doctors. The epitaph for one named Domnina reads: "You delivered your homeland from disease." A tribute to another describes her as "savior of all through her knowledge of medicine."

Why has the author quoted these two examples?

One simple reason: Go through this paragraph: Moreover, despite evidence that some of these women doctors treated mainly female patients, their practice was clearly not limited to midwifery....Other references provide evidence of a broad scope of practice for women doctors.

He uses these two quotes to prove that women doctors indulged in things other than midwifery.

Other options:

- A. acknowledged as authorities by other doctors: There is no reference to other doctors here
- B. highly educated: this is not about education, this is about women doctors doing things other than midwifery
- C. very effective at treating illness: there is no mention of women doctors being effective; we know these two doctors were praised for their role.

The question is not about the content of these quotes; the question is why these quotes have been used.

5. D

This is another question that requires close perusal amongst two options: option A and option D. Option A, though correct in a certain way, loses out to option D as it does provide as clear an answer as provided by option D. The last option is far more specific and accurate than option A.

6. B

Option A is true. Refer to these lines from the passage: "But Swedish meatballs are no longer just a domestic dish. They have gone global." Thus, option A is true.

Option C is true. Refer to these lines: "SeverinSjöstedt, the chef who spent almost a year developing the original recipe for IKEA, has said that the firm wanted to make something that was easy to serve, tasty and affordable for most people."

Option D is also true. Refer to the second paragraph of the passage.

Option B, though true, is not true for meatballs. It is true for the Swedish meatballs-köttbullar. However, in general, meatballs are made in Britain, Italy, Lebanon, and many other countries and its roots are not given in the passage, hence this option is not true.

Option B is the correct answer.

7. D

The primary reason for the meatballs to be served was that they did not want their customers to faint because of hunger while exploring the furniture. Refer to the lines: IKEA started serving meatballs more than three decades ago. Concerned that customers navigating its endless aisles of flat-pack furniture would grow faint with hunger, the company opened restaurants in its stores.

Thus, option D is the correct answer here.

The ref: Concerned that customers navigating its endless aisles of flat-pack furniture would grow faint with hunger, the company opened restaurants in its stores.

The tricky thing here to spot is that the restaurants are in the stores; while navigating the stores, people felt hungry and hence, Ikea opened these and served meatballs. Hence, the connection. Essentially it is one and the same thing here.

A logical doubt you might have here: you might think they are asking the reason for restaurants serving meatballs, however in the answer given, they have provided the reason for starting restaurants instead.

Read the question statement closely: The reason why IKEA started restaurants serving meatballs in their showroom was:

The question asks why IKEA started restaurants..

The main verb here is 'started' and not 'serving meatballs'.

'Serving meatballs' is just a quality of these restaurants. The question still asks you why they started these restaurants.

8. C

Option A is true. Refer to the lines from the passage: "They are at the centre of any midsummer smorgasbord or Christmas julbord."

Option B is also true. Refer to the first paragraph of the passage. It has different names in different countries.

Option D is also true. It can be inferred from the first paragraph of the passage. It says that meatballs are homely food in many countries and it makes one remember one's mother.

Option C is not true. It was the furniture giant who was responsible for the dish to go global, not the Swedish mothers. Refer to the lines "But Swedish meatballs are no longer just a domestic dish. They have gone global, thanks to the efforts not of Sweden's mothers but of one giant furniture company: IKEA."

Hence, Option C is the correct answer.

9. C

In the last paragraph, the author mentions that Swedish meatballs have a different origin and this fact made some of its promoters react in shock and dejection. But the author feels that it is still commendable that a country having no roots of meatballs can make the dish their own and also persuade the rest of the world to love it. The author supports this and says that even mothers would approve this. When the author uses the phrase given in the question, he wants to point out that there is no need to feel dejection. He explains the reason after he says the above phrase.

Remember, in this case, you do not need to tell the meaning of the above lines.

Rather, you need to tell the basis (the reason behind this statement).

Option A is the meaning of this statement; option C is the reason why he says this statement.
 Refer to option D: Because the origin of the dish does not really matter, the one that makes it best matters.
 Option D misses out on the sentiment of the passage.
 The thing is this is not about the best meatballs or this is not about a competition for the best meatballs.
 The author wishes to point out that Sweden has done a great job making a dish its own which did not belong to it. That is why the particular statement is used.
 Hence, Option C is the correct answer.

10. B

This is an in-direct question and one you should skip in the first go. The reason for this is that this question does not really base itself on clear facts in the passage and in fact, requires you to know the meaning of insourcing. You might object to this by saying that outside information is required in this case but then you need to be ready for any kind of challenge in the exam. This question can only be solved by option elimination.

First things first, let us study the meaning of insourcing. Insourcing is a business practice in which work that would otherwise have been contracted out is performed in house. Insourcing often involves bringing in specialists to fill temporary needs or training existing personnel to perform tasks that would otherwise have been outsourced. This clearly fits our given context (though you might be challenged to identify this if you do not know the meaning of the term). You need to remember that the main idea of the author is that America should focus on creating jobs within the country by using its immigrant pool better and using its resources better than focusing on outsourcing. This can be labelled as insourcing.

Options A, C and D all suffer from the same problem: the topics mentioned in these options are not even remotely mentioned in the passage.

11. C

Statement I is incorrect. It distorts the sentiment expressed in this line: Research indicates that immigrant entrepreneurs have achieved astonishing inroads in launching technology start-ups in the United States. Statement II is correct and can be derived from the lines: It's taken as a truism in American politics that start-ups and small companies drive the majority of the country's new economic growth and job growth. Statement III can be derived from the lines: But frozen by fears of a nativist backlash, both Obama and Romney have refused to discuss immigration as an economic issue.
 Remember, you need to pick a statement that the author won't agree with.

12. C

Option A is ruled out as the law does not mandate (that is direct) ethnic and race check.
 Option B is ruled out as there is no specific place being talked about.
 Option C is the correct choice as it highlights what the draconian law does and how it creates the "stop-and-frisk" zone.
 The problem with option D is that it is vague and general; it does not talk about the main subjects of the passage.

13. D

Statement I can be derived from the lines: The pundit class has repeated ad nauseam that the economy and unemployment numbers will likely make or break Obama's reelection campaign.
 Statements II and III can be derived from the lines: However, the most important reason to revisit immigration reform has largely remained off the political radar: namely, that high-skilled immigrants could

provide a tremendous boost to the U.S. economy in a very short period at virtually no cost to taxpayers. It's taken as a truism in American politics that start-ups and small companies drive the majority of the country's new economic growth and job growth.

14. C

Option A is incorrect as we cannot say that this *Discourse on Political Economy* was the most significant work for Rousseau. It was an important work but how important is something we cannot discuss.

Option B is incorrect as not exact dates are mentioned for the given works and we cannot decide the order from the given context.

Option C can be derived from the lines: The work is perhaps most significant because it is here that Rousseau introduces the concept of the "general will," a major aspect of his political thought which is further developed in the *Social Contract*.

15. B

The last paragraph of the passage makes it completely clear that the works of the two are not in agreement with one another. At variance means they are not in agreement with one another. This is an easy question and you should have got it right.

16. D

In this question, the choice is between option A and option D. Which option did you select? Effectively, you need to identify whether the last paragraph mentions two political methods or arguments. Remember, the technical definition for an argument is a reason or set of reasons given in support of an idea, action or theory. In the given case, we can see that the two individuals mentioned actually represent two arguments or theories put forward by the two (these are not political methods; these are political thoughts). Considering this, we select option D as the right answer.

17. C

Option A only talks about life satisfaction, whereas here, we have also talked about physical and mental health.

Option B again covers only a part of the passage and not all the aspects. And Option 4 is beyond the scope as the passage does not mention productivity here.

Option C is the correct option as it mentions overall well being and not just one aspect and it also compares real-world social networks to Facebook.

18. B

The main idea here is that when Trump faces a problem or panic as he did in 1990s he changes his behaviour to be less arrogant and it seems that is what is happening now, which is captured by option B. Option A and C mention only one part of the passage and Option D is comparing a larger aspect as mentioned in the passage.

19. D

Explanation

The passage talks about implementation of Scrum practices and the benefits obtained by implementing the full suite of such practices. This is reflected in option D.

20.A

The last line of the paragraph gives us the idea that the railways are going to compromise on quantity to ensure quality. The immediate question that can come into our mind is -How much?

Well this goes without saying that option A explains the quantity cut perfectly. Hence this is the answer. Option B speaks about the concluding line. This can only follow option A. Hence we can eliminate this one. Option C speaks of 'this'. What is 'this'? The answer comes in option A. Option D is completely irrelevant

21.A

The passage ends in a negation of thoughts. What is the actual situation? The answer is nothing but option A.

22. 2143

Statement 2 is the opening statement as it gives the context to the whole discussion. It is showing how the violence in Charlottesville has impacted Britain. The uncomfortable discussions mentioned in 2 are followed by 1. The link for 4 and 3 is noun pronoun usage. 4 mentions the name of a person and 3 mentions he, referring to the editor. Therefore, the correct order is 2143.

23. 3142

Here, the first sentence is option 3 as it is giving an introduction of how the theory came under pressure. The words 'Early on' in statement 1 show that, it will be the first reason for the theory coming under pressure and the fact that statement 2 has 'and', it shows that it will be the last reason and thus statement 4 will be the second reason making 3142 as the correct order.

24. 2134

Exp: Statement 2 can be the perfect opening for the passage, as with its help the topic of changing mindsets of the young generations can be taken forward. Statement 1 follows as it exactly points out this fact regarding the young generation. Statement 3 continues further, what this trend among the young generation means, so it follows statement 1. Statement 4 can be the concluding statement as it gives the ill-effects of such mentality. This makes the proper sequence of sentences as 2-1-3-4

Section - Data Interpretation & Logical Reasoning

25. 46

From the data given in the table, we can say that :

Judge	Finalists			Total Points of 3 finalists as given	%	Total Points given to 5 finalists
Mr Bappi Lahiri	Ankita (18)	Bablu (10)	Chinmoy (12)	$18+10+12 = 40$	80	$(40*100)/80 = 50$
Mr Arijit Singh	Ankita (8)	Debarati (16)	Enakshi (12)	$8+16+12 = 36$	90	$(36*100)/90 = 40$
Ms Asha Bhosle	Chinmoy (22)	Debarati (12)	Enakshi (14)	$22+12+14 = 48$	80	$(48*100)/80 = 60$
Mr Kedar Bhattacharya	Ankita (14)	Debarati (16)	Enakshi (4)	$14+16+4 = 34$	85	$(34*100)/85 = 40$

Mr Srikanta Acharya	Ankita (6)	Bablu (16)	Chinmo y (10)	$6+16+10 = 32$	80	$(32*100)/80 = 40$

But all the points given by each judge to the five finalists were distinct, non-negative integers which were multiples of 2.

Hence the possibilities of points given can be depicted as below :

Judge	Ankita	Bablu	Chinmo y	Debarati	Enakshi	Total Points	
Mr Bappi Lahiri	18	10	12	2, 4, 6, 8	8, 6, 4, 2	50	10, and hence 0, is not possible
Mr Arijit Singh	8	0, 4	4, 0	16	12	40	2 and 2 is not possible
Ms Asha Bhosle	2, 4, 8, 10	10, 8, 4, 2	22	12	14	60	6 and 6, as well as 12, and hence 0, is not possible
Mr Kedar Bhattacharya	14	0, 6	6, 0	16	4	40	4, and hence 2, is not possible
Mr Srikanta Acharya	6	16	10	0, 8	8, 0	40	4 and 4, as well as 6, and hence 2, is not possible

The range of points that could be earned by the finalists individually in the final round of Sa-Re-Ga-Ma-Pa 2018 (Bengali) were :

Ankita : $(18+8+2+14+6)$ to $(18+8+10+14+6) = 48$ to 56

Bablu : $(10+0+2+0+16)$ to $(10+4+10+6+16) = 28$ to 46

Chinmoy : $(12+0+22+0+10)$ to $(12+4+22+6+10) = 44$ to 54

Debarati : $(2+16+12+16+0)$ to $(8+16+12+16+8) = 46$ to 60

Enakshi : $(2+12+14+4+0)$ to $(8+12+14+4+8) = 32$ to 46

Hence, the minimum total number of points earned by Debarati in the final round of Sa-Re-Ga-Ma-Pa 2018 (Bengali) was 46

26. 40

The possibilities of points given can be depicted as below :

Judge	Ankita	Bablu	Chinmo y	Debarati	Enakshi	Total Points
Mr Bappi Lahiri	18	10	12	2, 4, 6, 8	8, 6, 4, 2	50
Mr Arijit Singh	8	0, 4	4, 0	16	12	40
Ms Asha Bhosle	2, 4, 8, 10	10, 8, 4, 2	22	12	14	60

Mr Kedar Bhattacharya	14	0, 6	6, 0	16	4	40
Mr Srikanta Acharya	6	16	10	0, 8	8, 0	40

Ms Asha Bhosle gave 8 points to Ankita.

Also, Mr Arijit Singh and Mr Kedar Bhattacharya gave the same number of points to Chinmoy. But that can only be 0.

So Bablu can get 4 from Ms Asha Bhosle, 4 from Mr Arijit Singh and 6 from Mr Kedar Bhattacharya.

Hence, if Ms Asha Bhosle gave 8 points to Ankita, and Mr Arijit Singh and Mr Kedar Bhattacharya gave the same number of points to Chinmoy, the number of points Bablu earned in the final round of Sa-Re-Ga-Ma-Pa 2018 (Bengali)

$$= 10+4+4+6+16$$

$$= 40$$

27. D

The range of points that could be earned by the finalists individually in the final round of Sa-Re-Ga-Ma-Pa 2018 (Bengali) were :

$$\text{Ankita : } (18+8+2+14+6) \text{ to } (18+8+10+14+6) = 48 \text{ to } 56$$

$$\text{Bablu : } (10+0+2+0+16) \text{ to } (10+4+10+6+16) = 28 \text{ to } 46$$

$$\text{Chinmoy : } (12+0+22+0+10) \text{ to } (12+4+22+6+10) = 44 \text{ to } 54$$

$$\text{Debarati : } (2+16+12+16+0) \text{ to } (8+16+12+16+8) = 46 \text{ to } 60$$

$$\text{Enakshi : } (2+12+14+4+0) \text{ to } (8+12+14+4+8) = 32 \text{ to } 46$$

The lower range of Debarati was 46

The upper range of Bablu and Enakshi was 46

Hence, both Bablu and Enakshi could definitely not earn more points than Debarati in the final round of Sa-Re-Ga-Ma-Pa 2018 (Bengali).

28. 114

The range of points that could be earned by the finalists individually in the final round of Sa-Re-Ga-Ma-Pa 2018 (Bengali) were :

$$\text{Ankita : } (18+8+2+14+6) \text{ to } (18+8+10+14+6) = 48 \text{ to } 56$$

$$\text{Bablu : } (10+0+2+0+16) \text{ to } (10+4+10+6+16) = 28 \text{ to } 46$$

$$\text{Chinmoy : } (12+0+22+0+10) \text{ to } (12+4+22+6+10) = 44 \text{ to } 54$$

$$\text{Debarati : } (2+16+12+16+0) \text{ to } (8+16+12+16+8) = 46 \text{ to } 60$$

$$\text{Enakshi : } (2+12+14+4+0) \text{ to } (8+12+14+4+8) = 32 \text{ to } 46$$

The summation of the total points earned by Bablu and Enakshi is 60

$$28+32 = 60$$

Hence both Bablu and Enakshi had earned the lowest possible number of points of 28 and 32 respectively.

The possibilities of individual points were :

Judge	Ankita	Bablu	Chinmoy	Debarati	Enakshi	Total Points
Mr Bappi Lahiri	18	10	12	2, 4, 6, 8	8, 6, 4, 2	50
Mr Arijit Singh	8	0, 4	4, 0	16	12	40
Ms Asha Bhosle	2, 4, 8, 10	10, 8, 4, 2	22	12	14	60
Mr Kedar Bhattacharya	14	0, 6	6, 0	16	4	40
Mr Srikanta Acharya	6	16	10	0, 8	8, 0	40

If both Bablu and Enakshi had earned the lowest possible number of points of 28 and 32 respectively, the possibilities of individual points were :

Judge	Ankita	Bablu	Chinmoy	Debarati	Enakshi	Total Points
Mr Bappi Lahiri	18	10	12	8	2	50
Mr Arijit Singh	8	0	4	16	12	40
Ms Asha Bhosle	10	2	22	12	14	60
Mr Kedar Bhattacharya	14	0	6	16	4	40
Mr Srikanta Acharya	6	16	10	8	0	40

In that case total points earned by Chinmoy = $(12+4+22+6+10) = 54$

Also total points earned by Debarati = $(8+16+12+16+8) = 60$

Hence, if the summation of the total points earned by Bablu and Enakshi was 60, what could be the sum of the total points earned by Chinmoy and Debarati in the final round of Sa-Re-Ga-Ma-Pa 2018 (Bengali)

$$= 54 + 60$$

$$= 114$$

29. A

Since each candidate would be called at forty minute intervals starting from 11.00 am on 26th February 2023 at the Tata Hall in the IIM Calcutta campus, the timings of the start of the eight interviews would be 11.00 am, 11.40 am, 12.20 pm, 1.00 pm, 1.40 pm, 2.20 pm, 3.00 pm and 3.40 pm.

Tabulating the originally given data given would yield the following :

Time	11.00 am	11.40 am	12.20 pm	1.00 pm	1.40 pm	2.20 pm	3.00 pm	3.40 pm

Name				Mr Quereshi		Mr Partha		
Profession			Engineer			Accountant		
Percentile			98.35	98.87				

Now, if Mr Subir was an accountant who was called at 3.00 pm, then :

Time	11.00 am	11.40 am	12.20 pm	1.00 pm	1.40 pm	2.20 pm	3.00 pm	3.40 pm
Name				Mr Quereshi		Mr Partha	Mr Subir	
Profession			Engineer			Accountant	Accountant	
Percentile			98.35	98.87				

Dr Ratan (MBBS) was called after 2.20 pm (d). The only slot vacant after 2.20 pm was 3.40 pm. So Dr Ratan (MBBS) was called at 3.40 pm.

Neither the first nor the last interviewee was an engineer (e). Yet there were four engineers who were called for the interview. So the slots at 11.40 am, 1.00 pm and 1.40 pm were definitely engineers. Hence the English professor Mr Williams was called at 11.00 am, as that was the only slot left. Also Mr Tanmoy, Mr Umesh and Mr Vittal were engineers.

Thus :

Time	11.00 am	11.40 am	12.20 pm	1.00 pm	1.40 pm	2.20 pm	3.00 pm	3.40 pm
Name	Mr William			Mr Quereshi		Mr Partha	Mr Subir	Dr Ratan
Profession	Professor	Engineer	Engineer	Engineer	Engineer	Accountant	Accountant	Gen Practitioner
Percentile	99.97		98.35	98.87				

From the above we can definitely conclude that :

Mr Partha was called after Mr Vittal.

Mr William was called at 11.00 am

Dr Ratan (MBBS) was called at 3.40 pm

Mr Umesh was called at either 11.40 am or 1.40 pm

Hence, Mr Umesh was called at 1.40 pm may not be definitely correct.

30. B

Tabulating the originally given data given would yield the following :

Time	11.00 am	11.40 am	12.20 pm	1.00 pm	1.40 pm	2.20 pm	3.00 pm	3.40 pm
Name				Mr Quereshi		Mr Partha		
Profession			Engineer			Accountant		
Percentile			98.35	98.87				

Now, if Mr Vittal, an accountant with a percentile of 99.87, was called at 11.40 am, then :

Time	11.00 am	11.40 am	12.20 pm	1.00 pm	1.40 pm	2.20 pm	3.00 pm	3.40 pm
Name		Mr Vittal		Mr Quereshi		Mr Partha		
Profession		Accountant	Engineer			Accountant		
Percentile		99.87	98.35	98.87				

Neither the first nor the last interviewee was an engineer (e). Hence the candidates who were called at 1.00 pm, 1.40 pm and 3.00 pm were engineers. Hence the candidates who were called at 11.00 am and 3.40 pm were the remaining English professor and the general practitioner, in any order. But Dr Ratan (MBBS) was called after 2.20 pm (d). Hence Dr Ratan (MBBS) was called at 3.40 pm. Thus the English professor Mr Williams was called at the other remaining slot of 11.00 am.

Thus :

Time	11.00 am	11.40 am	12.20 pm	1.00 pm	1.40 pm	2.20 pm	3.00 pm	3.40 pm
Name	Mr William	Mr Vittal		Mr Quereshi		Mr Partha		Dr Ratan
Profession	Professor	Accountant	Engineer	Engineer	Engineer	Accountant	Engineer	Gen Prac
Percentile	99.97	99.87	98.35	98.87				

From the above we can definitely conclude that :

Dr Ratan was called at 3.40 pm

Mr William was called at 11.00 am

Mr Umesh was called at either 1.40 pm or 3.00 pm

Mr Quereshi was an engineer

Hence, Mr Quereshi was an engineer is the only option that is definitely correct.

31. C

Tabulating the originally given data given would yield the following :

Time	11.00 am	11.40 am	12.20 pm	1.00 pm	1.40 pm	2.20 pm	3.00 pm	3.40 pm
Name				Mr Quereshi		Mr Partha		
Profession			Engineer			Accountant		
Percentile			98.35	98.87				

Neither the first nor the last interviewee was an engineer (e). Thus if Mr Vittal was an engineer who was immediately followed by Mr Tanmoy in the call timing, then the two consecutive slots that could accommodate them would be 1) 11.40 am for Mr Vittal and 12.20 pm for Mr Tanmoy, or 2) 3.00 pm for Mr Vittal and 3.40 pm for Mr Tanmoy.

Case 1)

Time	11.00 am	11.40 am	12.20 pm	1.00 pm	1.40 pm	2.20 pm	3.00 pm	3.40 pm
Name		Mr Vittal	Mr Tanmoy	Mr Quereshi		Mr Partha		
Profession		Engineer	Engineer			Accountant		
Percentile			98.35	98.87				

Case 2)

Time	11.00 am	11.40 am	12.20 pm	1.00 pm	1.40 pm	2.20 pm	3.00 pm	3.40 pm
Name				Mr Quereshi		Mr Partha	Mr Vittal	Mr Tanmoy
Profession			Engineer			Accountant	Engineer	
Percentile			98.35	98.87				

But Dr Ratan (MBBS) was called after 2.20 pm (d). Case 2 would not be able to accommodate the condition. Hence Case 2 is invalid.

In Case 1, Dr Ratan (MBBS) could be called either at 3.00 pm or at 3.40 pm. In Case 1, Mr William could have been called at any time at 11.00 am or 1.40 pm or 3.00 pm or 3.40 pm depending upon whom the other two engineers were and when was Dr Ratan (MBBS) called. In Case 1, if Dr Ratan (MBBS) was called at 3.00 pm, then Mr Umesh, an engineer (f), had to be called at 1.40 pm. However, in Case 1, if Dr Ratan (MBBS) was called at 3.40 pm, then Mr Umesh could be called at 1.40 pm or 3.00 pm.

In Case 1, Mr Tanmoy was an engineer with 98.35 percentile in CAT 2020. Mr Quereshi with 98.87 percentile (b), Mr Umesh with 99.43 percentile (f), and Mr William with 99.97 percentile (a) were definitely above Mr Tanmoy in rank in CAT 2020. There could also be more candidates.

Hence, if Mr Vittal was an engineer who was immediately followed by Mr Tanmoy in the call timing, then the option which states that there were at least three candidates whose percentile was more than Mr Tanmoy in CAT 2022 must be definitely correct.

32. D

Tabulating the originally given data given would yield the following :

Time	11.00 am	11.40 am	12.20 pm	1.00 pm	1.40 pm	2.20 pm	3.00 pm	3.40 pm
Name				Mr Quereshi		Mr Partha		
Profession			Engineer			Accountant		
Percentile			98.35	98.87				

Now, if Mr Tanmoy was called at 1.40 pm and Mr Vittal at 3.00 pm, then :

Time	11.00 am	11.40 am	12.20 pm	1.00 pm	1.40 pm	2.20 pm	3.00 pm	3.40 pm
Name				Mr Quereshi	Mr Tanmoy	Mr Partha	Mr Vittal	
Profession			Engineer			Accountant		
Percentile			98.35	98.87				

Dr Ratan (MBBS) was called after 2.20 pm (d). Hence Dr Ratan (MBBS) was called at 3.40 pm, as that was the only vacant slot after 2.20 pm. Mr William who was the English professor (a) could hence be called at either 1) 11.00 am or 2) 11.40 am.

Case 1)

Time	11.00 am	11.40 am	12.20 pm	1.00 pm	1.40 pm	2.20 pm	3.00 pm	3.40 pm
Name	Mr William			Mr Quereshi	Mr Tanmoy	Mr Partha	Mr Vittal	Dr Ratan
Profession	Professor		Engineer			Accountant		Gen Practitioner
Percentile	99.97		98.35	98.87				

Case 2)

Time	11.00 am	11.40 am	12.20 pm	1.00 pm	1.40 pm	2.20 pm	3.00 pm	3.40 pm

Name		Mr William		Mr Queres hi	Mr Tanmoy	Mr Partha	Mr Vittal	Dr Ratan
Profession		Professor	Engineer			Accountant		Gen Prac
Percentile		99.97	98.35	98.87				

But, Mr Umesh, who had scored 99.43 percentile was an engineer (f). But Case 2 would not be able to accommodate the condition, as neither the first nor the last interviewee was an engineer (e). Hence Case 2 is invalid.

But in Case 1, Mr Umesh had to be the one called in the 11.40 am slot. So Mr Subir was the one called at the 12.20 pm slot.

Thus :

Case 1)

Time	11.00 am	11.40 am	12.20 pm	1.00 pm	1.40 pm	2.20 pm	3.00 pm	3.40 pm
Name	Mr William	Mr Umesh	Mr Subir	Mr Queres hi	Mr Tanmoy	Mr Partha	Mr Vittal	Dr Ratan
Profession	Professor	Engineer	Engineer			Accountant		Gen Prac
Percentile	99.97	99.43	98.35	98.87				

Thus,

Dr Ratan (MBBS) was called after 4 hours 40 minutes after Mr William

Mr Subir, an engineer, had a percentile of 98.35

Mr Umesh was called at 11.40 am

Either Mr Queres hi and Mr Tanmoy, or Mr Queres hi and Mr Vittal, or Mr Tanmoy and Mr Vittal were the remaining two engineers.

Hence, if Mr Tanmoy was called at 1.40 pm and Mr Vittal at 3.00 pm, then the option stating that Mr Queres hi was an engineer may not be definitely correct.

33. 70

$$23 + (2+3) = 28$$

$$28 + (2*8) = 44$$

$$44 + (4+4) = 52$$

$$52 + (5*2) = 62$$

$$62 + (6+2) = 70$$

$$\text{Hence, } 70 + (7*0) = 70$$

34. D

Unscrambling, we get :

PNGISR : SPRING

NERIWT : WINTER
 REMUMS : SUMMER
 ELTNPA : PLANET

Option D is hence the odd one out, as it is not a season

35. C

Solution :

Given below is the table which complies with the cumulative quantity of Indianium X prepared by Dr Ramanna as per his excerpt :

Month of 1970	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct
Indanium X prepared (kg)	14	16	10	10	14	14	12	12	14	12
Cumulative quantity of Indanium X prepared (kg)	14	30	40	50	64	78	90	102	116	128
Abra purchased (kg)	nil	nil	10	nil	12	nil	16	nil	nil	6
Cadabra purchased (kg)	nil	nil	nil	8	nil	6	nil	8	nil	nil

Now, for preparing two kilograms of Indianium X, 880 gm of Abra and 540 gm of Cadabra were required. Also Indianium X could be prepared only in batches of two kilograms.

a) Abra :

Month of 1970	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct
Indanium X prepared (kg)	14	16	10	10	14	14	12	12	14	12
Cumulative quantity of Indanium X prepared (kg)	14	30	40	50	64	78	90	102	116	128
Abra purchased (kg)	nil	nil	10	nil	12	nil	16	nil	nil	6

The first consignment of Abra was purchased in Mar 1970.

To prepare 40 kg of Indianium X, there must have been at least $(40/2) \times 0.88 = 17.60$ kg of Abra and less than $17.60 + 0.88 = 18.48$ kg of Abra. (If there was any more Abra, more batches of Indianium X could have

been prepared before purchasing Abra). Hence, the range of Abra initially available would be ≥ 17.60 to < 18.48 kg. After the production of 40 kg of soap, stock of Abra left would be ≥ 0 to < 0.88 kg.

Then 10 kg of Abra was purchased at the end of Mar 1970. So stock of Abra after purchase ≥ 10.00 to < 10.88 kg. $10+14 = 24$ kg of Indianium X was prepared after the purchase and before the second purchase of Abra in May 1970.

To prepare 24 kg of Indianium X, there must have been at least $(24/2) \times 0.88 = 10.56$ kg of Abra and less than $10.56+0.88 = 11.44$ kg of Abra. Hence, the actual range of Abra available before this production would be ≥ 10.56 to < 10.88 kg. After the production of 24 kg of Indianium X, stock of Abra left would be ≥ 0 to < 0.32 kg.

Then 12 kg of Abra was purchased at the end of May 1970. So stock of Abra after purchase ≥ 12.00 to < 12.32 kg. $14+12 = 26$ kg of Indianium X was prepared after the purchase and before the third purchase of Abra in July 1970.

To prepare 26 kg of Indianium X, there must have been at least $(26/2) \times 0.88 = 11.44$ kg of Abra and less than $11.44+0.88 = 12.32$ kg of Abra. Hence, the actual range of Abra available before this production would be ≥ 12.00 to < 12.32 kg. After the production of 26 kg of Indianium X, stock of Abra left would be ≥ 0.56 to < 0.88 kg.

Then 16 kg of Abra was purchased at the end of July 1970. So stock of Abra after purchase ≥ 16.56 to < 16.88 kg. $12+14+12 = 38$ kg of Indianium X was prepared after the purchase and before the fourth purchase of Abra in Oct 1970.

To prepare 38 kg of Indianium X, there must have been at least $(38/2) \times 0.88 = 16.72$ kg of Abra and less than $16.72+0.88 = 17.60$ kg of Abra. Hence, the actual range of Abra available before this production would be ≥ 16.72 to < 16.88 kg. After the production of 38 kg of Indianium X, stock of Abra left would be ≥ 0 to < 0.16 kg.

Then 6 kg of Abra was purchased at the end of Oct 1970. So stock of Abra after purchase ≥ 6.00 to < 6.16 kg.

Considering the maximum stock and vis-à-vis requirement at the various stages of production (as discussed above), the maximum possible stock of Abra at the beginning of Jan 1970 is $< 18.48 + (10.88 - 10.88) + (12.32 - 12.32) + (16.88 - 16.88)$,
that is < 18.48 kg + 0 + 0 + 0,
that is < 18.48 kg

Also considering the minimum stock and vis-à-vis requirement at the various stages of production (as discussed above), the minimum possible stock of Abra at the beginning of Jan 1970 is $\geq 17.60 + (10.56 - 10.00) + (12.00 - 12.00) + (16.72 - 16.56)$,
that is $\geq 17.60 + 0.56 - 0 + 0.16$,
that is ≥ 18.32 kg

b) Cadabra :

Month 1970	of	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct

Indianium X prepared (kg)	14	16	10	10	14	14	12	12	14	12
Cumulative quantity of Indianium X prepared (kg)	14	30	40	50	64	78	90	102	116	128
Cadabra purchased (kg)	nil	nil	nil	8	nil	6	nil	8	nil	nil

The first consignment of Cadabra was purchased in Apr 1970.

To prepare 50 kg of Indianium X, there must have been at least $(50/2) \times 0.54 = 13.50$ kg of Cadabra and less than $13.50 + 0.54 = 14.04$ kg of Cadabra. (If there was any more Cadabra, more batches of Indianium X could have been prepared before purchasing Cadabra). Hence, the range of Cadabra initially available would be ≥ 13.50 to < 14.04 kg. After the production of 50 kg of Indianium X, stock of Cadabra left would be ≥ 0 to < 0.54 kg.

Then 8 kg of Cadabra was purchased at the end of Apr 1970. So stock of Cadabra after purchase ≥ 8.00 to < 8.54 kg. $14 + 14 = 28$ kg of Indianium X was prepared after the purchase and before the second purchase of Cadabra in June 1970.

To prepare 28 kg of Indianium X, there must have been at least $(28/2) \times 0.54 = 7.56$ kg of Cadabra and less than $7.56 + 0.54 = 8.10$ kg of Cadabra. Hence, the range of Cadabra initially available would be ≥ 8.00 to < 8.10 kg. After the production of 28 kg of Indianium X, stock of Cadabra left would be ≥ 0.44 to < 0.54 kg.

Then 6 kg of Cadabra was purchased at the end of June 1970. So stock of Cadabra after purchase ≥ 6.44 to < 6.54 kg. $12 + 12 = 24$ kg of Indianium X was prepared after the purchase and before the third purchase of Cadabra in Aug 1970.

To prepare 24 kg of Indianium X, there must have been at least $(24/2) \times 0.54 = 6.48$ kg of Cadabra and less than $6.48 + 0.54 = 7.02$ kg of Cadabra. Hence, the range of Cadabra initially available would be ≥ 6.48 to < 6.54 kg. After the production of 24 kg of Indianium X, stock of Cadabra left would be ≥ 0 to < 0.06 kg.

Then 8 kg of Cadabra was purchased at the end of Aug 1970. So stock of Cadabra after purchase ≥ 8.00 to < 8.06 kg. $14 + 12 = 26$ kg of Indianium X was prepared after this with the existing stock.

To prepare 26 kg of Indianium X, there must have been at least $(26/2) \times 0.54 = 7.02$ kg of Cadabra and less than $7.02 + 0.54 = 7.56$ kg of Cadabra. Hence, the range of Cadabra initially available would be ≥ 8.00 to < 8.06 kg. After the production of 26 kg of Indianium X, stock of Cadabra left would be ≥ 0.98 to < 1.04 kg.

Considering the maximum stock and vis-à-vis requirement at the various stages of production (as discussed above), the maximum possible stock of Cadabra at the beginning of Jan 1970 is $< 14.04 + (8.10 - 8.54) + (6.54 - 6.54) + (8.06 - 8.06)$, that is $< 14.04 - 0.44 + 0 + 0$, that is < 13.60 kg

Also considering the minimum stock and vis-à-vis requirement at the various stages of production (as discussed above), the minimum possible stock of Cadabra at the beginning of Jan 1970 is

$$\geq 13.50 + (8.00 - 8.00) + (6.48 - 6.44) + (8.00 - 8.00),$$

$$\text{that is } \geq 13.50 + 0 + 0.04 + 0,$$

$$\text{that is } \geq 13.54 \text{ kg}$$

We found out that at the start of Jan 1970, the range of the possible stock of Abra was ≥ 18.32 kg and < 18.48 kg.

Out of the options only 18.36 kg lies in the range.

Hence 18.36 kg could be the amount of Abra Dr Raja Ramanna already had as stock before he started to prepare the first 2 kg batch of Indianium X in Jan 1970.

36. B

We found out that at the start of Apr 1970, the range of the possible stock of Abra was ≥ 18.32 kg and < 18.48 kg.

We also found out that at the start of Apr 1970, the range of the possible stock of Cadabra was ≥ 13.54 kg and < 13.60 kg.

Hence, the minimum total amount of Abra and Cadabra put together that could have been available as stock before the first batch of Indianium X was prepared in Jan 1970 = $18.32 + 13.54 = 31.86$ kg

37. A

We found out above that after the 128th kg of Indianium X was prepared on Oct 1970, stock of Abra left would be ≥ 0 to < 0.16 kg.

Out of the options only 156 gm, that is 0.156 kg lies in the range

38. D

We found out above that after the 128th kg of Indianium X was prepared on Oct 1970, stock of Cadabra left would be ≥ 0.98 to < 1.04 kg.

Out of the options only 994 gm, that is 0.994 kg lies in the range

39. C

To prepare 76 kg of Indianium X,

Abra required would be $(76/2) \times 0.88 = 33.44$ kg, while Cadabra required would be $(76/2) \times 0.54 = 20.52$ kg

The 76th kg was prepared in June 1970.

As in June 1970,

The cumulative inventory range of Abra was $\geq (18.32+10+12)$ to $< (18.48+10+12)$ kg, that is ≥ 40.32 to < 40.48 kg

And the cumulative inventory range of Cadabra was $\geq (13.54+8)$ to $< (13.60+8)$ kg, that is ≥ 21.54 to < 21.60 kg

After preparation of 76 kg of Indianium X,

The leftover inventory range of Abra was $\geq (40.32 - 33.44)$ to $< (40.48 - 33.44)$, that is ≥ 6.88 to > 7.04 kg

And the leftover inventory range of Cadabra was $\geq (21.54 - 20.52)$ to $< (21.60 - 20.52)$, that is ≥ 1.02 to > 1.08 kg

Hence, the range of the total quantity of stock of Abra and Cadabra combined after exactly 76 kg of Indianium X had been prepared would be $\geq (6.88 + 1.02)$ to $< (7.04 + 1.08)$, that is ≥ 7.90 to < 8.12 kg.

Out of the options only 8.00 kg lies in the range

40. D

We found out that the stock of Abra at the end of Oct 1970 is ≥ 6.00 to < 6.16 kg, and the stock of Cadabra at the end of 10th July is ≥ 0.98 to < 1.04 kg.

To prepare a batch of 2 kg of Indianium X, 0.880 kg of Abra and 0.540 kg of Cadabra are required.

To prepare another 2 kg batch of Indianium X, Cadabra required will be $(0.540 \times 2) = 1.08$ kg

But 1.08 kg is > 1.04 kg stock.

So Cadabra will fall short.

Hence maximum 2 kg of Indianium X can be prepared with the stock.

Hence, maximum possible value of $n = 2$ kg

41. 1,12,500

As per condition (d), all the friends spent a different amount.

From condition (b), it can be understood that out of the two friends who did not purchase an LG Microwave Oven, one had not purchased an iPhone 14 or a Bose Music System as well. That had to be Shubhayu, as he spent the least.

That meant one friend had purchased all the three items. That had to be Anirban, as he spent the most.

Hence, the two different cases that could have happened were :

Case 1	iPhone 14	Bose Music System	LG Microwave Oven
Anirban	Yes	Yes	Yes
Bhaskar/Sugato	Yes	No	Yes
Shubhayu	No	Yes	No
Sugato/Bhaskar	Yes	Yes	No

Case 2	iPhone 14	Bose Music System	LG Microwave Oven
Anirban	Yes	Yes	Yes
Bhaskar/Sugato	No	Yes	Yes
Shubhayu	Yes	No	No
Sugato/Bhaskar	Yes	Yes	No

Deductions from Case 1 :

The price of the Bose Music System cannot be Rs 78750.

If it were so, the expense of Bhaskar/Sugato and Shubhayu would become the same, which is not possible.
But the cost of the LG Microwave Oven was also not Rs 78750
Hence the cost of the iPhone 14 must be Rs 78750

Deductions from Case 2 :

The price of the iPhone 14 cannot be Rs 78750.

If it were so, the expense of Bhaskar/Sugato and Shubhayu would become the same, which is not possible.

But the cost of the LG Microwave Oven was also not Rs 78750

Hence the cost of the Bose Music System must be Rs 78750

In Case 1 the cost of the iPhone 14 must be Rs 78750

A) If the LG Microwave Oven costs Rs 33750 and the Bose Music System costs Rs 45000, then the expenses were :

Case 1A	iPhone 14	Bose Music System	LG Microwave Oven	Total Expense
Anirban	Yes	Yes	Yes	$(78750+45000+33750)$ = Rs 157500
Bhaskar/Sugato	Yes	No	Yes	$(78750+33750)$ = Rs 112500
Shubhayu	No	Yes	No	Rs 45000
Sugato/Bhaskar	Yes	Yes	No	$(78750+45000)$ = Rs 123750

B) If the LG Microwave Oven costs Rs 45000 and the Bose Music System costs Rs 33750, then the expenses were :

Case 1B	iPhone 14	Bose Music System	LG Microwave Oven	Total Expense
Anirban	Yes	Yes	Yes	$(78750+33750+45000)$ = Rs 157500
Bhaskar/Sugato	Yes	No	Yes	$(78750+45000)$ = Rs 123750
Shubhayu	No	Yes	No	Rs 33750
Sugato/Bhaskar	Yes	Yes	No	$(78750+33750)$ = Rs 112500

In Case 2 the cost of the Bose Music System must be Rs 78750

A) If the LG Microwave Television costs Rs 33750 and the iPhone 14 costs Rs 45000, then the expenses were :

Case 2A	iPhone 14	Bose Music System	LG Microwave Oven	Total Expense
Anirban	Yes	Yes	Yes	$(45000+78750+33750)$ = Rs 157500
Bhaskar/Sugato	No	Yes	Yes	$(78750+33750)$ = Rs 112500
Shubhayu	Yes	No	No	Rs 45000
Sugato/Bhaskar	Yes	Yes	No	$(45000+78750)$ = Rs 123750

B) If the LG Microwave Television costs Rs 45000 and the iPhone 14 costs Rs 33750, then the expenses were :

Case 2B	iPhone 14	Bose Music System	LG Microwave Oven	Total Expense
Anirban	Yes	Yes	Yes	$(33750+78750+45000)$ = Rs 157500
Bhaskar/Sugato	No	Yes	Yes	$(78750+45000)$ = Rs 123750
Shubhayu	Yes	No	No	Rs 33750
Sugato/Bhaskar	Yes	Yes	No	$(33750+78750)$ = Rs 112500

From all the four cases we can observe that Rs 1,57,500, Rs 1,23,750 and Rs 1,12,250 was always spent by one friend or the other in every case. However only Rs 1,12,500 is present in the options.

Hence, If the cost of the LG Microwave Oven was not Rs 78,750, then the amount definitely spent by one friend out of the options given is Rs 1,12,500.

42. 45000

The two different cases that could have happened (as discussed in the previous question) were :

Case 1	iPhone 14	Bose Music System	LG Microwave Oven
Anirban	Yes	Yes	Yes
Bhaskar/Sugato	Yes	No	Yes
Shubhayu	No	Yes	No
Sugato/Bhaskar	Yes	Yes	No

Case 2	iPhone 14	Bose Music System	LG Microwave Oven
Anirban	Yes	Yes	Yes
Bhaskar/Sugato	No	Yes	Yes
Shubhayu	Yes	No	No
Sugato/Bhaskar	Yes	Yes	No

In both the cases, two different situations would arise, as given below :

a) One amongst Bhaskar or Sugato would purchase the item costing Rs 78750 and the 2nd most costly item of Rs 45000, while the other would purchase the item costing Rs 78750 and the least costly item of Rs 33750.

The difference would be $\{(78750+45000) - (78750+33750)\} = \text{Rs } 11250$

b) One amongst Bhaskar or Sugato would purchase the item costing Rs 78750 and the 2nd most costly item of Rs 45000, while the other would purchase the 2nd most costly item of Rs 45000 and the least costly item of Rs 33750.

The difference would be $\{(78750+45000) - (45000+33750)\} = \text{Rs } 45000$

Hence, the maximum possible difference between the amounts spent by Bhaskar and Sugato = Rs 45000

43. C

From the explanations provided in the first question, we know that when the cost of the LG Microwave Oven was not Rs 78,750, four different situations arose, as is again given below :

1 A) If the iPhone 14 costs Rs 78750, the LG Microwave Oven costs Rs 33750 and the Bose Music System costs Rs 45000, then the expenses were :

Case 1A	iPhone 14	Bose Music System	LG Microwave Oven	Total Expense
Anirban	Yes	Yes	Yes	$(78750+45000+33750) = \text{Rs } 157500$
Bhaskar/Sugato	Yes	No	Yes	$(78750+33750) = \text{Rs } 112500$
Shubhayu	No	Yes	No	Rs 45000
Sugato/Bhaskar	Yes	Yes	No	$(78750+45000) = \text{Rs } 123750$

1 B) If the iPhone 14 costs Rs 78750, the LG Microwave Oven costs Rs 45000 and the Bose Music System costs Rs 33750, then the expenses were :

Case 1B	iPhone 14	Bose Music System	LG Microwave Oven	Total Expense
Anirban	Yes	Yes	Yes	$(78750+33750+45000) = \text{Rs } 157500$
Bhaskar/Sugato	Yes	No	Yes	$(78750+45000) = \text{Rs } 123750$
Shubhayu	No	Yes	No	Rs 33750
Sugato/Bhaskar	Yes	Yes	No	$(78750+33750) = \text{Rs } 112500$

2 A) If the Bose Music System costs Rs 78750, the LG Microwave Television costs Rs 33750 and the iPhone 14 costs Rs 45000, then the expenses were :

Case 2A	iPhone 14	Bose Music System	LG Microwave Oven	Total Expense
Anirban	Yes	Yes	Yes	$(45000+78750+33750) = \text{Rs } 157500$
Bhaskar/Sugato	No	Yes	Yes	$(78750+33750) = \text{Rs } 112500$
Shubhayu	Yes	No	No	Rs 45000
Sugato/Bhaskar	Yes	Yes	No	$(45000+78750) = \text{Rs } 123750$

2 B) If the Bose Music System costs Rs 78750, the LG Microwave Television costs Rs 45000 and the iPhone 14 costs Rs 33750, then the expenses were :

Case 2B	iPhone 14	Bose Music System	LG Microwave Oven	Total Expense
Anirban	Yes	Yes	Yes	$(33750+78750+45000) = \text{Rs } 157500$
Bhaskar/Sugato	No	Yes	Yes	$(78750+45000) = \text{Rs } 123750$
Shubhayu	Yes	No	No	Rs 33750
Sugato/Bhaskar	Yes	Yes	No	$(33750+78750) = \text{Rs } 112500$

It can be seen that only in Case 1B and Case 2B Shubhayu spent Rs 33750.

Sugato spent the second highest amount among the four friends, which in Case 1B and Case 2B was Rs 123750.

Hence in Case 1B and Case 2B Bhaskar spent Rs 112500.

But we also need to consider the remaining case where cost of the LG Microwave Oven was Rs 78,750.

It gives rise to four different cases 1C, 1D, 2C and 2D.

1 C) If the LG Microwave Oven costs Rs 78750, the iPhone 14 costs Rs 33750 and the Bose Music System costs Rs 45000, then the expenses were :

Case 1C	iPhone 14	Bose Music System	LG Microwave Oven	Total Expense
Anirban	Yes	Yes	Yes	$(33750+45000+78750) = \text{Rs } 157500$

Bhaskar/Sugato	Yes	No	Yes	$(33750+78750)$ = Rs 112500
Shubhayu	No	Yes	No	Rs 45000
Sugato/Bhaskar	Yes	Yes	No	$(33750+45000)$ = Rs 78750

1 D) If the LG Microwave Oven costs Rs 78750, the iPhone 14 costs Rs 45000 and the Bose Music System costs Rs 33750, then the expenses were :

Case 1D	iPhone 14	Bose Music System	LG Microwave Oven	Total Expense
Anirban	Yes	Yes	Yes	$(45000+33750+78750)$ = Rs 157500
Bhaskar/Sugato	Yes	No	Yes	$(45000+78750)$ = Rs 123750
Shubhayu	No	Yes	No	Rs 33750
Sugato/Bhaskar	Yes	Yes	No	$(45000+33750)$ = Rs 78750

2 C) If the LG Microwave Oven costs Rs 78750, the iPhone 14 costs Rs 33750 and the Bose Music System costs Rs 45000, then the expenses were :

Case 2C	iPhone 14	Bose Music System	LG Microwave Oven	Total Expense
Anirban	Yes	Yes	Yes	$(33750+45000+78750)$ = Rs 157500
Bhaskar/Sugato	No	Yes	Yes	$(45000+78750)$ = Rs 123750
Shubhayu	Yes	No	No	Rs 33750
Sugato/Bhaskar	Yes	Yes	No	$(33750+45000)$ = Rs 78750

2 D) If the LG Microwave Oven costs Rs 78750, the iPhone 14 costs Rs 45000 and the Bose Music System costs Rs 33750, then the expenses were :

Case 2D	iPhone 14	Bose Music System	LG Microwave Oven	Total Expense
Anirban	Yes	Yes	Yes	$(45000+33750+78750)$ = Rs 157500

Bhaskar/Sugato	No	Yes	Yes	(33750+78750) = Rs 112500
Shubhayu	Yes	No	No	Rs 45000
Sugato/Bhaskar	Yes	Yes	No	(45000+33750) = Rs 78750

It can be seen that only in Case 1D and Case 2D Shubhayu spent Rs 33750.

Sugato spent the second highest amount among the four friends, which in Case 1D was Rs 123750 and in Case 2D was Rs 112500.

Hence in Case 1D and Case 2D Bhaskar spent Rs 78750.

Hence, if Shubhayu spent Rs 33,750 and Sugato spent the second highest amount among the four friends, then the minimum amount that Bhaskar had spent was Rs 78750.

44. D

In all the different possible cases of 1A, 1B, 1C, 1D, 2A, 2B, 2C and 2D, as discussed in the previous question, Anirban had spent Rs 157500

Section - Quantitative Aptitude

45. A

Since n is even, unit digit of $4^{2n+1} = 4$ (Since 4^{odd} is always gives 4 as unit digit)
and unit digit of $4^n = 6$ (Since 4^{odd} is always gives 6 as unit digit)

Therefore, $4^{2n+1} + x$ is divisible by 5 if x is 1, 6, 11, 16, ...
and $4^n - x$ is divisible by 5 if x is 1, 6, 11, 16, ...

46. D

Cost of AC-III berth = Rs 2000

Cost of AC-II berth = Rs 2400

Cost of AC-I berth = Rs 2880

Maximum revenue is when all the berths are filled

Revenue from AC-III Coaches = $3 \times 64 \times 2000 = \text{Rs } 384000$

Revenue from AC-II Coaches = $6 \times 45 \times 2400 = \text{Rs } 648000$

Revenue from AC-I Coaches = $4 \times 24 \times 2880 = \text{Rs } 276480$

Total revenue = Rs 384000 + Rs 648000 + Rs 276480 = Rs 1308480

47. 567

Let's solve for the powers of 5. One of the numbers will have 5^4 in it, as the LCM has 5^4 .

Now the other number can have the powers of 5 are 0, 1, 2, 3, and 4. Therefore, number of pairs will be 5: $(5^4, 5^0)$, $(5^4, 5^1)$, $(5^4, 5^2)$, $(5^4, 5^3)$, and $(5^4, 5^4)$ and the number of ordered pairs will be $2 \times 5 - 1 = 9$ (we cannot count the pair $(5^4, 5^4)$ twice).

Similarly ordered pairs for powers of 7 = $2 \times 4 - 1 = 7$.

Number of ordered pairs for powers of 11 = $2 \times 5 - 1 = 9$.

Total ordered pairs $(p, q) = 9 \times 7 \times 9 = 567$

48. C

$$x \times y < y$$

$\Rightarrow y(x - 1) < 0$; Two possibilities are there

Case 1:

$(x - 1) < 0$ and $y > 0$, no integer value will satisfy $7x - 3y = 122$.

Case 2:

$(x - 1) > 0$ and $y < 0$,

Also, $7x - 3y = 122 \Rightarrow x = (122 + 3y)/7$

For above situation we get 6 pairs of solutions in x and y .

i.e $(2, -36), (5, -29), (8, -22), (11, -15), (14, -8), (17, -1)$

49. D

SP per unit = CP per unit = 1 (say)

$$\frac{\text{Total SP}}{\text{Total CP}} = \frac{\text{Quantity for which shopkeeper receive the amount} * \text{SP per unit}}{\text{Quantity for which shopkeeper pay the amount} * \text{CP per unit}}$$

$$\frac{\text{Total SP}}{\text{Total CP}} = \frac{500*1}{550*1} = \frac{10}{11}$$

He got loss of 1 on 11 i.e. 9.09% loss.

So, he should sell at the rate of 12 to maintain his losses.

Percentage increase in the price will be $1*100/12 = 8.33\%$

50. C

In 6 months, interest = 4.25% of Sum = Sum - 200

So, $\frac{17}{400} \text{sum} = \text{Sum} - 200$

On solving,

Sum lent for 3 yrs = sum lent for 2.5 yrs = Rs 210 (approx.)

Total sum lent = Rs 420

51. 7

Let the fraction be 'x'

Its reciprocal will be $1/x$

So, $x - 1/x = 48/7$

$$\Rightarrow x^2 - 1 = 48x/7$$

$$\Rightarrow 7x^2 - 48x - 7 = 0$$

$$\Rightarrow 7x^2 - 49x + x - 7 = 0$$

$$\Rightarrow 7x(x - 7) + (x - 7) = 0$$

$$\Rightarrow (x - 7)(7x + 1) = 0$$

$$\Rightarrow x = 7 \text{ or } x = -1/7$$

So, $x = 7$ will be the answer

52. B

$$\text{Profit} = 10(7 + 8y/5) - 6y^2$$

To find the minimum profit

$$10(7 + 8y/5) - 6y^2 \geq 0$$

$$\text{Or, } 70 + 16y - 6y^2 \geq 0$$

$$\text{Or, } 6y^2 - 16y - 70 \leq 0$$

On solving, we get

$$\text{Or, } y \geq 5 \text{ or } y \leq -7/3$$

So, minimum value of y is 5.

53. A

$$\cos^4\theta - \sin^4\theta = \frac{3}{4}$$

$$\Rightarrow (\cos^2\theta - \sin^2\theta)(\cos^2\theta + \sin^2\theta) = \frac{3}{4}$$

$$\Rightarrow (\cos^2\theta - \sin^2\theta) = \frac{3}{4}$$

$$\text{So, } (\cos\theta + \sin\theta)^2 = \cos^2\theta + \sin^2\theta + \sin 2\theta$$

$$\Rightarrow (\cos\theta + \sin\theta)^2 = \cos^2\theta + \sin^2\theta + \sin 2\theta = 1 + \sin 2\theta$$

Also,

$$(\cos\theta - \sin\theta)^2 = \cos^2\theta + \sin^2\theta - \sin 2\theta = 1 - \sin 2\theta$$

Multiplying above two equations

$$(\cos^2\theta - \sin^2\theta)^2 = 1 - \sin^2 2\theta$$

$$\Rightarrow \left(\frac{3}{4}\right)^2 = 1 - \sin^2 2\theta$$

$$\Rightarrow \sin^2 2\theta = 1 - \frac{9}{16} = \frac{7}{16}$$

$$\Rightarrow \sin 2\theta = \sqrt{\frac{7}{16}} = \frac{\sqrt{7}}{4}$$

$$\text{So, } \cos 2\theta = \sqrt{\frac{9}{16}} = \frac{3}{4}$$

$$\sin 2\theta - \cos 2\theta = (\sqrt{7} - 3)/4$$

54. 2

$$\text{Area} = \frac{1}{2} (\text{base}) (\text{height}) = \frac{1}{2} b (7b^2 - 84) = \frac{7b^3}{2} - \frac{84b}{2}$$

For Area to be maximum, find $dA/db = \frac{21}{2} b^2 - 42 = 0$

$$\Rightarrow b^2 = 4$$

$$\Rightarrow b = 2 \text{ or } b = -2.$$

$$\text{Now find } d^2A/db^2 = 21b$$

At $b = 2$; $d^2A/db^2 = 42$ which is greater than 0, so at $b = 2$, we get minimum value of Area.

Hence the answer is 2.

55. C

$$f(x) = \max (2 \cdot 7.5 + 1, 3 - 4 \cdot 7.5) \text{ at } x = 7.5$$

$$f(x) = \max (16, -27) \text{ at } x = 7.5$$

Answer is 16.

56. B

$$\log_{49} (7 \log_2 (2 + \log_3 (1 + 2 \log_2 x))) = \frac{1}{2}$$

$$\Rightarrow 7 \log_2 (2 + \log_3 (1 + 2 \log_2 x)) = 49^{\frac{1}{2}} = 7$$

$$\Rightarrow \log_2 (2 + \log_3 (1 + 2 \log_2 x)) = 1$$

$$\Rightarrow 2 + \log_3 (1 + 2 \log_2 x) = 2$$

$$\Rightarrow \log_3 (1 + 2 \log_2 x) = 0$$

$$\Rightarrow (1 + 2 \log_2 x) = 1$$

$$\Rightarrow 2 \log_2 x = 0$$

$$\Rightarrow x = 1$$

57. 1

Let the average age of children is x and there are n children in the family.

Let the age of mother is y .

$$\text{So, } nx + y = (n+1) 20$$

$$\text{Also, } nx + y + 50 = (n+2) 30$$

Subtract 1st equation from the 2nd, we get

$$50 = 30n + 60 - 20n - 20$$

$$50 = 10n + 40$$

So, $n = 1$. There is 1 child in the family

58. 12

One way walk + one way bike = 10 hrs

Two-way bike = 8 hrs

So, 1 way bike = 4 hrs

And 1 way walk = 6 hrs

2-way walk = 12 hrs

59. B

Let the total work be 90 units.

1 day work of Sonia is 9 units. In 2 days, Sonia did 18 unit's work.

1 day work of Raveena is 6 units. In 4 days, Raveena did 24 unit's work.

1 day work of Kareena is 5 units. In 4 days, Kareena did 20 unit's work.

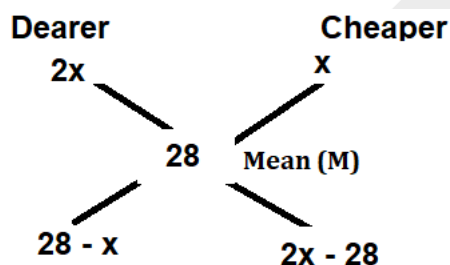
Remaining Work = $90 - 18 - 24 - 20 = 28$

Fraction of work remaining = $28/90 = 14/45$

60. C

Let the prices are $2x$ and x .

Since profit is 25%; cost price of the mixture be $(35/5)4 = 28$



So,

$$\frac{\text{Dearer}}{\text{Cheaper}} = \frac{28 - x}{2x - 28}$$

From options, it is evident that only option c gives integer value of x .

61. 228000

A was in partnership for 12 months with Rs 30000

B was in partnership for 9 months with Rs 40000

C was in partnership for 4 months with Rs 120000

Ratio of Profits of A, B and C = $30000: 40000: 120000 = 3: 4: 12$

Share of C = $12(361000)/19 = 228000$

62. D

Let the first raise in salary is $x\%$

Then second raise is $2x\%$

Net change = $[x + 2x + x(2x)/100] \%$

Also, net change = $14 \times 100/7 = 200\%$

Therefore,

$$x + 2x + x(2x)/100 = 200$$

$$\Rightarrow 300x + 2x^2 = 20000$$

$$\Rightarrow x^2 + 150x - 10000 = 0$$

On solving, $x = 50\%$

63. B

Possible GPs are

$[1, 2, 4]$

$[1, 3, 9]$

$[2, 4, 8]$

From each set, $3!$ Numbers can be formed.

So, total numbers formed = $3 \times 3! = 18$.

64. 125

Let after time T , they will meet. Distance covered by Mukesh is 50 m less than that by Anshuman.

$$S_A / S_M = D_A / D_M$$

$$5/3 = D_A / D_M$$

If $D_A = 5x$, then $D_M = 3x$.

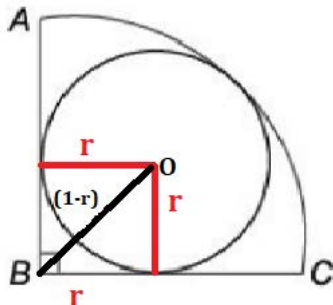
So, $5x - 3x = 50$

Therefore $x = 25$

Distance from starting point = Distance by Anshuman = $25 \times 5 = 125$ m.

65. D

$OB = 1$ - radius of inscribed circle



Dimensions will be as shown in figure;

$$r^2 + r^2 = (1-r)^2$$

$$2r^2 = 1 + r^2 - 2r$$

$$r^2 + 2r - 1 = 0$$

On solving; $r = (\sqrt{2} - 1)$ cm

66. C

Let radius and slant height of 1st coin be r and l respectively.

Radius of second cone be R and slant height will be $3l$.

According to question

$$\pi r l = 2\pi R(3l)$$

$\Rightarrow r/R = 6/1$
Therefore,
 $\pi r^2 / \pi R^2 = 36/1$

CAREERS360

MOCK TEST - 18

Section - 1 - Verbal Ability & Reading Comprehension

Directions: The sentences given in each question, when properly sequenced, form a coherent paragraph. Each sentence is labeled with a letter. Choose the most logical order of sentences from among the given choices to construct a coherent paragraph.

TITA

Q1.

1. It is well to remember that the New Imperialism which began after 1870 in a spirit of Capitalism Triumphant, soon became seriously troubled and after 1914.
2. A major reason was Britain's inability to cope with the by-products of its own rapid accumulation of capital; i.e., a class-conscious labour force at home; a middle class in the hinterland; and rival centres of capital on the Continent and in America.
3. The viability of the multinational corporate system depends upon the degree to which people will tolerate the unevenness it creates.
4. It was characterized by war, depression, breakdown of the international economic system and war again, rather than free Trade, Pax Britannica and Material Improvement.

TITA

Q2.

1. The idea of electronic commerce apparently never occurred to them. A few years later, academic researchers at Stanford and MIT rediscovered public-key systems.
2. Their work was classified, and the British government neither used it nor allowed it to be released to the public.
3. Public-key cryptography was invented by researchers at the Government Communications Headquarters (GCHQ) who wanted to protect communications between a large number of people in a security organisation.
4. This time they were thinking about the benefits that widespread cryptography could bring to everyday people, not least the ability to do business over computers.

TITA

Q3.

1. The government should not have a stake in so many banks in a country since it cannot influence the economy by floating companies of its own and not formulating policies.
2. Public sector banks in India have run the course of their time and it is high time that these banks privatized to bring in professionalism and expertise in functioning.
3. The main job of a government is to declare policies for the economic well-being of the country and all the organizations functioning within the territory of that country need to obey that.
4. For this to happen, there is no need for the government to have organizations of its own, rather the market should be there to decide the fate of organizations working in the various sectors of the country.

The question below has a paragraph given with one sentence missing at the end. From among the answer choices given, select the sentence that can fill the blank to form a coherent paragraph.

Q4. He wakes up on the front lawn of Aimee Finicky, a girl in his year whose name he doesn't know. Aimee is about to do her mother's paper route, because she too is sleeping off the night before. Sutter helps her out and they have a good time. He sits with her at lunch and asks her to tutor him in geometry, which he is failing, and learns she is smart, funny and into sci-fi and comics. Sutter invites Aimee to a party, where he introduces her to some Sci-Fi fans and then asks Cassidy to have a drink with him, but Marcus arrives to pick her up. Sutter and Aimee go for a walk and get drunk from his hip flask. Aimee confesses she has never been drunk before, never had a boyfriend and doesn't think she can go to college because she has to take care of her irresponsible mother. (_____)

- a. Aimee walks away as he watches her go.
- b. The movie is a dramatic monologue as it starts and ends abruptly without any indication.
- c. Sutter tells her she is not responsible for her mother.
- d. Sutter finds it odd and then he decides to walk away from her forever.

The question below has a paragraph given with one sentence missing at the end. From among the answer choices given, select the sentence that can fill the blank to form a coherent paragraph.

Q5. The responsibility of the civil services is to run the administration of India. The country is managed through a number of Central Government agencies in accordance with the policy directions given by the ministries. The members of the civil services are represented as administrators in the central government and state government; emissaries in the foreign missions/embassies; as tax collectors and revenue commissioners; as civil service commissioned police officers; as permanent representative(s) and employees in the United Nations and its agencies and as Chairman, Managing Director, full-time functional Director/Member of the Board of Management of various Public Sector Undertakings/Enterprises, Corporations, Banks and financial institutions. (_____)

- a. These responsibilities are endless and they need to work efficiently to fulfil their asserted goals.
- b. Civil servants are thus the backbone of administration in the country, tenacious and focused to build the nation a better place to live.
- c. Civil servants are employed to various agencies of India and can also be appointed as advisers or special duty officers or private secretaries to ministers of the Union and the State Government.
- d. Civil servants will work through their career by receiving promotions and thus they have the potential to go up to the rank of the chief secretary of the state.

Directions: Identify the apt summary for the given paragraph. Enter the option number you deem as the correct answer.

Q6.

People have habits of speech, mannerisms, a temperament that is at least in part inborn and even behavioural signatures and routines. But across time and contexts, any of these characteristics can change. We can act against our own proclivities until they aren't proclivities anymore. Being enclosed in solid, distinct bodies fuels the belief that our personalities must be fully formed and consistent as well. But they aren't. Everyone from pop-psych authors to business-school professors to astrologers has come up with her own system for sizing up people. If it were possible, wouldn't one method have prevailed by now?

- A. A person's personality is inborn and can't be changed.
- B. A person's personality can change across time and contexts.

- C. A person's personality must be fully formed and consistent as well.
- D. A person's personality is dependent only on one's own proclivities.

Q7.

Kusama's artwork focuses on the notion of "self-obliteration," yet self-aggrandizement would become the defining narrative of the exhibit. Countless visitors, mobile phones in hand, have repurposed Kusama's magnum opus into window dressing for their personal brands. The ubiquity of this new behavior has inspired numerous guides on how to take the "perfect infinity room selfie," and even a cautionary article in *Insurance Journal*, warning museum insurers about the spike in damaged art due to selfie-takers. During the exhibit's run at the Hirshhorn, social media accounts from DC to New York were flooded with Kusama selfies. The trend will continue as the exhibit begins a five-city tour.

- A. Kusama's artwork is Avant-garde.
- B. The trend of Kusama's artwork being very successful will continue in the next five cities as well.
- C. All guides are very efficient as they teach how to take a perfect infinity room selfie.
- D. People are obsessed with taking selfies no matter where they are, especially during an art exhibit.

Q8. In one of the first studies to test these questions, James McNulty at Florida State University recruited 135 newlyweds in Tennessee. Most were white and in their mid-20s; their average combined annual income was less than \$40,000. At the start of the study, all of the participants answered questionnaires about their set of standards for their relationships: Were they concerned about whether their partner was meeting their needs for self-esteem, self-actualization, and the like? They also answered surveys about how satisfied they were with their relationship. Every six months for the following four years, the couples filled out those relationship-satisfaction surveys so McNulty could trace the trajectory of their happiness together over time.

- A. Researcher James McNulty aimed to establish whether couples are happier together or not.
- B. A study of 135 couples aimed to establish the movement of their happiness over time.
- C. Researcher James McNulty aimed to correlate a couple's standards vis-à-vis levels of happiness.
- D. A study was conducted to establish how satisfaction changes over time for couples.

Directions for questions 9 to 14: The passage given below is followed by a set of questions. Choose the most appropriate answer to each question.

Passage 1

My wife was recently telling some mutual friends an amusing anecdote about the time she was changing our then-baby son's nappy in the toilet of a busy café, only for him to urinate all over the groin region of her trousers, meaning she had to return to the crowded eating area displaying a deeply suspicious stain. Big laughs all round. It is a very amusing story, in fairness. There's just one slight problem with it; it never happened. Not to her, at least. It happened to me. I pointed this out, and she was genuinely shocked, and baffled as to how one of my memories could end up in her head. I suggested that it may be because she has many memories of hearing me tell that story multiple times over the years, and also has many memories of changing that specific baby in public places, so it wouldn't require much effort for her brain to merge the two and create something effectively new. A 'false memory', if you like. You marry a neuroscientist, and this is the sort of thing that'll happen.

But this is just one example of how flexible human memory is. And that's when someone isn't actively trying to distort your memories and understanding. Should we be worried? Are we all prone to, and riddled with, false memories? How much of what we think we remember genuinely happened? To answer this, consider the following; the term false memories logically implies the existence of 'true' memories.

Where false memories recall things that definitely didn't happen, true memories would be reliable and accurate memories of things that did. A straightforward binary distinction. Sadly, the way our brain handles and stores memories is far more complex, and far less logical, than you would hope.

Human memory is not like electronic data on a hard drive, or words chiselled onto stone tablets. Information is stored in the brain via the creation and activity of synapses; the connections between two separate neurons – i.e. brain cells. But cells are not static, they're alive, and in a constant state of flux, a sort of quasi-stable equilibrium. They respond to stimulation and activity, and adapt accordingly. Because human memory is based on the activity of and between cells, it too becomes plastic and flexible. Partially this is due to the brain 'recreating' memories in our recall, building on the more basic information held in the synapses, like someone guessing a crossword answer from the clue and the few letters present. This process has numerous interesting consequences.

For instance, it's common when telling a story about an amusing event that happened to you, to embellish and exaggerate elements of it for comic effect. That's very good when regaling your friends at a social gathering, but doing so causes new memories of these embellishments, which are overlaid on top of the original memory. Ideally it would mean you separately remember the bonus elements you added to the event next time you want to regale others about it, but the human brain is a thrifty organ and generally can't afford to be so meticulous about how it stores information. It's incredibly complex, but as a rule of thumb, important information is prioritised over unimportant, or less important sorts.

But what counts as 'important' in this context? This is governed by the deeper fundamental processes that we've evolved over millions of years, which don't assign memories importance based on relevance or usefulness, but on how much sensation or emotional value they carry. Of a dull commute that follows the same route day in day out, all memories will blur into one. But did you crash your car on the way to work? That highly-charged, visceral memory will likely stay with you forever, for all that you'd rather it didn't.

Q9. According to the information given in the passage:

I. Human mind decides the priority of information on the basis of relevance and emotion.

II. Human beings can add elements to their own stories while recalling them.

III. The human brain, because of its economical nature, does not necessarily store information meticulously and can overlay new details over existing ones.

IV. Human memory, unlike computer memory, does not always follow clear and distinct patterns of storage.

- A. I, II, and III
- B. II, III, and IV
- C. I, III, and IV
- D. All of the above

Q10. According to the author of the passage:

- A. False memories are a distinct reality.
- B. False memories only impact a few of our memories.
- C. False memories are more vivid than our true memories.
- D. False memories and true memories are always two distinct binaries.

Q11. The author uses the first paragraph of the passage:

- A. to provide an illustration that paints a vivid picture in the mind of the reader and leaves an impression.
- B. to introduce an example that supports his views in the following paragraphs.
- C. to highlight an instance that contravenes his views in the following paragraphs.
- D. to showcase an occurrence that highlights the complete scope of this work in the following paragraphs.

Q12. The main point of the author of the passage is:

- A. Human mind is not perfect.
- B. Human memory is riddled with mistakes.
- C. Human memory is fluid and subjective.
- D. Human mind is driven by far too much emotion than logic.

Q13. According to the information given in the passage, which of the following are incorrect?

I. Information is stored in the brain with the creation of neurons.

II. Human cells are not stationary and unchanging.

III. Human memory is plastic and flexible in nature because of the activity of and between cells.

- A. Only I
- B. only II
- C. Only III
- D. II and III

Directions for questions 14 to 17: The passage given below is followed by a set of questions. Choose the most appropriate answer to each question.

Passage 2

In Quantum Mechanics, the uncertainty principle developed by W. Heisenberg states that it is impossible to specify precisely and simultaneously the values of both members of particular pairs of physical variables that describe the behaviour of an atomic system, the variables happen to be position and momentum. It implies that in the atomic domain, one cannot predict the future of the particles, while in the classical world, by applying Newton's law one can anticipate the probable future of an object.

Well, it may sound a bit puerile that despite belonging to the science community I am trying to establish an impalpable association between the atomic world and the classical world, where the same laws don't hold water. Classical mechanics is the branch of physics that satisfies our common sense, while Quantum Mechanics deals with the obscurity observed at the atomic level, challenging the comprehension level of the human mind.

I see a typical Indian graduate confined in the same circumstances as an elementary particle. The future of an Indian graduate seems to be completely unpredictable, uncertain and gloomy. A person grows and develops throughout his formative years, enjoys college days and finally becomes a graduate. After graduation, an endless list of hopes, desires and aspirations lies before him. Graduates confront a moral burden, sometimes even an unnecessary schadenfreude, from society. This is a spontaneous cycle, where nobody seems to be breaking the rules. But in the end, the overarching thing that outstrips the inevitability of everything is a job that can sustain you and your family.

I often wonder about my childhood, when I was promised the moon by an astrologer who predicted my probable future. As I have grown up now and completed my graduation, a desperate need for a job has

started tormenting me. My education is associated with the doctrines developed by Newton, Einstein, Schrodinger, Maxwell and many other intellectuals who transformed the world beyond recognition. I studied science, but see no reason to continue with the stream, and I too run for a job.

The impregnable desire of a graduate to achieve something in his life is thwarted by the feckless policies of the government. The schemes and announcements designed by the government are often highlighted with proper rhetorical ingredients and skilfully glorified by the leaders. With the shambolic implementation, government policies, with a goal to empower and equip people with skills and transform them into an epitaph of dexterity, seem to be a tremendous fiasco. Some schemes like Startup India, which were aimed at promoting and incentivising the innovative calibre of youth failed devastatingly. The repercussions of the deceitful promises could create a Stygian world for the downcast aspirant, where there would be no shred of sanguinity.

I anticipate an apocalypse. The 21st century is endowed with insurmountable technologies, with artificial intelligence and biotechnology leading the herd. With AI dominating the macrocosm of technology, the probability of getting a job for humans would decline exponentially. The inefficacies of the government coupled with the impeccable capabilities of technology make the equations unbalanced. The graduate, like the electrons, revolve around the nucleus with uncertain predictability, languishing in the same manner. Whatever happens, he would remain a nebbish.

Q14. The given passage is:

- A. A reflective piece dealing with issues concerning post-academic life
- B. A motivational lecture aimed at correcting the psyche of the student
- C. An opinion piece to condemn the way the government works.
- D. An opinion piece to condemn the education system in the country

Q15. What does the author mean when he says 'The repercussions of the deceitful promises could create a Stygian world for the downcast aspirant, where there would be no shred of sanguinity'?

- A. It could create a problematic world for job-seekers and aspirants where they have no scope for showcasing their innovation.
- B. It could create a dystopian world for job-seekers and aspirants where there is no reason to be optimistic.
- C. It could create a utopian world for job-seekers and aspirants where there is no reason to be cheerful and confident.
- D. It could create significant issues for job-seekers and aspirants where they have virtually no idea about what is going to happen to them in the future.

Q16. The passage revolves around which one of the following themes?

- A. The amalgamation of physics and reality.
- B. The amalgamation of neutrons and people.
- C. The uncertainty principle at work.
- D. Struggles of an entrance exam aspirant in today's world.

Q17. All of the following can be inferred from the passage except:

- A. Going forward, artificial intelligence is going to create further problems for job seekers.
- B. A job is not something which is looked at as a means for survival for one's family unit.

- C. Governments have a detrimental role to play when it comes to college educated individuals seeking a job or career.
- D. Classical mechanics and Quantum mechanics do not appeal to the human common sense in the same way.

Directions for questions 18 to 20: The passage given below is followed by a set of questions. Choose the most appropriate answer to each question.

Passage 3

Jeremy Paxman's appearance is a masterclass on what ennui can do to the human face. This week he turned it on Chloe Smith, a junior Treasury minister, who arrived on Newsnight to defend the deferred 3p rise in fuel duty because George Osborne was eating something, somewhere, and couldn't make it. Smith, who looks like a Goth pixie, was savaged by Paxman, and was then, in the way of things, savaged again for being savaged. Poor Chloe Smith, went with this narrative. How could she be expected to defend herself against broadcasting's giant squid? She is only a girl. She is young. (She is 30, which is, actually, the average life expectancy of a dolphin.) He would not do it to a man; except he does, and every day. Paxman does not do sexual profiling because he is omnivorous. He will digest anything as long as it tastes political. He may even be a feminist.

The aftermath was grisly. It was unfair, said Tories, in "supportive" briefings that blew the remains of Smith's head off, to put someone so "relatively inexperienced" up against Paxman, when she could have been painting the Tory tree on a cupcake. That Smith wobbled not because she is a girl, but because she forgot that Paxman only needs to be shouted at to pout and desist, was ignored. One "supportive" colleague compared Smith to a "tiny mouse"; another said that whoever put her in front of a TV camera again after she blathered during Channel 4 News "should be taken out and shot"; yet another pointed out that Smith's boss, Osborne, was at a dinner party during the broadcast, and this was an act of terrible moral cowardice.

It was all very Tolstoyan, but watching the Tories eat their females, apparently in revenge for some positive discrimination, is becoming a sport. There have been similar briefings against Lady Warsi, sometimes so loud that the mere memory of her is a panic attack in shoes. But who can be surprised? This is government by clique, and the function of a clique is to isolate everyone beyond it. Sometimes it is a nation, and sometimes it is only a woman. I am supposed, at this point, to ride to Smith's rescue and say what a disgrace, blah. How dare her anonymous colleague describe her as a "mouse" while Paxman gets to be a cat, which is bigger and more powerful than a mouse? Except that such a stand, although tempting, is a distraction, a (mouse) trap and a waste of time. Defend Chloe Smith from her sniggering colleagues? Why? Why stand in solidarity with a woman who stands in solidarity only with herself? This week the prime minister announced that he is considering making single mothers seek work when their youngest child is three. Three! Feminism, in its idealism and elitism, may defend Smith from her colleagues, but who will defend feminism from Smith? You cannot seek equality in the subclauses of anonymous briefings, and not in other, more ill-paid, unfulfilling and uncomfortable workplaces. Smith may have been unable to slap Paxman for his interruptions, but she is able to vote for all sorts of legislation that harms women, and she does.

Q18. Why does the author use the statement "she is 30, which is, actually, the average life expectancy of a dolphin" in the first paragraph?

- A. He wishes to illustrate the age or rather the lack of it of Chloe Smith.
- B. He wishes to illustrate how she was taken apart by Paxman because of her inexperience.

- C. He wishes to sarcastically point out the mistake of George Osborne to send Chloe Smith to the show.
- D. He wishes to show how Chloe Smith was not as inexperienced and helpless as she was made out to be.

Q19. Which, out of the following, cannot be inferred from the passage?

- A. Paxman has a taste for political controversy.
- B. Paxman does not choose between men and women when he targets them.
- C. Paxman does single out women when he targets someone.
- D. Paxman has the chance of being a feminist.

Q20. What does the author mean when he uses the word “Tolstoyan”?

- A. The defense of Chloe Smith on the premise that she was a sacrificial lamb.
- B. The defense of Chloe Smith on the basis that she was immature.
- C. The defense of Chloe Smith highlighting the greedy Tory hounds all around her.
- D. The defense of Chloe Smith on the grounds of discrimination.

Directions for questions 21 to 24: The passage given below is followed by a set of questions. Choose the most appropriate answer to each question.

Passage 4

The recent problems with salmonella-contaminated eggs are a reminder of how much more needs to be done to keep dangerous germs out of the American food supply. The Food and Drug Administration should urge egg producers to vaccinate their hens promptly. The Senate must pass long-stalled legislation that could strengthen the hand of regulators to prevent and control outbreaks of all food-related illnesses.

An article by William Neuman in The Times this week highlighted how vaccinating British hens virtually eliminated the health threat from salmonella-infected eggs. Some 1,500 Americans have been sickened in recent weeks and the F.D.A. announced Thursday that investigators had found the salmonella bacteria in barns and chicken feed at the two farms that are the source of the tainted eggs.

The agency issued a tough new egg safety rule last year that only took effect on July 9, after this outbreak had started. The rule has many good provisions mandating control measures that producers must take, but it shied away from requiring that hens be vaccinated. The agency said that while vaccines had been shown to work in laboratory experiments, there was insufficient data to judge how they would work in real world conditions. Fortunately, in recent years most American egg producers have started to vaccinate their flocks. All companies should accelerate their efforts.

Meanwhile, a bipartisan group of six prominent senators has released a “manager’s amendment” to a food safety bill that could finally bring the measure to a vote. The House passed its version last year. The bill would give the F.D.A. new powers to enforce disease-prevention plans on food facilities, trace the source of contaminated foods quickly, and order mandatory recalls.

Still it is worrisome that, in an effort to reduce the budgetary cost, the manager’s amendment would require inspections of “high risk” facilities — those that handle certain foods, have a past record of problems or less vigilant prevention efforts — only once every three years, after a five-year transition period. The House bill would require inspections every 6 to 12 months.

The Senate still needs to pass this legislation quickly. Then House-Senate conferees will need to look more closely at whether more frequent inspections are warranted and whether sufficient money can be found to pay for them. They should err on the side of consumer safety.

Q21. Which of the following can be inferred from the passage regarding the author's view on manager's amendment?

- A. Is complete in its grounding
- B. Is a half-baked attempt at solving the problem
- C. A step in the right direction
- D. Is lacking in the power it needs

Q22. The last statement of the passage, 'They should err on the side of consumer safety.' implies:

- A. If the senate spends a greater amount on inspections, it would have to spend a lesser amount on consumer safety.
- B. The Senate needs to make sure that it gets the maximum possible safety for consumers at the minimum cost.
- C. Mistakes should be minimal when it comes to consumer safety and spending money on it.
- D. Money should not be a factor when it comes to ensuring consumer safety.

Q23. The author will agree with which out of the following:

- I. The passing of legislation which is biting the dust right now might solve some of the problems with respect to food-related outbreaks.
- II. The manager's amendment does a fairly good job considering it is the government's work.
- III. Lack of effective legislation is the main cause of a number of outbreaks of food-related illnesses.

- A. Only I
- B. Only II
- C. I & III
- D. I & II

Q24. The main idea of the passage can be labelled as:

- A. The author believes that compulsory vaccination is simply being avoided due to a multiplicity of factors including cost and this is putting everyone in grave danger.
- B. The author believes that FDA is shirking its responsibility by choosing cost-cutting over measures that would help prevent outbreak of food-related illnesses.
- C. The author is of the considered view that infections such as those caused by salmonella should be tackled by adopting a pro-active and pro-consumer approach, leaving aside all other factors.
- D. The author is of the considered opinion that governments and their organizations find it hard to overcome their political/financial compulsions and this leads to problems for the consumer.

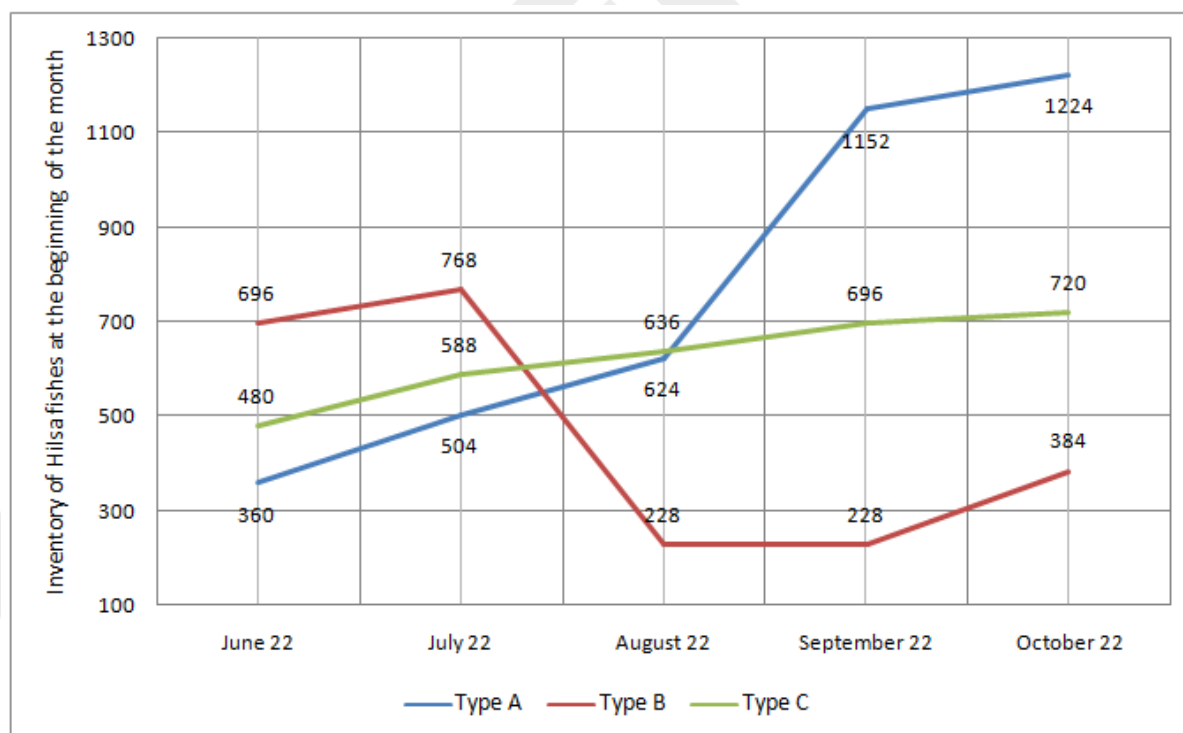
Section - 2 - Data Interpretation and Logical Reasoning

Directions for questions from 25 to 30 :

Presided by the Prime Ministers of both the countries, in February 2022, the Government of West Bengal signed a Memorandum of Understanding with their counterpart in Bangladesh enabling the exchange of the India manufactured covid vaccine – Covaxin, against their fabled Hilsa fish. Three types of Hilsa fish were supplied by the Bangladesh Government consecutively at the end of the five months of May, June, July, August and September 2022. They were the Chandpur Hilsa, the Padma Hilsa and the Meghna Hilsa, and all were freshly harvested.

The Fisheries Department of West Bengal, with the intention of fulfilling the demand of the Hilsa in West Bengal during the season of Durga Puja in October 2022, immediately transferred them to their state run cold-storage unit. It was known that the Chandpur Hilsa stayed perfectly fresh for two months in the cold-storage unit, the Padma Hilsa for three months and the Meghna Hilsa for four months. As soon as the freshness period got over, to prevent any wastage, the Hilsa was immediately removed from the cold-storage unit and released in the market at a very subsidized rate for consumption.

The following line graph exhibits the inventory of Hilsa fishes of the three types present in the cold-storage at the beginning of every month from June 2022 to October 2022. However, because the person taking the inventory could not recognize the identity of the three type of Hilsa fishes, he took down the inventory under the headings of Type A, Type B and Type C of Hilsa.



It is also known that 1032 fresh Hilsa fishes were transferred to the cold-storage unit at the end of one of the months.

Q 25 Which of the below was given the heading of Type B by the person taking the inventory in the line-graph above ?

- A) The Chandpur Hilsa
- B) The Padma Hilsa
- C) The Meghna Hilsa
- D) Either the Chandpur Hilsa or the Padma Hilsa

Q 26 Which of the below correctly represents the Meghna Hilsa in the line-graph given above ?

- A) Type A or Type C
- B) Type C
- C) Type B
- D) Type A

Q 27 (TITA)

How many fresh Chandpur Hilsa fishes were added to the inventory of the cold-storage unit at the end of August 2022 ?

Q 28 (TITA)

How many Hilsa fishes that had crossed their tenure of freshness were removed from the cold-storage unit at the end of September 2022 ?

Q29 What can be the number of Hilsa fishes remaining in the cold-storage unit at the end of October 2022 ?

- A) 2160
- B) 2112
- C) 2028
- D) 1944

Q 30 At the end of which of the months were 1032 freshly imported Hilsa fishes transferred to the cold-storage unit ?

- A) June 2022
- B) July 2022
- C) August 2022
- D) September 2022

Directions for questions from 31 to 32 :

Q 31 Mr Tenali Raman, a young chef specializing in South Indian cuisine from Padavedu, a village near Chennai, decided to migrate to Kolkata to open a small South Indian restaurant. His first restaurant in Padavedu had failed to run successfully since there was a surfeit of restaurants serving South Indian food. Furthermore, residents of his hometown were conservative in their eating habits and preferred to eat at home, rather than eating out at restaurants.

Mr Tenali Raman chose Kolkata because of three reasons : a) There weren't many good restaurants serving South Indian dishes in Kolkata, b) Bengalis have an in-born affinity for good food and have diverse culinary tastes, and c) A burgeoning educational and IT sector had attracted a lot of young educated migrants to Kolkata who he thought would not be averse to eating outside at restaurants.

Six months after starting his restaurant at Behala – a location of Kolkata where most of the educated young migrants lived – Tenali Raman realized his idea of serving only South Indian food at his outlet would probably not work. During peak hours his occupancy was only fifty percent and it was half of that at non-peak hours. However, during peak hours, most of his clientele were regular customers who praised and swore by the food that his restaurant served. He realized that most Bengalis who lived in the area preferred to eat Bengali food and were thus not attracted to his restaurant.

Should Mr Tenali Raman stop serving South Indian food and serve Bengali dishes instead ?

- A) Yes, since most young migrants do not want to eat South Indian food.
- B) No, since most of his clientele comprising fifty percent during peak hours are regular customers.
- C) No, since South Indian style food is all he knows, he should wait for a few more months and hope that business slowly picks up.
- D) No, he should serve both South Indian and Bengali dishes with separate menus for each.

Q 32 After a further six months Mr Tenali Raman observes that his regular South Indian clientele has stopped coming. He finds out that his restaurant is considered too shabby for family lunches or dinners. During summer, it can become unbearably hot due to lack of air-conditioning. But Mr Tenali Raman calculates that he will have to spend a couple of lakh of rupees to refurbish his restaurant and install air-conditioning. He would also have to increase prices of his dishes proportionately and he fears other customers may stop coming due to the price rise.

Should Mr Tenali Raman refurbish his restaurant ?

- A) No, since his other customers may stop coming due to the increase in prices.
- B) Yes, since he cannot afford to lose his regular clientele which comprises forty percent of his total clientele.
- C) Yes, since he can charge much higher prices and get a more affluent clientele, which in turn would prove more profitable for him.
- D) Yes and No. Mr Tenali Raman should provide separate refurbished air conditioned and non-air conditioned sections in his restaurant with different prices.

Directions for questions from 33 to 34 :

Study the following two tables and find the codes for the words given :

	0	1	2	3	4
0	P	D	E	H	A
1	B	T	G	K	R
2	U	H	Y	B	O
3	C	A	N	E	D
4	S	R	F	L	T

	5	6	7	8	9
5	N	H	S	A	B
6	A	D	L	U	V
7	E	W	O	C	T
8	G	U	H	D	L
9	S	P	C	H	E

Here, A can be represented by 04, 31, 58 or 65. Similarly P can be represented by 00 or 96.

Q 33 What can be the code of DOUBLE ?

- A) 01 24 20 95 89 02

- B) 66 24 86 59 43 75
 C) 88 77 68 10 67 88
 D) 95 89 88 77 01 24

Q 34 What can be the code of SALT ?

- A) 57 04 89 97
 B) 95 31 67 12
 C) 57 43 97 31
 D) 57 31 43 44

Directions for questions from 35 to 40 :

The HR team of the corporate giant Google had come to the campus of Jadavpur University, an institution whose passed out engineers grace the employee list of all the topmost corporations in India and the world, for recruiting two Trainee Software Engineers. The Placement Department of Jadavpur University had shortlisted seven third-year students from the Computer Science Department for the Technical Written Test which would be the first step of the selection process. They were Pratim, Quereshi, Ranjan, Shilpa, Tamal, Utpal and Vishal.

The Technical Written Test had two sections of a) Programming and b) Mathematics. Each section had fifty questions each. The marking system was such that if in any section the examinees got at most ten answers correct, they would get one mark per answer, if at least eleven and most twenty answers correct, then they would get two marks per answer, and so on. If they got all at least forty one and at most all answers correct in a section, they would get five marks per answer. No marks were deducted for a wrong answer or an un-attempted question.

While evaluating, the HR team of Google found out that all the examinees had answered at least one question correctly in each of the sections. The number of correct answers by Pratim individually in Programming and Mathematics in the Technical Written Test were equal to the number of correct answers by Tamal and Utpal individually in Mathematics in the same test in any order. The number of correct answers in the Programming section of Pratim was equal to the number of correct answers of Ranjan and Shilpa individually in Mathematics. Utpal and Quereshi had the same number of correct answers in Programming and Mathematics respectively. Also, both Tamal and Utpal had five correct answers more in any one section, compared to both sections of Quereshi.

One of the HR member of Google while tabulating the performance of the Technical Written Test kept it incomplete, which read as below :

	Third Student	Year	Numbers of Correct answers			Total marks
			Programmi ng	Mathematic s	Total	
1	Pratim					250
2	Quereshi					215
3	Ranjan					120
4	Shilpa					165

5	Tamal			40	
6	Utpal				
7	Vishal				
	Total	175	200		

Q 35 Who scored the least number of marks in the Programming Section of the Technical Written Test of Google at the Jadavpur University Campus ?

- A) Tamal
- B) Utpal
- C) Vishal
- D) Ranjan

Q 36 Who scored the second highest marks in both the sections combined in the Technical Written Test of Google at the Jadavpur University Campus ?

- A) Pratim
- B) Utpal
- C) Tamal
- D) Vishal

Q 37 (TITA)

How many of the examinees scored less than Shilpa in both the sections together in the Technical Written Test of Google at the Jadavpur University Campus ?

Q 38 (TITA)

How many examinees scored more in the Programming section than in the Mathematics section of the Technical Written Test of Google at the Jadavpur University Campus ?

Q 39 What was the ratio of the scores of Ranjan in the Programming section to that of Shilpa in the Mathematics section of the Technical Written Test of Google at the Jadavpur University Campus ?

- A) 1 : 2
- B) 1 : 3
- C) 6 : 5
- D) 9 : 2

Q 40 (TITA)

The marks obtained in the Programming section was _____ % of the total marks obtained by Pratim in the Technical Written Test of Google at the Jadavpur University Campus.

Directions for questions from 41 to 44 :

Five eminent film actors Abhishek B., Shahrukh K., Ajay D., Mohanlal V. and Jisshu S. own exactly one distinct Film Production and Distribution company among the following five companies namely M/s Green Capsicum Entertainment, M/s N.D. Vfxwalla, M/s Laxmi Entertainment, M/s Minilab Cinema and M/s Red Water Pictures, not necessarily in that order.

The profit generated by the five companies in the financial year 2021-22 were 60 crores, 70 crores, 80 crores, 90 crores and 100 crores of rupees, not necessarily in the same order as that of the names of the companies mentioned.

It was also known that :

- a) Ajay D. did not own M/s Laxmi Entertainment
- b) The profit generated by M/s Green Capsicum Entertainment in 2021-22 was greater than the profit generated by the company owned by Ajay D. by Rs 10 crores
- c) The profit generated by the company owned by Abhishek B. in 2021-22 was greater than the profit generated by M/s N.D. Vfxwalla by Rs 20 crores
- d) The profit generated by the company owned by Mohanlal V. in 2021-22 was greater than the profit generated by M/s Laxmi Entertainment by Rs 20 crores
- e) Shahrukh K. did not own M/s Red Water Pictures
- f) The profit generated by M/s Minilab Cinemas in 2021-22 was greater than the revenue generated by the company owned by Jisshu S. by Rs 10 crores

Q 41 If Abhishek B. owned M/s Laxmi Entertainment, then which of the following options could be true ?

- A) Mohanlal V. owned M/s Green Capsicum Entertainment which generated a profit of Rs 100 crores in 2021-22
- B) The profit generated by the company owned by Shahrukh K. in 2021-22 was Rs 70 crores
- C) The profit generated by the company owned by Jisshu S. in 2021-22 was Rs 60 crores
- D) All of the above

Q 42 (TITA)

What was the profit generated in 2021-22 by the company owned by Shahrukh K. (in Rs crores) ?

Q 43 If Mohanlal V. owns the company having a profit of Rs 100 crores in 2021-22, then which is the company owned by Abhishek B. ?

- A) M/s Green Capsicum Entertainment
- B) M/s Laxmi Entertainment
- C) M/s N.D. Vfxwalla
- D) M/s Red Water Pictures

Q 44 Which of the following companies was owned by Shahrukh K. ?

- A) M/s Green Capsicum Entertainment
- B) M/s N.D. Vfxwalla
- C) M/s Laxmi Entertainment
- D) M/s Red Water Pictures

Section - 3 - Quantitative Aptitude

Q45.(TITA)

LCM of highest powers of 24 and 72 in 200! is

Q46. A quadrilateral is randomly chosen from a grid of 7 x 7, Probability of the quadrilateral being a square is

- (a) 1 (b) $2/3$ (c) $105/196$ (d) $1/2$

Q47. Salaries of A, B & C are in the ratio of 3: 5: 7. If A switches his job, his salary becomes twice of that of B and C. If C's salary is Rs 3500 more than the salary of B, the percentage increase in the salary of A is

- (a) -1 (b) 2 (c) 1 (d) $1/2$

Q48. (TITA)

The minimum value of $f(x) = |10 - x| + |x - 2| - |4 - x|$ is

Q49. 12 men or 16 boys can do a piece of work in 5 days. In how many days the work be completed if 1 man and 2 boys worked alternatively if boy works on day 1?

- (a) 24 days (b) 30 days (c) 48 days (d) 60 days

Q50.(TITA)

For how many positive integral values of N, less than 25 does the equation $5 - |2N/3| \leq 2$, have integer solution?

Q51. (TITA)

$7\sin x - 24\cos x - r$ is always less than or equal to 0. What is the greatest value 'r' can take?

Q52. A motorcyclist covers two stretches of x km each at the speeds of 20 kmph, 30 kmph respectively. He then, covers two equal stretches of 2x km each at the speeds of 30 kmph and 40 kmph. Find the difference between average speeds during first two stretches and last two stretches. (in kmph)

- (a) 9.72 (b) 10.28 (c) 0 (d) Cannot be determined

Q53. Find the remainder when $76^{65} + 65^{76}$ is divided by 7.

- (a) 4 (b) 3 (c) 2 (d) 1

Q54. In a survey conducted by a multilevel marketing company to know people's preference for beauty products and Accessories, 74 preferred beauty products while 67 preferred accessories. There were 18 who liked both and may prefer any. If there was no one who didn't prefer at least one of the phones, then on how many people was the survey conducted?

- (a) 120 (b) 40 (c) 123 (d) 159

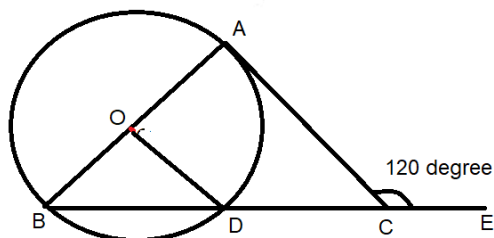
Q55.(TITA)

Sum of first 20 terms of an AP is equal to the sum of the first 40 terms in the same AP. The arithmetic mean of last 20 terms is

Q56. Two cones have their heights in the ratio 2: 1 and the diameters of base of both are 50% of their respective heights. What will be the ratio of their volumes?

- (a) 1: 24 (b) 2: 1 (c) 24: 1 (d) 8: 1

Q57 In the figure given below (not drawn to scale), A, B and D are three points on a circle with centre O. AC is a tangent to the circle at point A. If $\angle ACE = 120^\circ$, then the $\angle ODC$ is



- (a) 120° (b) 150° (c) 80° [4] Cannot be determined

Q58. (TITA)

Anshuman runs $\frac{5}{3}$ times as fast as Mukesh. In a race, if Anshuman gives a lead of 50m to Mukesh, find the distance (in metres) from the starting point where both of them will meet.

Q59. A dealer sold two Radio Sets for Rs 1100 each, gaining 10% on one and losing 20% on the other set. At what minimum rate per radio set, he should sell the two radios so that he will get any loss?

- (a) Rs 1000 (b) Rs 1187.5 (c) Rs 2375 (d) Rs 2000

Q60. If the simple interest is 10% annual and compound interest is 11.25% annual, find the difference between the interests after 2 years on a sum of Rs 2400.

- (a) Rs 50.4 (b) Rs 84.4 (c) Rs 24 (d) Rs 60.3

Q61. Let $g(x)$ be a function such that $g(x+1)g(x) = 12$ for every real x . Then what is value of $g(11)g(0)$?

- (a) 1 (b) 12 (c) $\frac{1}{12}$ (d) 6

Q62. (TITA)

How many 5-digit odd numbers can be formed using $[1, 4, 9, 5]$ such that exactly 1 digit is repeated?

Q63. (TITA)

The number of the integers in the solution set of $|x^2 - 4x| > 6$ and $x^2 \leq 143$ is:

Q64. A person has x chocolates. He gave 2 more than half of the chocolates to 1 child and 2 more than the half of the remaining to the second child. Then the third child also gets half the remaining plus 2 chocolates. Thereafter, no chocolates is left with him. Which of the following best describes the value of x ?

- (a) $2 \leq x \leq 16$ (b) $5 \leq x \leq 18$ (c) $9 \leq x \leq 24$ (d) $18 \leq x \leq 30$

Q65. Maneesh borrowed \$5000 from Suneel. Suneel charges a simple interest of 10 pa. Maneesh returned \$2300 after 1.5 years which included the interest for the 1.5 years. He returned the remaining amount after 2.5 more years. Total interest paid by Maneesh in 4 years is

(a) \$1050

(b) \$2000

(c) \$750

(d) \$1500

Q66. Anuj looked up at the top of a flag on a lighthouse from his boat and found the angle of elevation to be 45 degrees and at the bottom of the flag he found the angle of elevation 30 degrees. After sailing in a straight line 30 m towards the lighthouse, he found that the angle of elevation from the top of the flag changed to 60 degrees. Find the height of the flag (in metres).

(a) 30

(b) $30\sqrt{3}$ (c) $30(\sqrt{3}-1)$ (d) $30(\sqrt{3}+1)$

CAREERS360

Answer Key - Mock Test 18

Section - Verbal Ability & Reading Comprehension

1-3142, 2-3214, 3-2134, 4-C, 5-C, 6-B, 7-D, 8-B, 9-B, 10-A, 11-B, 12-C, 13-A, 14-A, 15-B, 16-C, 17-B, 18-D, 19-C, 20-D, 21-C, 22-D, 23-A, 24-C

Section - Data Interpretation & Logical Reasoning

25-A, 26-B, 27-72, 28-780, 29-C, 30-D, 31-D, 32-D, 33-B, 34-D, 35-A, 36-B, 37-2, 38-2, 39-B, 40-36, 41-D, 42-70, 43-B, 44-A

Section - Quantitative Aptitude

45-4656, 46-C, 47-B, 48-2, 49-C, 50-21, 51-25, 52-B, 53-D, 54-3, 55-0, 56-D, 57-B, 58-125, 59-B, 60-B, 61-B, 62-240, 63-16, 64-D, 65-A, 66-A

Solutions - Mock Test 18

Section - Verbal Ability & Reading Comprehension

1. 3142

Sentence 3 is the introduction because it is putting in perspective this whole explanation and how it relates to the multinational corporate system. The degree of unevenness mentioned in 3 is directly demonstrated by sentences 1 followed by 4. Sentence 2 explains the major reason for what happened in sentence 4.

2. 3214

3 will be the introductory sentence as it talks about the origin of Public-key cryptography. They mentioned in 2 refers to the GCHQ in 3. So, 32 will be followed by 1 which again uses them to refer to GCHQ and at last we will put sentence 4 which refers to the researchers mentioned in sentence 1. Correct order: 3214.

3.2134

Exp: Statement 2 is the generic opening sentence of the passage since it is about the status of public sector banks in India whereas statement 1 comes after that with the criticism of the government for having a stake in so many banks in the country. It is again followed by statement 3 since it talks about the main role of the government in an economy. Statement 4 comes after that with the course of action for the government.

4.C

This is a plot of a dramatic romantic film. When Aimee confesses and tells Sutter about her mother the primary romantic reaction would be to calm her down and to provide comfort to her. Option A is actually overstepping as Sutter might have had a conversation with her about her mother's case.

Option B speaks about things that we don't know as we are unaware of the beginning and the end of the film.

Option C can be the suitable answer because he is trying to pacify her, naturally.

Option D is not natural as his reaction is unheard of. Thus it seems a little absurd for him to walk away as it is clear that he is interested in her.

5.C

We might have noticed that the passage ends with one nature of the job of civil servants/posts they will be appointed to. It is most appropriate to go for the option continuing the content of various posts that a civil servant should work upon. Option A speaks about the responsibilities. But this is something that should come after all the responsibilities of a civil servant are mentioned. Hence we look for better options. Option B is like a conclusion which can come only at the end of the passage. We notice that the sequence we require is largely dependent on the nature of posts given to a civil servant. Hence we can scan for a better option. Option C is the correct one as it continues the positions that are supposed to be held by the civil servants. Hence this could be our answer. Option D is a statement which can come later down the passage as it deals with the promotions and the career paths of a civil servant. This does not get a higher priority over statement C.

6. B

Option B summarises the main idea correctly.

The most important line to identify the answer is: But across time and contexts, any of these characteristics can change.

7. D

Option D covers the essence of the paragraph.

8. B

The paragraph does not mention James McNulty as a researcher. Therefore, options A and C are incorrect. Option D is incorrect as the study didn't aim to measure satisfaction but instead happiness. Therefore, option B is the correct choice.

9. B

Statement I is incorrect. Refer to the lines: But what counts as 'important' in this context? This is governed by the deeper fundamental processes that we've evolved over millions of years, which don't assign memories importance based on relevance or usefulness, but on how much sensation or emotional value they carry.

Statement II can be derived from the lines: For instance, it's common when telling a story about an amusing event that happened to you, to embellish and exaggerate elements of it for comic effect.

Statement II can be derived from the lines: Ideally it would mean you separately remember the bonus elements you added to the event next time you want to regale others about it, but the human brain is a thrifty organ and generally can't afford to be so meticulous about how it stores information.

Statement IV can be derived from the lines: Human memory is not like electronic data on a hard drive, or words chiselled onto stone tablets.

10. A

Option A is the correct answer as it is a generic statement that basically says that false memories exist.

Option B is incorrect as the author does not state how many of our memories are false.

Option C is incorrect as no such comparison is carried out.

Option D is incorrect. Refer to the lines: Where false memories recall things that definitely didn't happen, true memories would be reliable and accurate memories of things that did. A straightforward binary

distinction. Sadly, the way our brain handles and stores memories is far more complex, and far less logical, than you would hope.

They should be two distinct binaries but they are not.

11. B

Option A is ruled out as it effectively delivers us zero information. The option uses great language but does very little in terms of conveying the purpose of the paragraph.

Option B is the perfect option here as it explains why the author quotes the example.

Option C is incorrect. Contravene means to go against something.

Option D is incorrect as the paragraph does not represent the complete scope of his work. This is too extreme an answer option.

12. C

What is the main point of the passage?

Refer to these lines: Sadly, the way our brain handles and stores memories is far more complex, and far less logical, than you would hope....Human memory is not like electronic data on a hard drive, or words chiselled onto stone tablets...It's incredibly complex, but as a rule of thumb, important information is prioritised over unimportant, or less important sorts....That highly-charged, visceral memory will likely stay with you forever, for all that you'd rather it didn't.

From the above lines, we can see that the author wishes to highlight that human memory is not something which is fixed; it changes and is subject to emotions. Option C is the only one which highlights all these aspects.

Option A is ruled out as it is limited in nature. Option C does a much better job of explaining what the passage is about.

Option B is too negative and extreme.

Option D is an opinion which is not expressed in the passage.

13. A

Statement I is incorrect: Information is stored in the brain via the creation and activity of synapses; the connections between two separate neurons – i.e. brain cells.

Statement II is correct: But cells are not static, they're alive, and in a constant state of flux, a sort of quasi-stable equilibrium.

Statement III is correct: Because human memory is based on the activity of and between cells, it too becomes plastic and flexible.

14. A

What does the passage do in this case?

The purpose of the passage here is very simple actually (if you are able to spot it): it talks about the life of a graduate and the uncertainty a graduate faces when he looks for employment.

Which is the option that deals with the sentiment? The option that deals with this sentiment is option A. Here 'post-academic life' is a reference to life after graduation. Establishing this connection is key to finding the answer.

Option B is rejected as the passage is not a motivational piece offering solutions.

Option C is rejected as the primary subject of the passage is not the flaws of the government but the life of a graduate.

Option D goes beyond the scope of the passage. The passage is about the life of a graduate when he seeks employment; everything in the passage is mentioned in that context. Option D goes well beyond the scope of the passage.

15. B

Refer to the lines: With the shambolic implementation, government policies, with a goal to empower and equip people with skills and transform them into an epitaph of dexterity, seem to be a tremendous fiasco. Some schemes like Startup India, which were aimed at promoting and incentivising the innovative calibre of youth failed devastatingly. The repercussions of the deceitful promises could create a Stygian world for the downcast aspirant, where there would be no shred of sanguinity.

In the given case, you need to know the meanings of the following words first:

Deceitful: Marked by deliberate deceptiveness especially by pretending one set of feelings and acting under the influence of another

Sanguinity: optimistically cheerful and confident

Stygian: Hellish

Where does the word Stygian come from?

Stygian comes to us (by way of Latin stygius and Greek stygios) from Styx, the name of the principal river in Hades, the underworld of the dead in Greek mythology. This is the river over which Charon the boatman was said to ferry the spirits of the dead; the Greeks and Romans would place a coin in the mouth or hand of the deceased to serve as fare. It is also the river by which the gods swore their most binding oaths, according to the epics of Homer. English speakers have been using stygian to mean "of or relating to the river Styx" since the early 16th century. From there the meaning broadened to describe things that are as dark, dreary, and menacing as one might imagine Hades and the river Styx to be.

The next step is to understand the context here.

The passage mentions that the aspirations are crushed by the thwarted government policies and jobs are being taken by machines, so the inference that could be drawn is that students or aspirants are losing hope and they have found themselves in a tough spot.

This line translates to: the policies of the government and the current scenario has led to a hellish situation for aspirants, where they have no reason to be happy.

Option B comes closest to this sentiment.

Dystopian refers to as bad as can be; characterized by human misery.

Option A is ruled out as this line is not about innovation.

Option C is ruled out as utopian refers to a perfect world, a dreamlike world.

Option D does not correlate with the sentiment highlighted by the sentence.

Option B vs. Option D

Original line: 'The repercussions of the deceitful promises could create a Stygian world for the downcast aspirant, where there would be no shred of sanguinity'

Option B: It could create a dystopian world for job-seekers and aspirants where there is no reason to be optimistic.

No reason to be optimistic explains no shred of sanguinity.

Option D: It could create significant issues for job-seekers and aspirants where they have virtually no idea about what is going to happen to them in the future.

This deviates from the given line. In the given, we need to tell the meaning of the given statement. This option does not do that. Also, the element of a Hellish world is missed by this option. Also, the given line is not about aspirants not having any idea about their future; it is about how terrible the situation is going to be.

On all these counts, option B explains the meaning of this sentence and not option D.

16. C

Why are options A and B incorrect?

The author uses the parallel example of physics to show the struggles of people with respect to jobs.

The passage does not amalgamate physics and reality. Amalgamating the two would mean that physics is also a subject of the passage and the passage explores a topic which runs according to the laws of physics.

Here, the author is highlighting a real life situation and using a parallel example in physics to show a similarity. In this example, he is just showcasing that life is uncertain as well, as is the case of physics.

This is a question where you need to be careful. The passage is actually not about physics, and one figures this out only when one completes the passage. The passage uses the uncertainty principle of physics to create a link between reality and unpredictability. Here, the usage of the example is just for creating a parallel but this example does not represent a deeper purpose for the passage. The theme of the passage is not co-relating physics and reality.

In a similar manner, neutrons are mentioned but the passage is not about neutrons and people.

Option A is incorrect because firstly, amalgamation means the action, process, or result of combining or uniting. In the passage, the author tried to convey how some concepts of physics also hold true in real life as in how real life also mimics the principles of physics sometimes. He doesn't say physics and real life came together, affected each other and became one.

Option D is incorrect as this is just one aspect of the passage. Aspirants do struggle but this does not reflect the overall theme of the passage.

Option C is the best choice here as it provides an explanation for the initial physics examples and co-relates it with the main theme of the passage. The author wishes to highlight the uncertainty in the lives of job-seekers and aspirants. This sentiment is best expressed by option C. Also, Option C is correct because the passage starts with the statement "I see a typical Indian graduate confined in the same circumstances as an elementary particle. The future of an Indian graduate seems to be completely unpredictable, uncertain and gloomy." In this statement, he means that once a man graduates and starts to work, since he has not been given proper training and has not been prepared well by the Government etc., it is uncertain how his life will progress and what his trajectory would be like.

17. B

We need to select an option that cannot be inferred in the given case.

Option A can be derived from the line: I anticipate an apocalypse. The 21st century is endowed with insurmountable technologies, with artificial intelligence and biotechnology leading the herd. With AI dominating the macrocosm of technology, the probability of getting a job for humans would decline exponentially.

Option C can be derived from the line: The impregnable desire of a graduate to achieve something in his life is thwarted by the feckless policies of the government.

Option D can be derived from the lines: Classical mechanics is the branch of physics that satisfies our common sense, while Quantum Mechanics deals with the obscurity observed at the atomic level, challenging the comprehension level of the human mind.

Option B is the incorrect inference. Refer to the lines: This is a spontaneous cycle, where nobody seems to be breaking the rules. But in the end, the overarching thing that outstrips the inevitability of everything is a job that can sustain you and your family.

This clearly goes against the information given in the passage.

Thus, option B is our answer here.

18. D

To answer the question, you need to go through the lines: *Poor Chloe Smith, went this narrative. How could she be expected to defend herself against broadcasting's giant squid? She is only a girl. She is young. (She is 30, which is, actually, the average life expectancy of a dolphin.) He would not do it to a man; except he does, and every day.* These lines clearly show that the author just wished to prove that Chloe Smith was not as inexperienced and helpless as she was made out to be.

19.C

The only statement that does not find mention in the passage is option C.

Options A, B and D can be inferred from: *He would not do it to a man; except he does, and every day. Paxman does not do sexual profiling because he is omnivorous. He will digest anything as long as it tastes political. He may even be a feminist.*

20.D

Tolstoy was a Russian writer whose great novels War and Peace (1869) and Anna Karenina (1877) offer extraordinary detail and profound psychological insights. His later theories of ethics and morality recommended nonparticipation in and passive resistance to evil. In the given lines, it refers to the unfair treatment meted out to Chloe Smith and how this should have been avoided at all cost.

Refer to the lines to identify the answer: *That Smith wobbled not because she is a girl, but because she forgot that Paxman only needs to be shouted at to pout and desist, was ignored. One "supportive" colleague compared Smith to a "tiny mouse"; another said that whoever put her in front of a TV camera again after she blathered during Channel 4 News "should be taken out and shot"; yet another pointed out that Smith's boss, Osborne, was at a dinner party during the broadcast, and this was an act of terrible moral cowardice. It was all very Tolstoyan, but watching the Tories eat their females, apparently in revenge for some positive discrimination, is becoming a sport.*

21. C

The last three paragraphs of the passage discuss this amendment. The author mentions its shortcoming but at the same time says that it should be implemented. This makes option C the correct answer as then this amendment becomes a step in the right direction, along with which more should follow.

22. D

Read the line just before this one to get an idea. *Then House-Senate conferees will need to look more closely at whether more frequent inspections are warranted and whether sufficient money can be found to pay for them.* This makes it clear that all he is saying is that the senate should consider consumer safety first and then think about finances as they are secondary in nature.

23. A

Statement I: This statement can be found from the lines: *The Senate must pass long-stalled legislation that could strengthen the hand of regulators to prevent and control outbreaks of all food-related illnesses.* Statement II & III: These are far-fetched opinions that we really cannot ascribe to the author of the passage. These are too strong in nature and hence, both are rejected.

24. C

The author wants the government/ government agencies to pay heed to his advice and look into these matters with urgent concern. What he wishes for is a different approach, one which places consumer interest at the top of the pyramid. The option which emphasizes this aspect is Option C.

Section - Data Interpretation & Logical Reasoning

25. A

Data provided in the line-graph can be tabulated as follows :

	MAY'22	JUNE'22		JULY'22		AUG'22		SEPT'22		OCT'22
	End	Start	End	Start	End	Start	End	Start	End	Start
TYPE A	360	360		504		624		1152		1224
TYPE B	696	696		768		228		228		384
TYPE C	480	480		588		636		696		720

It was known that the Chandpur Hilsa stayed fresh for two months in the cold-storage unit, the Padma Hilsa for three months and the Meghna Hilsa for four months.

So the loss of freshness of the Chandpur Hilsa would start from July 2022 end and would reflect in the inventory from August 2022 start.

The loss of freshness of the Padma Hilsa would start from August 2022 end and would reflect in the inventory from September 2022 start.

The loss of freshness of the Meghna Hilsa would start from September 2022 end and would reflect in the inventory from October 2022 start.

We can observe that only for Type B Hilsa the quantity decreases at the start of August 2022, inspite of probable addition of fresh stock to the inventory.

So the Chandpur Hilsa must have been the one which was given the heading of Type B in the line-graph above by the person taking the inventory

26. B

From the previous question's solution we know that Type B is the Chandpur Hilsa.

Thus data provided in the line-graph can be tabulated as follows :

	MAY'22	JUNE'22		JULY'22		AUG'22		SEPT'22		OCT'22
	End	Start	End	Start	End	Start	End	Start	End	Start
TYPE A	360	360		504		624		1152		1224
CHANDPUR HILSA	696	696		768		228		228		384
TYPE C	480	480		588		636		696		720

Now, none of the Type A or Type C Hilsa show a reduction in count in the subsequent months due to the addition of fresh stock to the inventory.

Hence there can be two cases :

Case 1 : Type A is the Padma Hilsa and Type C the Meghna Hilsa

Case 2 : Type A is the Meghna Hilsa and Type C the Padma Hilsa

If Case 1 is correct, then :

	MAY'22	JUNE'22			JULY'22			AUG'22			SEPT'22			OCT'22
	End	Start	Not Fresh	End	Start	Not Fresh	End	Start	Not Fresh	End	Start	Not Fresh	End	Start
TYPE A	360	360	0	360 +144 =504	504	0	504 +120 =624	624	360	624 -360 +888 =1152	1152	144	1152 -144 +216 =1224	1224
CHANDPUR HILSA	696	696	0	696 +72 =768	768	696	768 -696 +156 =228	228	72	228 -72 +72 =228	228	156	228 -156 +312 =384	384
TYPE C	480	480	0	480 +108 =588	588	0	588 +48 =636	636	0	636 +60 =696	696	480	696 -480 +504 =720	720

Hence total number of Hilsa fishes transferred to the cold-storage unit at the end of :

May 2022 = $360+696+480 = 1536$

June 2022 = $144+72+108 = 324$

July 2022 = $120+156+48 = 324$

August 2022 = $888+72+60 = 1020$

September 2022 = $216+312+504 = 1032$

If Case 2 is correct, then :

	MAY'22	JUNE'22			JULY'22			AUG'22			SEPT'22			OCT'22
	End	Start	Not Fresh	End	Start	Not Fresh	End	Start	Not Fresh	End	Start	Not Fresh	End	Start
TYPE A	360	360	0	360 +144 =504	504	0	504 +120 =624	624	0	624 +528 =1152	1152	360	1152 -360 +432 =1224	1224
CHANDPUR HILSA	696	696	0	696 +72 =768	768	696	768 -696 +156 =228	228	72	228 -72 +72 =228	228	156	228 -156 +312 =384	384
TYPE C	480	480	0	480 +108 =588	588	0	588 +48 =636	636	480	636 -480 +540 =696	696	108	696 -108 +132 =720	720

Hence total number of Hilsa fishes transferred to the cold-storage unit at the end of :

May 2022 = $360+696+480 = 1536$

June 2022 = $144+72+108 = 324$

July 2022 = $120+156+48 = 324$

August 2022 = $528+72+540 = 1140$

September 2022 = $432+312+132 = 876$

But it is given that 1032 fresh Hilsa fishes were transferred to the cold-storage unit at the end of one of the months, and that can be found to occur only in Case 1, at the end of September 2022.

So, Case 1 is the correct deduction, that is, Type A is the Padma Hilsa and Type C the Meghna Hilsa.

Hence Type C correctly represents the Meghna Hilsa in the line-graph given above

27. 72

We know that Type A is the Padma Hilsa, Type B is the Chandpur Hilsa and Type C is the Meghna Hilsa.

Hence the actual scenario in the cold-storage unit from end of May 2022 to start of October 2022 is as below :

	MAY'22	JUNE'22			JULY'22			AUG'22			SEPT'22			OCT'22
	End	Start	Not Fresh	End	Start	Not Fresh	End	Start	Not Fresh	End	Start	Not Fresh	End	Start
PADMA HILSA	360	360	0	$360+144=504$	504	0	$504+120=624$	624	360	$624-360+888=1152$	1152	144	$1152-144+216=1224$	1224
CHANDPUR HILSA	696	696	0	$696+72=768$	768	696	$768-696+156=228$	228	72	$228-72+72=228$	228	156	$228-156+312=384$	384
MEGHNA HILSA	480	480	0	$480+108=588$	588	0	$588+48=636$	636	0	$636+60=696$	696	480	$696-480+504=720$	720

Hence, 72 fresh Chandpur Hilsa fishes were added to the inventory of the cold-storage unit at the end of August 2022.

28. 780

The actual scenario in the cold-storage unit from end of May 2022 to start of October 2022 is as below :

	MAY'22	JUNE'22			JULY'22			AUG'22			SEPT'22			OCT'22
	End	Start	Not Fresh	End	Start	Not Fresh	End	Start	Not Fresh	End	Start	Not Fresh	End	Start

PADMA HILSA	360	360	0	360 +144 =504	504	0	504 +120 =624	624	360	624 -360 +888 =1152	1152	144	1152 -144 +216 =1224	1224
CHANDPU R HILSA	696	696	0	696 +72 =768	768	696	768 -696 +156 =228	228	72	228 -72 +72 =228	228	156	228 -156 +312 =384	384
MEGHNA HILSA	480	480	0	480 +108 =588	588	0	588 +48 =636	636	0	636 +60 =696	696	480	696 -480 +504 =720	720

Hence, the number of Hilsa fishes that had crossed their tenure of freshness and were removed from the cold-storage unit at the end of September 2022 = 144+156+480 = 780

29. C

The actual scenario in the cold-storage unit from end of May 2022 to start of October 2022 is as below :

	MAY'22	JUNE'22			JULY'22			AUG'22			SEPT'22			OCT'22
	End	Start	Not Fresh	End	Start	Not Fresh	End	Start	Not Fresh	End	Start	Not Fresh	End	Start
PADMA HILSA	360	360	0	360 +144 =504	504	0	504 +120 =624	624	360	624 -360 +888 =1152	1152	144	1152 -144 +216 =1224	1224
CHANDP UR HILSA	696	696	0	696 +72 =768	768	696	768 -696 +156 =228	228	72	228 -72 +72 =228	228	156	228 -156 +312 =384	384
MEGHNA HILSA	480	480	0	480 +108 =588	588	0	588 +48 =636	636	0	636 +60 =696	696	480	696 -480 +504 =720	720

No fresh Hilsa fish were added to the inventory at the end of October 2022.

So, if we consider till the end of October 2022, the situation will be :

	MAY'22	JUNE'22			JULY'22			AUG'22			SEPT'22			OCT'22		
	End	Start	Not Fresh	End	Start	Not Fresh	End	Start	Not Fresh	End	Start	Not Fresh	End	Start	Not Fresh	End

PADMA HILSA	360	360	0	360 +144 =504	504	0	504 +120 =624	624	360	624 -360 +888 =1152	1152	144	1152 -144 +216 =1224	1224	120	1224 -120 +0 =1104
CHANDP UR HILSA	696	696	0	696 +72 =768	768	696	768 -696 +156 =228	228	72	228 -72 +72 =228	228	156	228 -156 +312 =384	384	72	384 -72 +0 =312
MEGHNA HILSA	480	480	0	480 +108 =588	588	0	588 +48 =636	636	0	636 +60 =696	696	480	696 -480 +504 =720	720	108	720 -108 +0 =612

Hence, the number of Hilsa fishes remaining in the cold-storage unit at the end of October 2022 = $1104+312+612 = 2028$

30. D

The actual scenario in the cold-storage unit from end of May 2022 to start of October 2022 is as below :

	MAY'22	JUNE'22			JULY'22			AUG'22			SEPT'22			OCT'22
	End	Start	Not Fresh	End	Start	Not Fresh	End	Start	Not Fresh	End	Start	Not Fresh	End	Start
PADMA HILSA	360	360	0	360 +144 =504	504	0	504 +120 =624	624	360	624 -360 +888 =1152	1152	144	1152 -144 +216 =1224	1224
CHANDP UR HILSA	696	696	0	696 +72 =768	768	696	768 -696 +156 =228	228	72	228 -72 +72 =228	228	156	228 -156 +312 =384	384
MEGHNA HILSA	480	480	0	480 +108 =588	588	0	588 +48 =636	636	0	636 +60 =696	696	480	696 -480 +504 =720	720

Hence total number of Hilsa fishes transferred to the cold-storage unit at the end of :

May 2022 = $360+696+480 = 1536$

June 2022 = $144+72+108 = 324$

July 2022 = $120+156+48 = 324$

August 2022 = $888+72+60 = 1020$

September 2022 = $216+312+504 = 1032$

Hence, at the end of September 2022, 1032 freshly imported Hilsa fishes were transferred to the cold-storage unit.

31. D

Mr Tenali Raman should certainly not stop serving South Indian food since he has built a successful clientele who come regularly for his South Indian dishes. Hence Option A is eliminated. Option B is partly correct but is incomplete, as Mr Tenali Raman has to do something to boost sales. Option C is a passive option where Mr Tenali Raman is banking solely on fate and luck for customers. Option D is the best option for him to retain his regular customers who enjoy his South Indian dishes and also to try and bring in new customers by incorporating Bengali dishes.

32. D

Yes and No. Mr Tenali Raman should provide separate refurbished air conditioned and non-air conditioned sections in his restaurant with different prices.

Option D satisfies both conditions – of maintaining competitive pricing and good, comfortable ambience for customers who want it. Options A and B satisfy one condition only and can be eliminated. Option C may make him lose his other customers, who are price conscious. Therefore, the correct answer is option D.

33. B

D can be represented by 01, 34, 66 or 88,

O by 24 or 77,

U by 20, 68 or 86,

B by 10, 23 or 59,

L by 43, 67 or 89,

E by 02, 33, 75 or 99.

Only option B satisfies all the codes of the letters

34. D

S can be represented by 40, 57 or 95,

A by 04, 31, 58 or 65,

L by 43, 67 or 89,

T by 11, 44 or 79.

Only option D satisfies all the codes of the letters

35. A

All the examinees had at least one answer correct in each of the sections.

Hence the only combination of correct answers possible to enable Pratim to score 250 will be 30 correct of Programming and 40 correct of Mathematics, or vice versa. $30 \times 3 + 40 \times 4 = 90 + 160 = 250$.

The combination of correct answers possible to enable Quereshi to score 215 will be :

a) 21 correct of Programming and 38 correct of Mathematics, or vice versa. $21 \times 3 + 38 \times 4 = 63 + 152 = 215$.

b) 25 correct of Programming and 35 correct of Mathematics, or vice versa. $25 \times 3 + 35 \times 4 = 75 + 140 = 215$.

The only combination of correct answers possible to enable Ranjan to score 120 will be 15 correct of Programming and 30 correct of Mathematics, or vice versa. $15 \times 2 + 30 \times 3 = 30 + 90 = 120$.

The combination of correct answers possible to enable Shilpa to score 165 will be :

- a) 25 correct of Programming and 30 correct of Mathematics, or vice versa. $25 \times 3 + 30 \times 3 = 75 + 90 = 165$,
or,
b) 5 correct of Programming and 40 correct of Mathematics, or vice versa. $5 \times 1 + 40 \times 4 = 5 + 160 = 165$.

Now, the number of correct answers by Pratim individually in Programming and Mathematics in the Technical Written Test were equal to the number of correct answers by Tamal and Utpal individually in Mathematics in the same test in any order. Hence Tamal and Utpal must have given 30 and 40 correct answers in Mathematics in any order.

Also, the number of correct answers in the Programming section of Pratim was equal to the number of correct answers of Ranjan and Shilpa individually in Mathematics. But Pratim did not answer 15, 25 or 5 questions correctly in Programming. So, none of them can be the number of correct answers of Ranjan and Shilpa in Mathematics. Pratim answered either 30 or 40 answers correctly in Programming. The only figure that can be achieved by both Ranjan and Shilpa is 30 correct answers in Mathematics.

So :

- a) Pratim answered 30 questions correctly in Programming. Hence 40 correct Mathematics answers were given by him
b) Ranjan answered 15 correctly in Programming and 30 correctly in Mathematics
c) Shilpa answered 25 correctly in Programming and 30 correctly in Mathematics

Total number of correct answers by Tamal is 40. Hence, had Tamal got 40 correct answers in Mathematics, then he had to get 0 correct answers in Programming. But that is not possible

- a) So Tamal must have got 30 answers correct in Mathematics and hence 10 answers correct in Programming
b) Hence, Utpal must have got 40 answers correct in Mathematics

Now, both Tamal and Utpal had five correct answers more in any one section, compared to both sections of Quereshi. So one of the sections of Quereshi must have either $(30-5) = 25$, or, $(10-5) = 5$ correct answers. The only possible combination of Quereshi that agrees with this is 25 correct answers of Programming and 35 correct answers of Mathematics or vice-versa.

Hence :

	Third Student	Year	Numbers of Correct answers			Total marks
			Programmi ng	Mathematic s	Total	
1	Pratim		30	40	70	250
2	Quereshi		25/35	35/25	60	215
3	Ranjan		15	30	45	120
4	Shilpa		25	30	55	165
5	Tamal		10	30	40	100
6	Utpal			40		
7	Vishal					
	Total		175	200		

Now, the total number of correct answers in Mathematics is 200.

Number of correct answers of all except Vishal in Mathematics = $40 + 35/25 + 30 + 30 + 30 + 40 = 205/195$

But a total of 205 is not possible.

So, number of correct answers of all except Vishal in Mathematics = 195

Hence number of correct answers of Vishal in Mathematics = $200 - 195 = 5$

Also the combination of correct answers possible to enable Quereshi to score 215 will be 35 correct of Programming and 25 correct of Mathematics.

Utpal and Quereshi had the same number of correct answers in Programming and Mathematics respectively. Hence Utpal had 25 correct answers in Mathematics.

The total number of correct answers in Programming is 175.

Number of correct answers of all except Vishal in Programming = $30+25+15+25+10+25 = 130$

Hence number of correct answers of Vishal in Programming = $175 - 130 = 45$

Hence :

	Third Student	Year	Numbers of Correct answers			Total marks
			Programmi ng	Mathematic s	Total	
1	Pratim		30	40	70	250
2	Quereshi		35	25	60	215
3	Ranjan		15	30	45	120
4	Shilpa		25	30	55	165
5	Tamal		10	30	40	100
6	Utpal		25	40	65	235
7	Vishal		35	5	40	145
	Total		175	200	375	

Hence, Tamal, at $10 \times 1 = 10$ marks, scored the least number of marks in the Programming Section of the Technical Written Test of Google at the Jadavpur University Campus.

36. B

We know that :

	Third Student	Year	Numbers of Correct answers			Total marks
			Programmi ng	Mathematic s	Total	
1	Pratim		30	40	70	250
2	Quereshi		35	25	60	215
3	Ranjan		15	30	45	120
4	Shilpa		25	30	55	165
5	Tamal		10	30	40	100
6	Utpal		25	40	65	235

7	Vishal	35	5	40	145
	Total	175	200	375	

Hence, Utpal, at 235 marks, scored the second highest marks in both the sections combined in the Technical Written Test of Google at the Jadavpur University Campus

37. 2

We know that :

	Third Student	Year	Numbers of Correct answers			Total marks
			Programmi ng	Mathematic s	Total	
1	Pratim		30	40	70	250
2	Quereshi		35	25	60	215
3	Ranjan		15	30	45	120
4	Shilpa		25	30	55	165
5	Tamal		10	30	40	100
6	Utpal		25	40	65	235
7	Vishal		35	5	40	145
	Total		175	200	375	

Two examinees, Ranjan and Tamal, at 120 and 100 respectively, scored less than Shilpa at 165 in both the sections together, in the Technical Written Test of Google at the Jadavpur University Campus

38. 2

We know that :

	Third Student	Year	Numbers of Correct answers			Total marks
			Programmi ng	Mathematic s	Total	
1	Pratim		30	40	70	250
2	Quereshi		35	25	60	215
3	Ranjan		15	30	45	120
4	Shilpa		25	30	55	165
5	Tamal		10	30	40	100
6	Utpal		25	40	65	235
7	Vishal		35	5	40	145
	Total		175	200	375	

The two examinees Quereshi and Vishal scored more in the Programming section than in the Mathematics section of the Technical Written Test of Google at the Jadavpur University Campus.

39. B

We know that :

	Third Student	Year	Numbers of Correct answers			Total marks
			Programmi ng	Mathematic s	Total	
1	Pratim		30	40	70	250
2	Quereshi		35	25	60	215
3	Ranjan		15	30	45	120
4	Shilpa		25	30	55	165
5	Tamal		10	30	40	100
6	Utpal		25	40	65	235
7	Vishal		35	5	40	145
	Total		175	200	375	

Score of Ranjan in the Programming section = $15 \times 2 = 30$

Score of Shilpa in the Mathematics section = $30 \times 3 = 90$

Hence, the ratio of the scores of Ranjan in the Programming section to that of Shilpa in the Mathematics section of the Technical Written Test of Google at the Jadavpur University Campus = $30 : 90 = 1 : 3$

40. 36

We know that :

	Third Student	Year	Numbers of Correct answers			Total marks
			Programmi ng	Mathematic s	Total	
1	Pratim		30	40	70	250
2	Quereshi		35	25	60	215
3	Ranjan		15	30	45	120
4	Shilpa		25	30	55	165
5	Tamal		10	30	40	100
6	Utpal		25	40	65	235
7	Vishal		35	5	40	145
	Total		175	200	375	

Score of Pratim in Programming section = $30 \times 3 = 90$

Total score of Pratim = 250

Hence, percentage of the total marks obtained by Pratim in the Technical Written Test of Google at the Jadavpur University Campus = $(90 \times 100) / 250 = 36.00\%$

41. D

Let the respective profits in 2021-22 generated by the companies M/s Green Capsicum Entertainment, M/s N.D. Vfxwalla, M/s Laxmi Entertainment, M/s Minilab Cinema and M/s Red Water Pictures be Rs A, B, C, D and E crores respectively.

Thus, from the data given we can say :

Owner of Company	Profit in 2021-22 (in Rs crores)
Abhishek B.	B+20
Shahrukh K.	
Ajay D.	A-10
Mohanlal V.	C+20
Jisshu S.	D-10

Total profit generated by all the five companies = $(A+B+C+D+E)$

From the above, the total profit generated by four of them except the one belonging to Shahrukh K.

$$= (B+20 + A-10 + C+20 + D-10)$$

$$= (A+B+C+D+20)$$

Thus, the profit generated by the company belonging to Shahrukh K.

$$= (A+B+C+D+E) - (A+B+C+D+20)$$

$$= (E-20)$$

Hence,

Owner of Company	Profit in 2021-22 (in Rs crores)
Abhishek B.	B+20
Shahrukh K.	E-20
Ajay D.	A-10
Mohanlal V.	C+20
Jisshu S.	D-10

So, $(B+20)$, $(E-20)$, $(A-10)$, $(C+20)$ and $(D-10)$ must take the values of 60 crores, 70 crores, 80 crores, 90 crores and 100 crores of rupees, not necessarily in the same order.

A, D and E cannot be Rs 60 crores, as otherwise the values of profits generated will become less than Rs 60 crores, which is not possible.

Thus one of B and C have to be Rs 60 crores.

Again, $(E-20)$, $(A-10)$ and $(D-10)$ cannot be Rs 100 crores, as otherwise the values of profits generated will become more than Rs 100 crores, which is not possible.

Thus one of $(B+20)$ and $(C+20)$ have to be Rs 100 crores, that is, one of B and C have to be Rs 80 crores.

Hence B and C values are Rs 60 crores and Rs 80 crores in any order.

Hence,

Owner of Company	CASE 1 (B=60, C=80)	CASE 2 (B=80, C=60)
	Profit in 2021-22 (in Rs crores)	Profit in 2021-22 (in Rs crores)
Abhishek B.	$(B+20) = 80$	$(B+20) = 100$
Shahrukh K.	E-20	E-20
Ajay D.	A-10	A-10
Mohanlal V.	$(C+20) = 100$	$(C+20) = 80$
Jisshu S.	D-10	D-10

Now, the profit generated by the company of Shahrukh K. in 2021-22 can be any one of Rs 60, 70 and 90 crores.

But $(E-20) = 60$ crores or, $E = 80$ crores is not possible, as one among B and C is already 80 crores

Similarly $(E-20) = 90$ crores or, $E = 110$ crores is not possible, as none of the profits generated correspond to that value.

Hence, $(E-20) = 70$ crores or, $E = 90$ crores

Hence,

Owner of Company	(B=60, C=80)	(B=80, C=60)
	Profit in 2021-22 (in Rs crores)	Profit in 2021-22 (in Rs crores)
Abhishek B.	$(B+20) = 80$	$(B+20) = 100$
Shahrukh K.	$(E-20) = 70$	$(E-20) = 70$
Ajay D.	A-10	A-10
Mohanlal V.	$(C+20) = 100$	$(C+20) = 80$
Jisshu S.	D-10	D-10

So, A and D will have values of Rs 70 crores and Rs 100 crores in any order.

So, a total of four cases occur :

(All figures in Rs crores)	CASE 1	CASE 2	CASE 3	CASE 4

A (Profit of M/s Green Capsicum Entertainment)	70	100	70	100
B (Profit of M/s N.D. Vfxwalla)	60	60	80	80
C (Profit of M/s Laxmi Entertainment)	80	80	60	60
D (Profit of M/s Minilab Cinemas)	100	70	100	70
E (Profit of M/s Red Water Pictures)	90	90	90	90

Accordingly, regarding profit amount, we can see that :

Owner of Company	CASE 1	CASE 2	CASE 3	CASE 4
	Profit in 2021-22 (in Rs crores)	Profit in 2021-22 (in Rs crores)	Profit in 2021-22 (in Rs crores)	Profit in 2021-22 (in Rs crores)
Abhishek B.	$(B+20) = 80$	$(B+20) = 80$	$(B+20) = 100$	$(B+20) = 100$
Shahrukh K.	$(E-20) = 70$	$(E-20) = 70$	$(E-20) = 70$	$(E-20) = 70$
Ajay D.	$(A-10) = 60$	$(A-10) = 90$	$(A-10) = 60$	$(A-10) = 90$
Mohanlal V.	$(C+20) = 100$	$(C+20) = 100$	$(C+20) = 80$	$(C+20) = 80$
Jisshu S.	$(D-10) = 90$	$(D-10) = 60$	$(D-10) = 90$	$(D-10) = 60$

and, regarding ownership of company, we can see that :

Owner of Company	CASE 1	CASE 2	CASE 3	CASE 4
	Company owned	Company owned	Company owned	Company owned
Abhishek B.	M/s Laxmi Entertainment	M/s Laxmi Entertainment	M/s Minilab Cinemas	M/s Green Capsicum Entertainment
Shahrukh K.	M/s Green Capsicum Entertainment	M/s Minilab Cinemas	M/s Green Capsicum Entertainment	M/s Minilab Cinemas
Ajay D.	M/s N.D. Vfxwalla	M/s Red Water Pictures	M/s Laxmi Entertainment	M/s Red Water Pictures
Mohanlal V.	M/s Minilab Cinemas	M/s Green Capsicum Entertainment	M/s N.D. Vfxwalla	M/s N.D. Vfxwalla
Jisshu S.	M/s Red Water Pictures	M/s N.D. Vfxwalla	M/s Red Water Pictures	M/s Laxmi Entertainment

Thus we find that :

Mohanlal V. owned M/s Green Capsicum Entertainment which generated a profit of Rs 100 crores in 2021-22 is true

The profit generated by the company owned by Shahrukh K. in 2021-22 was Rs 70 crores is true
 The profit generated by the company owned by Jisshu S. in 2021-22 was Rs 60 crores is true

Hence, all of the above are true.

42. 70

Regarding profit amount, we can see that :

Owner of Company	CASE 1	CASE 2	CASE 3	CASE 4
	Profit in 2021-22 (in Rs crores)	Profit in 2021-22 (in Rs crores)	Profit in 2021-22 (in Rs crores)	Profit in 2021-22 (in Rs crores)
Abhishek B.	$(B+20) = 80$	$(B+20) = 80$	$(B+20) = 100$	$(B+20) = 100$
Shahrukh K.	$(E-20) = 70$	$(E-20) = 70$	$(E-20) = 70$	$(E-20) = 70$
Ajay D.	$(A-10) = 60$	$(A-10) = 90$	$(A-10) = 60$	$(A-10) = 90$
Mohanlal V.	$(C+20) = 100$	$(C+20) = 100$	$(C+20) = 80$	$(C+20) = 80$
Jisshu S.	$(D-10) = 90$	$(D-10) = 60$	$(D-10) = 90$	$(D-10) = 60$

Hence, the profit generated in 2021-22 by the company owned by Shahrukh K. was Rs 70 crores.

43. B

Regarding profit amount, we can see that :

Owner of Company	CASE 1	CASE 2	CASE 3	CASE 4
	Profit in 2021-22 (in Rs crores)	Profit in 2021-22 (in Rs crores)	Profit in 2021-22 (in Rs crores)	Profit in 2021-22 (in Rs crores)
Abhishek B.	$(B+20) = 80$	$(B+20) = 80$	$(B+20) = 100$	$(B+20) = 100$
Shahrukh K.	$(E-20) = 70$	$(E-20) = 70$	$(E-20) = 70$	$(E-20) = 70$
Ajay D.	$(A-10) = 60$	$(A-10) = 90$	$(A-10) = 60$	$(A-10) = 90$
Mohanlal V.	$(C+20) = 100$	$(C+20) = 100$	$(C+20) = 80$	$(C+20) = 80$
Jisshu S.	$(D-10) = 90$	$(D-10) = 60$	$(D-10) = 90$	$(D-10) = 60$

and, regarding ownership of company, we can see that :

Owner of Company	CASE 1	CASE 2	CASE 3	CASE 4
	Company owned	Company owned	Company owned	Company owned
Abhishek B.	M/s Laxmi Entertainment	M/s Laxmi Entertainment	M/s Minilab Cinemas	M/s Green Capsicum Entertainment
Shahrukh K.	M/s Green Capsicum Entertainment	M/s Minilab Cinemas	M/s Green Capsicum Entertainment	M/s Minilab Cinemas
Ajay D.	M/s N.D. Vfxwalla	M/s Red Water Pictures	M/s Laxmi Entertainment	M/s Red Water Pictures
Mohanlal V.	M/s Minilab Cinemas	M/s Green Capsicum Entertainment	M/s N.D. Vfxwalla	M/s N.D. Vfxwalla
Jisshu S.	M/s Red Water Pictures	M/s N.D. Vfxwalla	M/s Red Water Pictures	M/s Laxmi Entertainment

If Mohanlal V. owned the company having a profit of Rs 100 crores in 2021-22, it must be Case 1 or Case 2

In both Case 1 and Case 2, Abhishek B. owns M/s Laxmi Entertainment.

44. A

Regarding ownership of company, we can see that :

Owner of Company	CASE 1	CASE 2	CASE 3	CASE 4
	Company owned	Company owned	Company owned	Company owned
Abhishek B.	M/s Laxmi Entertainment	M/s Laxmi Entertainment	M/s Minilab Cinemas	M/s Green Capsicum Entertainment
Shahrukh K.	M/s Green Capsicum Entertainment	M/s Minilab Cinemas	M/s Green Capsicum Entertainment	M/s Minilab Cinemas
Ajay D.	M/s N.D. Vfxwalla	M/s Red Water Pictures	M/s Laxmi Entertainment	M/s Red Water Pictures
Mohanlal V.	M/s Minilab Cinemas	M/s Green Capsicum Entertainment	M/s N.D. Vfxwalla	M/s N.D. Vfxwalla
Jisshu S.	M/s Red Water Pictures	M/s N.D. Vfxwalla	M/s Red Water Pictures	M/s Laxmi Entertainment

Hence, out of the options given, Shahrukh K. owns M/s Green Capsicum Entertainment.

Section - Quantitative Aptitude

45. 4656

$$24 = 2^3 \times 3$$

$$72 = 2^3 \times 3^2$$

Highest powers of 24 in $200!$ = number of 3's in $200!$ = $[200/3] + [200/9] + [200/27] + [200/81] + [200/243]$ where $[x]$ is greatest integer less than or equal to x
 Highest powers of 24 in $200!$ = $66 + 22 + 7 + 2 + 0 = 97$

Highest powers of 72 in $200!$ = {number of 3's in $200!$ }/2
 number of 3's in $200!$ = $[200/3] + [200/9] + [200/27] + [200/81] + [200/243]$ where $[x]$ is greatest integer less than or equal to x
 number of 3's in $200!$ = 97
 Highest powers of 72 in $200!$ = $[97/2] = 48$

LCM $[48, 97] = 4656$

46. C

Number of quadrilaterals in a grid of $7 \times 7 = {}^8C_2 \times {}^8C_2 = 784$
 Number of squares in a grid of $7 \times 7 = 1^2 + 2^2 + 3^2 + \dots + 7^2 = 420$
 Probability = $420/784 = 105/196$

47. B

Let salaries of A, B and C are $3x$, $5x$ and $7x$.
 So, $7x - 5x = 3500$
 $\Rightarrow x = \text{Rs } 1750$
 Old salary of A = $3 \times 1750 = \text{Rs } 5250$
 New salary of A = $5x + 7x = 12x = \text{Rs } 21000$
 Percentage increase in salary of A = $(21000 - 5250) \times 100/5250 = 300\%$

48. 2

$$f(x) = |10 - x| + |x - 2| - |4 - x|$$

$f(x) = \begin{cases} x - 8; & x \geq 10 \\ 12 - x; & 4 \leq x < 10 \\ x + 4; & 2 \leq x < 4 \\ 8 - x; & x < 2 \end{cases}$
 Minimum value is obtained at $x = 10$, i. e. 2

49. C

$12M = 16B$
 $M/B = 4/3$
 If 1 man does 4 units work in 1 day then 1 boy does 3 units work in 1 day.
 Total work = $12 \times 4 \times 5 = 240$ units
 Work done in every 2 days = $4 + 2 \times 3 = 10$ units
 So, work will be completed in $2 \times 240/10 = 48$ days

50. 21

$5 - |2N/3| \leq 2$
 $\Rightarrow -|2N/3| \leq -3$
 $\Rightarrow |2N/3| \geq 3$
 $\Rightarrow 2N/3 \geq 3$ (since N is positive)
 $\Rightarrow 2N \geq 9$
 $\Rightarrow N \geq 9/2$
 N will be 5, 6, 7, ..., 25 (total 21 values are possible)

51. 25

$$7\sin x - 24\cos x - r \leq 0$$

$$\Rightarrow \frac{7}{25} \sin x - \frac{24}{25} \cos x \leq \frac{r}{25}$$

$$7/25 = \cos A$$

$$24/25 = \sin A$$

$$\text{So, } \cos A \sin x - \sin A \cos x \leq \frac{r}{25}$$

$$\Rightarrow \sin(A - x) \leq \frac{r}{25}$$

Since maximum value of $\sin(\text{angle})$ is = 1

$$\text{So, } r/25 = 1$$

$$\Rightarrow r = 25$$

52. B

$$\text{Average speed during first two stretches} = \frac{2 \times 20 \times 30}{20 + 30} = 24 \text{ Kmph}$$

$$\text{Average speed during first two stretches} = \frac{2 \times 30 \times 40}{30 + 40} = 34.28 \text{ Kmph}$$

$$\text{Difference} = 34.28 - 24 = 10.28 \text{ kmph}$$

53. D

$$\text{Rem}(76/7) = -1$$

$$(-1)^{65} = -1$$

$$\text{Rem}((-1)/7) = -1 \text{ or } 6$$

where $\text{Rem}(x/y)$ represents the value of remainder when x is divided by y .

$$\text{Rem}(65/7) = 2$$

$$2^{76} = (2^3)^{25} \times 2$$

$$\text{Rem}((2^3)/7) = 1$$

$$\text{Rem}(1^{25}/7) = 1$$

$$\text{Rem}[(2 \times (2^3)^{25})/7] = 2 \times 1 = 2;$$

Total remainder = $6 + 2 = 8$ when divided by 7 again remainder is 1.

54. 3

Using formula

$$n(A \cup B) = n(A) + n(B) - n(A \cap B)$$

$$\text{Here, } n(A) = 74; n(B) = 67; n(A \cap B) = 18$$

$$\text{So, } n(A) = 74 + 67 - 18 = 123$$

55. 0

Sum of last 20 terms must be 0.

$$\text{So, } 20(a_{21} + a_{40})/2 = 0$$

$$\text{So, } (a_{21} + a_{40})/2 = 0$$

$$\text{AM of last 20 terms} = 0$$

56. D

Let the heights of cones are 20 cm and 10 cm, then their diameters are 10 and 5 cm respectively.

$$\frac{\text{Volume of cone 1}}{\text{Volume of cone 2}} = \frac{R^2}{r^2} \times \frac{H}{h}; R \text{ is radius of cone 1, } r \text{ is radius of cone 2, } H \text{ is height of cone 1, } h \text{ is height of cone 2}$$

$$\frac{\text{Volume of cone 1}}{\text{Volume of cone 2}} = \frac{5^2}{2.5^2} \times \frac{2}{1} = \frac{8}{1}$$

57. B

$\angle BAD = 90^\circ$ (Angle from radius to tangent at point of contact)
 $\angle B = 30^\circ$ (since $\angle ACE$ is the external angle of the triangle ABC)
 $\angle ODB = \angle B = 30^\circ$ (angles opposite to equal sides are equal)
 $\angle ODC = 180 - \angle B = 180 - 30 = 150^\circ$

58. 125

Let after time T, they will meet. Distance covered by Mukesh is 50 m less than that by Anshuman.

$$S_A / S_M = D_A / D_M$$

$$5/3 = D_A / D_M$$

If $D_A = 5x$, then $D_M = 3x$.

$$\text{So, } 5x - 3x = 50$$

Therefore $x = 25$

$$\text{Distance from starting point} = \text{Distance by Anshuman} = 25 \times 5 = 125 \text{ m.}$$

59. B

For first radio, profit is 10%. So,

$$\frac{SP}{CP} = \frac{11}{10}$$

$\Rightarrow$

$$\frac{1100}{CP} = \frac{11}{10}; CP = 1000$$

Similarly for 2nd radio

$$\frac{SP}{CP} = \frac{4}{5} \Rightarrow CP = 1375$$

Total selling price should be equal to total cost price to get no loss i.e. Rs (1000 + 1375) = Rs 2375

$$\text{Selling price per radio} = \text{Rs } 2375/2 = \text{Rs } 1187.5$$

60. B

$$\begin{aligned} \text{First calculate CI- SI for 3 years at 10\% per annum} &= P(R/100)^2 \\ &= 2400 (10/100)^2 \\ &= \text{Rs } 24 \end{aligned}$$

Additional CI at (11.25- 10) % for 2 years = 1.25 % compounded for 2 yrs on Rs 2400 = Rs 60.375

$$\text{Net Difference between CI and SI for 3 years} = \text{Rs } (24 + 60.375) = \text{Rs } 84.4$$

61. B

$$\text{For } x = 0; g(1) = 12/g(0)$$

Similarly $g(2) = 12/g(1)$, which gives $g(2) = g(0)$

$g(3) = g(1)$ and so on.

$$\text{Therefore, } g(11) = g(9) = g(7) = \dots = g(1) = 12/g(0)$$

$$\Rightarrow g(11) g(0) = 12.$$

62. 240

Let digit '1' is repeated; so, set of digits will be 1, 1, 9, 5, 4

$$\text{Number of numbers formed} = 5!/2 = 60$$

Similarly for other digits; number of numbers formed = 60 for each case.

Total numbers formed = $4 \times 60 = 240$

63. 16

$$|x^2 - 4x| > 6$$

$$\Rightarrow x^2 - 4x > 6 \text{ or } x^2 - 4x < -4$$

Case 1:

$$\Rightarrow x^2 - 4x > 6$$

$$\Rightarrow x^2 - 4x - 6 > 0$$

$$\Rightarrow x > [(2 \pm \sqrt{10})] \text{ which gives two solutions } x > 5 \text{ or } x < -1 \text{ (for } x \text{ to be integer).}$$

Case 2:

$$\Rightarrow x^2 - 4x < -6$$

$$\Rightarrow x^2 - 4x + 6 < 0 \text{ since Discriminant is less than 0, we will get no solutions from here.}$$

For equation 1 solution set is $(-\infty, -1) \cup (5, \infty)$

For equation 2

$$x^2 \leq 143$$

$$x < 12 \text{ or } x > -12$$

solution set is $(-12, 12)$

Common solutions are $(-12, -1) \cup (5, 12)$

Number of integer solutions are 16.

64. D

Third child gets half of the remaining plus 2 chocolates and the person left with no chocolates with him. So, clearly third child gets 4 chocolates.

Second child gets half of the remaining plus 2 chocolates and the person left with 4 chocolates with him. So, clearly second child gets 6 chocolates.

First child gets half of the remaining plus 2 chocolates and the person left with 10 chocolates with him. So, clearly first child gets $(2 \times 6 + 2 = 14)$ chocolates.

So, initially the person must have 28 chocolates with him.

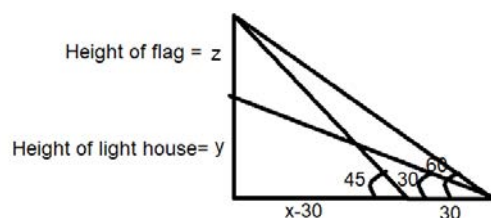
65. A

For first 1.5 yrs, he paid 15% as interest. So, in \$2300, Principal = $(2300/115) \times 100 = \$2000$ and \$300 as interest.

In next 2.5 years, he will pay 25% as interest on \$3000. So, interest in 2.5 years will be \$750.

Total interest paid = $300 + 750 = 1050$

66. A



$$\tan 30 = y/x \Rightarrow y = x \tan 30 \text{ ----- (1)}$$

$$\tan 45 = (y+z)/x \Rightarrow x = y + z \text{ ----- (2)}$$

$$\tan 60 = (y + z)/(x - 30) \Rightarrow y + z = (x - 30) \tan 60 \text{ ----- (3)}$$

From 2 and 3

$$x = (x - 30) \tan 60$$

$$\Rightarrow x = \frac{30\sqrt{3}}{\sqrt{3}-1}$$

$$\text{So, } y = \frac{30\sqrt{3}}{(\sqrt{3}-1)} * \frac{1}{\sqrt{3}} = \frac{30}{(\sqrt{3}-1)} \text{ m}$$

$$\text{Also, } z = x - y$$

$$\Rightarrow z = \frac{30\sqrt{3}}{(\sqrt{3}-1)} - \frac{30}{(\sqrt{3}-1)} = 30 \text{ m}$$

CAREERS360

MOCK TEST - 19

Section - 1 - Verbal Ability & Reading Comprehension

Directions for Questions 1 to 4: Read the passage given below and answer the questions that follow.

Passage 1

The Venus Project assumes there can be an abundance of everything. That is simply not true. Technology can make many things abundant and the film discusses energy in great detail, but that is hardly everything. Human demand is limitless, it's simply not possible for 6 billion people to each live in a 5000 square foot mansion with attached private beach on the Florida coast. We live in a finite world and I am simply not convinced that even the base assumption proselytized by this film is realistic. In fact, it appears to be terribly flawed and reminiscent of discredited communist rhetoric.

The creator of this film doesn't seem to understand the difference between money and currency. Money is not the paper bills we use as a medium to exchange goods and services, money is a store of purchasing power that is represented by currency. Eliminating currency will not eliminate crime and corruption because the purpose of greed in a free market capitalist system was never to get more money but to get the stuff money can buy. As long as there is stuff there will always be ways to acquire it, and thus, money. In the absence of currency perhaps power and influence become the new money, isn't that much worse? If the intent is to achieve a more equitable distribution of stuff, and you believe that is desirable, it's ironically much easier for that to be accomplished with currency. In reality when resources become abundant, money does not lose value, it gains value as it allows you to consume much more. Everybody who has money would LOVE to see an abundance of resources for all humanity. The problem is not the money, it's the debt. If people could afford everything they wanted they would stop borrowing to consume and put the banks out of business.

The reason capitalism discourages the selling of products until abundance is not because of a hatred of humanity, it's because the capital required to fund those businesses could be better used to increase the supply of something else that is more in need of investment. How do we know that? By looking at prices! Take away the price system and you will have no way to know what the people want. You would need yet another corruptible "democratic" election process or a dictator to make decisions on your behalf. Here again the problem is not capitalism or profit, it's debt. When money is cheap people no longer compete for scarce savings to maximize the efficiency of the money supply, they just build whatever the hell they want without regard for sustainability through profit because debt by inflation is always available from the banks. That creates inequality and poverty. In the new proposed system, if resources were cheap or freely available to everyone just as currency is today, competing projects would also have no incentive to maximize the efficient use of those resources. Everyone with influence (money) would support whichever pet projects provide maximum benefit to themselves. What's the difference? When currency runs out, more is printed. When money runs out, prices adjust. When resources run out, what then?

Q1. The author of the passage:

- A. is in agreement with major tenets of the Venus Project but disagrees with some specific aspects.
- B. is unsure of the viability of the Venus Project, though he understands the romantic notions operating behind it.
- C. is against the basic principles, main ideas and core team of the Venus project and he highlights the major shortcomings of the same.

- D. is in complete disagreement with the thoughts put forward by the Venus project and completely debunks what it purposes.

Q2. According to the author of the passage, shifting to a system of abundant resources can:

I. lead to a chaotic situation where it might not be possible to ascertain the wants of people.

II. lead to dictators or corrupt democracies coming to power and making decisions.

III. lead to spending of resources on projects which might be unsustainable.

A. I & II	B. II & III
C. I & III	D. All of the above

Q3. According to the author of the passage:

- A. The institutions of money and currency are necessary evils that need to be endured in order to save the world from collapsing into complete chaos.
- B. The institutions of money and currency, cornerstones of a capitalist economy, are too obstinate to be changed.
- C. The institutions of money and currency demand prudent management and therefore, require constant evaluation.
- D. The elimination of money and currency is not feasible as these drive the world and help sustain balance in human wants and resource utilization.

Q4. It can be inferred from the passage that the elimination of currency:

- A. would benefit all and lead to equitable distribution of resources
- B. will eliminate crime and corruption because it targets greed
- C. can lead to eventual exhaustion of resources
- D. can lead to more money being printed

Directions for Questions 5 to 7: Read the passage given below and answer the questions that follow.

Passage 2

Now that President Obama has finally succeeded in bringing the Israelis and the Palestinians back to the negotiating table, the commentariat is already dismissing his chances of reaching a peace agreement. But there are four factors that distinguish the direct talks that will get under way on Sept. 2 in Washington from previous attempts — factors that offer some reason for optimism.

First, violence is down considerably in the region. Throughout the 1990s, Israel was plagued by terrorist attacks, which undermined its leaders' ability to justify tangible concessions. Israelis came to believe that the Palestinian leader Yasir Arafat was playing a double game, professing peace in the negotiations while allowing terrorists to operate in territory he was supposed to control. Today, the Palestinian Authority is policing its West Bank territory to prevent violent attacks on Israelis and to prove its reliability as a negotiating partner. Hamas — mainly out of fear of an Israeli intervention that might remove it from power — is doing the same in Gaza. Second, settlement activity has slowed significantly. As a result of Israel's 10-month settlement moratorium, no new housing starts in the West Bank were reported by the Israeli Central Bureau of Statistics in the first quarter of this year. What's more, there have been hardly any new housing projects in East Jerusalem since the brouhaha in March, when Vice President Joe Biden, during a visit to Israel, condemned the announcement of 1,600 additional residential units. The demolition of Palestinian houses there is also down compared with recent years.

Third, the public on both sides supports a two-state solution. So do a majority of Arabs. The simple truth is that most people in the Middle East are exhausted by this conflict, and if Mr. Netanyahu and Mr. Abbas can reach a viable agreement, the public on all sides will likely support it by a large majority. Fourth, there isn't a lot to negotiate. In the 17 years since the Oslo accords were signed, detailed final status negotiations have dealt exhaustively with all the critical issues. If an independent Palestinian state is to be established, the zone of agreement is clear and the necessary trade-offs are already known.

In short, the negotiating environment is better suited to peacemaking today than it has been at any point in the last decade. The prospects for peace depend now on the willpower of the leaders.

Q5. The most likely source for the passage is:

- a. a newspaper editorial column
- b. a research paper
- c. an academic essay
- d. a non-fiction book

Q6. A likely meaning for the word 'commentariat' is:

- A. A group of protestors who are against the peace process
- B. The commentators and pundits of the news media
- C. An international group of political peaceniks
- D. None of the above

Q7. Which, out of the following, is not a possible reason for the success of the peace process?

- I. A temporary settlement suspension has led to a slowdown of the settlement activity in the region.
 - II. Reduced levels of violence in the region
 - III. The sincere and positive efforts of President Obama
 - IV. General acceptance of the two-state solution.
- A. IV
 - B. II
 - C. I
 - D. III

Directions for Questions 8 to 10: Read the passage given below and answer the questions that follow.

Passage 3

As every public figure knows, there are certain words that cannot be uttered without causing shock or offense. These words, commonly known as "slurs," target groups on the basis of race, nationality, religion, gender, sexual orientation, immigration status and sundry other demographics. Many of us were reminded of the impact of such speech in August, when the radio host Dr. Laura Schlessinger repeatedly uttered a racial slur on a broadcast of her show. A public outcry followed, and ultimately led to her resignation. Many such incidents of abuse and offense, often with much more serious consequences, seem to appear in the news by the day.

We may at times convince ourselves, as Dr. Laura may have, that there are inoffensive ways to use slurs. But a closer look at the matter shows us that those ways are very rare. Slurs are in fact uniquely and

stubbornly resistant to attempts to neutralize their power to hurt or offend. To be safe, we may ask ourselves how a targeted member, perhaps overhearing a slur, would react to it. Doing so, we will almost always find that what may have seemed suitable most definitely is not. But why are slurs so offensive? And why are some more offensive than others? Even different slurs for the same group vary in intensity of contempt. How can words fluctuate both in their status as slurs and in their power to offend? Members of targeted groups themselves are not always offended by slurs – consider the uses of appropriated or reclaimed slurs among African-Americans and gay people.

The consensus answer among philosophers to the first question is that slurs, as a matter of convention, signal negative attitudes towards targeted groups. Those who pursue this answer are committed to the view that slurs carry offensive content or meaning; they disagree only over the mechanisms of implementation. An alternative proposal is that slurs are prohibited words not on account of any particular content they get across, but rather because of relevant edicts surrounding their prohibition. This latter proposal itself raises a few pertinent questions: How do words become prohibited? What's the relationship between prohibition and a word's power to offend? And why is it sometimes appropriate to flout such prohibitions?

Q8. According to the author of the passage:

- A. the use of slurs can be tempered to a certain extent.
- B. there are ways through which slurs can lose their viciousness.
- C. it is tough to conceal the offense inherently carried by slurs.
- D. both (a) and (b)

Q9. Which, out of the following, is not an attitude adopted by the author of the passage?

- A. Examining
- B. Questioning
- C. Ingenuous
- D. Explanatory

Q10. The two approaches quoted by the author so as to why are slurs so offensive are:

- A. adversative in their type towards one another
- B. corresponding in their scrutiny of the situation
- C. select to emphasize on the similar facets of the given condition
- D. choose to approach the answer in differing ways.

Directions for Questions 11 to 14: Read the passage given below and answer the questions that follow.

Passage 4

A Bloomberg National Poll says that more than 7 in 10 Americans think that Congress can find major savings in the federal budget by slashing foreign aid. It's a new poll, but this is old news. Americans have always vastly overestimated how much we spend on foreign aid. A 2010 survey asked Americans what percentage of the federal budget went to foreign aid. The median response was 25 percent. Polls going back at least a decade show similar responses. In fact, foreign aid accounts for less than 1 percent of the federal budget

If Americans are asked whether they want to help bring health, water, education and other crucial resources to poor people around the world, they say yes, by overwhelming majorities. But Americans are skeptical that foreign aid accomplishes these things. The truth is, much of foreign aid works. Hundreds of millions of people around the world are better off because wealthy countries pay to vaccinate children, dig wells, build roads and buy school books. But some foreign aid is wasted, stolen or spent on projects that don't really help people. The facts about foreign aid are crucial to drive home to the American public today, as the political debate over the budget has led many Republicans to single out foreign aid as a target for cuts. (Frank James, who writes a blog at NPR, suggests a novel way to spread the word, using Charlie Sheen's Twitter account.)

But let's talk about on-the-ground practical solutions. The Center for Global Development, a Washington think tank led by Nancy Birdsall, has an intriguing idea that might help. The idea is called Cash on Delivery: instead of rich countries paying for all the little pieces that go into a poor country's program, they pay only when something good comes out. Aid would get transferred when there are measurable, provable results. Paying for results is nothing new in the world of business, of course. But that's not the way foreign aid has worked. Let's say that the United States and Malawi decided to help Malawi increase the number of children who finish primary school. Here's the current strategy: Aid officials would work with Malawi's government to decide on whether to build more schools, lower school fees or hire more teachers. Washington would put up the money up front. Monitoring would be very close; Malawi would have to do a lot of paperwork to get the money and constantly show it is being spent well along the way. As for the question of whether the program succeeds, we might find out later how many teachers were hired or schools built — or we might not. But we would not attempt to measure whether our aid actually resulted in more children finishing school — in fact, it would likely be impossible to prove such a link. And if the money was squandered or stolen, the only possible penalty would be a cutoff of future aid.

How would this project work with Cash on Delivery? The United States and Malawi would draw up a five-year contract that specifies a set of payments and what Malawi must do to get them. These would be made public. The contract would set a baseline: perhaps the number of children expected to finish school next year. The year after that, and every year for five years, Malawi would receive \$20 for every child who finishes school up to the baseline number — and, as an incentive to do even better, \$200 for every child over that number. The results would have to be accurately measured by Malawi — since school records are often spotty, Malawi would administer a standardized test and count the number of students who took it, and make those results public by district or even school. Those numbers would be verified by independent auditors. There could be steep penalties for lying. Once the contract is signed, Washington would then step back and keep its hands off. No monitoring would happen until the audit. Malawi could do whatever it thought would use the money in the best way. If it squandered its efforts in waste or corruption and produced fewer graduates, it would get less money. By definition, then, donor money would not be wasted.

In certain situations, Cash on Delivery might turn out to be a useful alternative to traditional aid. And its advantages may go beyond a more effective use of dollars: it might increase political support for foreign aid. Plus, paying for results is attractive. People don't have to worry that the money has gone into some government official's pocket, as taxpayers in wealthy countries won't be sending money unless there are results. "This focuses on a few simple outcomes that people can understand," says Birdsall. "You can say to the taxpayer: mortality fell by this amount." It could also help to create more accountability in poor countries. In most aid-dependent countries, citizens have no idea how much governments are getting in aid and how they spend it. Cash on Delivery sets clear goals and requires that all information be public.

Q11. An apt title for the passage above would be:

- A. Foreign Aid: How the bubble burst?

- B. Foreign Aid: In need of urgent repair
- C. How to Protect Foreign Aid? Improve It
- D. Foreign Aid: How to aid and abet it?

Q12. In the view of the author, foreign aid:

- a. is an instrument of extravagance and nepotism
- b. is an instrument of possible improvement
- c. is an instrument of an era gone by
- d. is an instrument of social obfuscation

Q13. With the help of the example of Malawi, the author of the passage wishes to highlight the point:

- a. how teamwork ensures that the system delivers on its promises.
- b. how deliverables need to be incentivised in order to avoid system failure
- c. how tasks need to be compartmentalised for efficient and timely completion
- d. how tangible targets improve efficiency for a program

Q14. According to the information given in the passage, Frank James is most likely:

- A. a movie or television star
- B. a democrat
- C. a republican
- D. a foreign aid enthusiast

Directions for Questions 15 to 17: Read the passage given below and answer the questions that follow.

Passage 5

In what was once one of Asia's most exciting emerging markets, Nguyen Van Nguyen sees only gloom ahead. Since 2008, his business in southern Vietnam's economic capital has suffered through two volatile bouts of inflation, peaking in August 2011 at 23 percent -- at the time, Asia's highest inflation rate. Now he's only accepting small overseas orders for Binh Minh, his once-thriving bamboo-screen factory in Ho Chi Minh City, to hedge against price fluctuations. He says customers in Australia, Europe, and the United States have decreased their orders following weakening global demand. Production costs across the industry have risen approximately 30 percent while customers are only willing to pay about 10 percent more, says Dang Quoc Hung, vice president of Association for Handicraft and Wood Industry in Ho Chi Minh City. Nguyen's hiring fewer workers for the summer high season and cutting their pay to about \$120 a month, down from \$200. "We can only work at a slow speed, and things are hard now," he lamented in late June.

The Communist Party of Vietnam would prefer that investors see cases like Nguyen's as simply one-off local effects of the global economic slowdown, not of a systemic weakening. In the two decades since the Communist Party instituted economic reforms in 1986, annual GDP growth averaged a remarkable 7.1 percent. Indeed, four years ago, Vietnam seemed like the next Asian success story. Before joining the World Trade Organization in 2007, the country's leaders pledged to do even better, speeding up a vast restructuring and privatization of their wasteful state-owned enterprises (SOEs), a process they euphemistically called "equitization." The International Monetary Fund predicted in 2007 that cheaper imports as a result of WTO accession could contain inflation, and that structural reforms could level the playing field between local and foreign competitors. But on Hillary Clinton's visit to the capitol Hanoi earlier this week, Prime Minister Nguyen Tan Dung was forced onto the defensive, promising favorable

conditions for foreign investors as he tries to keep the "Vietnam miracle" alive. Over the past decade, rising labor costs in China meant that its days as the factory of the world were numbered. Stable Vietnam, with its young, cheap workforce and serviceable infrastructure, seemed like the logical next choice. Foreign investment poured in throughout the mid-2000s, with net inflows more than tripling to \$9.6 billion in 2008 from two years earlier. Vietnam was the "next Asian tiger in the making," said Goldman Sachs. "Foreign investors didn't care about governance or policy. They were driven by low labor costs," says Edmund Malesky, a political economist at the University of California at San Diego who focuses on Vietnam.

Ignoring the politics, it turned out, was a costly oversight. Few business people predicted the Vietnam of 2012: a country struggling with a weak currency, inflation, red tape, and cronyism that has led to billions of dollars of waste -- and home to a government that makes decisions like building oddly placed ports or roads that serve little economic value. Things started to turn south when Vietnam embarked on a \$100 billion expansion in the domestic credit stock from 2007 to 2010, a program accelerated by the 2008 economic crisis. Instead of being directed towards private businesses, the government channeled the funds to politically connected SOEs, who used them to expand fervently into areas outside of their expertise, creating an increased demand for resources that fed inflation. Flush with cash, they were able to drive out smaller, more efficient competitors. The massive state-run shipbuilder Vinashin, which employed some 60,000 workers and oversaw 28 shipyards, diversified into almost 300 units, including motorbike manufacturing and hotels, after it raised an additional \$1 billion from international investors in 2007. Officials hoped it would drive growth like South Korea's semi-public conglomerates. But in 2010, Vinashin was found to be falsifying its financial reports, and it nearly collapsed under \$4.4 billion worth of debt owed to both local and international creditors, a number equivalent to almost 5 percent of GDP. It eventually defaulted on a \$400 million loan arranged by Credit Suisse. Prime Minister Nguyen Tan Dung - who backed Vinashin as his pet project central to the state-run economy -- was forced to apologize before the National Assembly during a painful self-criticism session. Dung's rivals, seeking to protect their own corporate fiefdoms and political offices, had found their scapegoat: Authorities sentenced eight executives last March. But instead of speeding up its much promised and grindingly slow process of privatization initiated in the 1990s, authorities swept the debacle under the rug.

Q15. A suitable title for the passage is:

- a. The Vietnamese economy: Needs to find a purpose for itself
- b. The Vietnamese model: Learn how to paper over the cracks?
- c. The End of the Vietnamese Miracle: So much for the next Asian success story.
- d. The Vietnamese Suffering: How decisions of few hurt many?

Q16. The line '*a process they euphemistically called "equitization"*' highlights:

- A. an ironic situation showcasing the helplessness of the government
- B. a sarcastic taunt that showcases the attempt of the government to conceal something
- C. a mocking attempt that showcases the foolhardiness of the government
- D. a critical analysis of the government policies that show systematic failure

Q17. It can be derived from the passage that:

- a. The problem of inflation cannot be handled in Vietnam.
- b. Vietnam is at the point of total financial ruin.
- c. The Communist Party of Vietnam refuses to reform itself.
- d. The Vietnamese economy is under extreme strain caused by systematic failures.

Directions for questions 18: In the following question, rearrange the five sentences in order to form a meaningful paragraph.

TITA

Q18.

1. The vast collections stood as a testament to man's genius, nature's diversity, and the acquisitional might of the British Empire.
2. At the time, most similar collections were privately held and required a letter of introduction for admission. The British Museum, on the other hand, welcomed "studious and curious Persons" of all ages and social classes.
3. The British Museum was founded in 1753 to house the collection of curiosities amassed by naturalist Sir Hans Sloane, some 71,000 artworks, specimens, and antiquities.
4. The first public museums were created to embody nationalist ambitions and the enlightenment values of reason, progress, and universal rights.

Directions for questions 22: In the following question, rearrange the five sentences in order to form a meaningful paragraph.

TITA

Q19.

1. Therefore, capitalism must be upgraded in a way that is compatible with societal and cultural values and with the fairness principle to provide equal opportunities.
2. The survival of billions of people will depend on our ability to drastically increase innovation rates and to generate more pluralistic innovations.
3. As today's form of capitalism is not compatible with our social and cultural value system, sooner or later it will be damaging to the foundations of societies and the values they are built on.
4. Since a change of the world's carrying capacity by 1% effectively decides over the lives and deaths of about 80 million people, it is unacceptable that innovations are obstructed or restricted to those that are compatible with current business models.

Directions for questions 20: In the following question, rearrange the five sentences in order to form a meaningful paragraph.

TITA

Q20.

1. The main problem has been pointed out as the hostility between the two sides because of which it has not been possible to bridge the gap between the sides due to which no side is talking to the other.
2. A democratic country thrives on the constructive relationship between the government and the opposition parties in the parliament because without cooperation from each other it is not possible to run the show.
3. This will affect the functioning of the parliament and due to that legislation will be stopped though it is very necessary in public interest that any such thing should be prevented.
4. India is experiencing one such moment of truth in the present session of the parliament in which it has not been possible to function normally during even one session till date.

Directions for the Question: Identify the apt summary for the given paragraph. Enter the option number you deem as the correct answer.

Q21. Just as a novel inspires a film, an anime series is usually based on a manga-the comic book version of an anime. And just as a person may or may not read the novel that inspired a film, fans of anime may or may not read the manga upon which the animation is based. Shojo Beat Senior Editor Megan Bates offers a 'tasteful' analogy: "Manga and anime are kind of like peanut butter and jelly: Some people prefer just peanut butter on their bread, others indulge in jelly sandwiches, and the vast majority revels in the sweet, nutty combination-but among fans there can be no argument that, together or apart, the individual components are simply delightful. And you really can't think of one without the other coming to mind."

- A. Although there are a lot of people who enjoy watching anime, not all of them will read the manga that the anime is based on.
- B. Anime and manga have a strong relationship, with the former frequently serving as a source of inspiration for the latter.
- C. Anime and manga have a strong connection, with the former drawing inspiration from the latter on a regular basis.
- D. Manga are extremely well-liked in Japan and have even served as motivation for a number of animes.

Directions for the Question: Identify the apt summary for the given paragraph. Enter the option number you deem as the correct answer.

Q22. Although Amīr Khusrau included much autobiographical information in his writings, the details of his origins are not clear. His father was Saifuddīn Shamsī, who is said to have migrated from Central Asia, and was married to the daughter of Imād al-Mulk, an Indian Muslim. Though the first and second-generation Turkish immigrants were generally an elite group who looked down on recently converted Indian Muslims, it appears that intermarriage did take place between the two communities. It is said that Khusrau was proud of both sides of his lineage and his writings symbolise a synthesis of the two different cultures. Thus, he appropriately called himself an "Indian Turk" and; in India, the designation 'Turk' came to be synonymous with 'Muslim'.

- A. Amir Khusrau was a Turk who cherished Indian culture and referred to himself as an Indian Turk due to his affinity for Indian customs.
- B. Amir Khusrau was a writer who wrote extensively about the cultures of India and Turkey.
- C. The practice of referring to Turks as Muslims originated with Amir Khusrau and spread throughout India.
- D. The fact that Amir Khusrau's ancestors were both Indians and Turks is represented in his writings as well as in his family tree.

Directions for the Question: Identify the apt summary for the given paragraph. Enter the option number you deem as the correct answer.

Directions for the Question: The question below has a paragraph given with one sentence missing in at the end. From among the answer choices given, select the sentence that can fill the blank to form a coherent paragraph.

Q23. On June 6, 2017, some farmers were killed in police firing in Mandsaur, Madhya Pradesh, during an agitation for better crop prices. There have been agitations across the country since then, including in Tamil Nadu, Punjab, Haryana, Maharashtra (where thousands of farmers walked nearly 200 km to the State capital in March). The current stir also derives from lack of tangible action on assurances made earlier and imperceptible movement on the Centre's grand promises such as doubling farm incomes and raising MSPs. That the general elections are just a year away adds a political subtext to the protest. Rural distress has dented the BJP's electoral performance in recent months. Too much of the structural

reform agenda to free agricultural markets from the grip of government rules and intermediaries remains pending. There has been dithering even on simple things like strengthening the food processing sector. (_____)

- a. Thus we are closer to drawing a conclusion that the government's methods are always aimed at favouring the rich upper category by building airports everywhere and by introducing digital payment schemes by discarding the minimal survival requirements of the lower category of people(based on income) who are mostly farmers.(Note that this occupation is the largest one in the country)
- b. Take one instance -100% FDI was allowed in the food retail business in 2016, but little money has come in as retailers want permission to stock a few non-food items like soaps and shampoos for customers, which was earlier promised.
- c. The neglected farmers are finding it very difficult to survive in a country like this which once boasted of its agro-exports.
- d. A sudden and stagnant plan must be brought in by the government to administer the existing problem of the nation in order to set their lives in the correct order.

Directions for the Question: The question below has a paragraph given with one sentence missing in at the end. From among the answer choices given, select the sentence that can fill the blank to form a coherent paragraph.

Q24. Chatty seatmates. Grimy hotel rooms. Unnecessary fees. Sound familiar? You're not alone. Last month, Expedia.com released its 2018 Airplane and Hotel Etiquette Study, and the findings are chock-full of all-too-relatable grievances like these. The annual survey includes insights from more than 18,000 people, covering everything from in-flight hanky panky to smelly bare feet. These travellers know what can go wrong because they've lived it...likely more than a couple of times.
(_____)

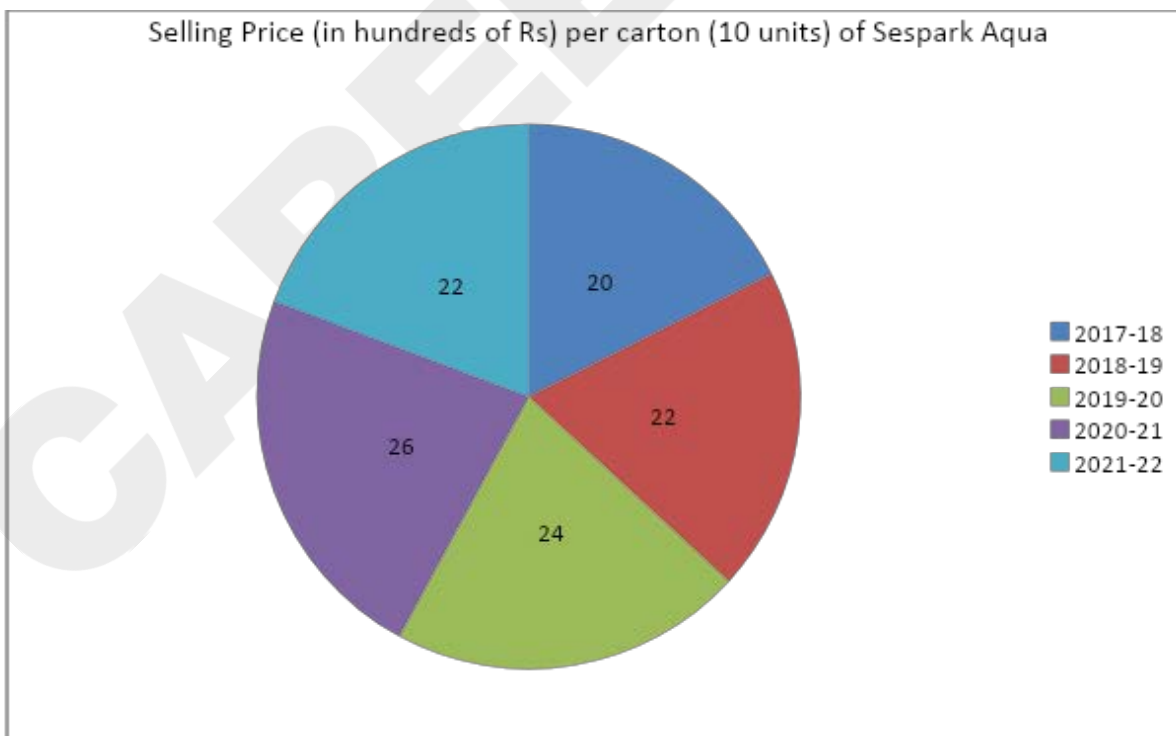
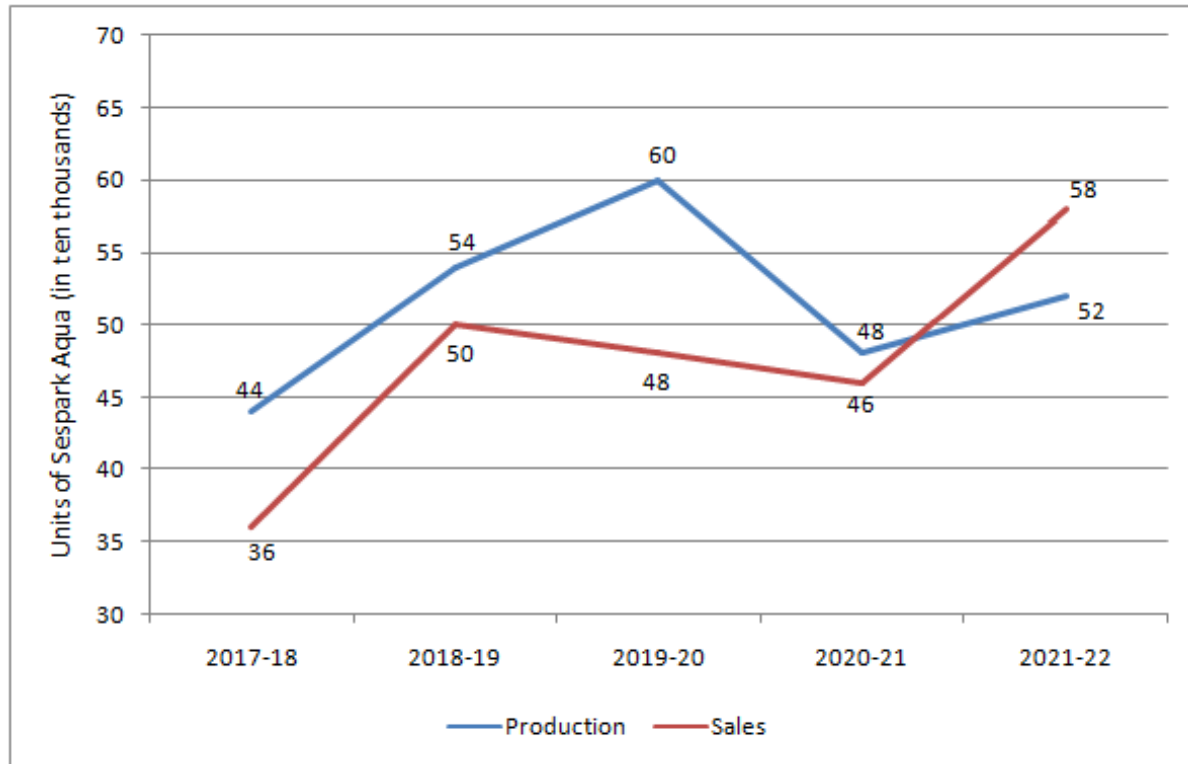
- a. Well even though the figures do not matter, we need to look into the problem that we can face while we plan to get away from our apartments.
- b. Thus the vacations are no longer fun because of the unwelcome-incumbencies attributed to travelling these days.
- c. According to Expedia's findings, the average respondent took five flights and spent an average of 14 nights in a hotel last year.
- d. The determination of the actual condition varies from one person to another person as different passengers will have different lifestyles.

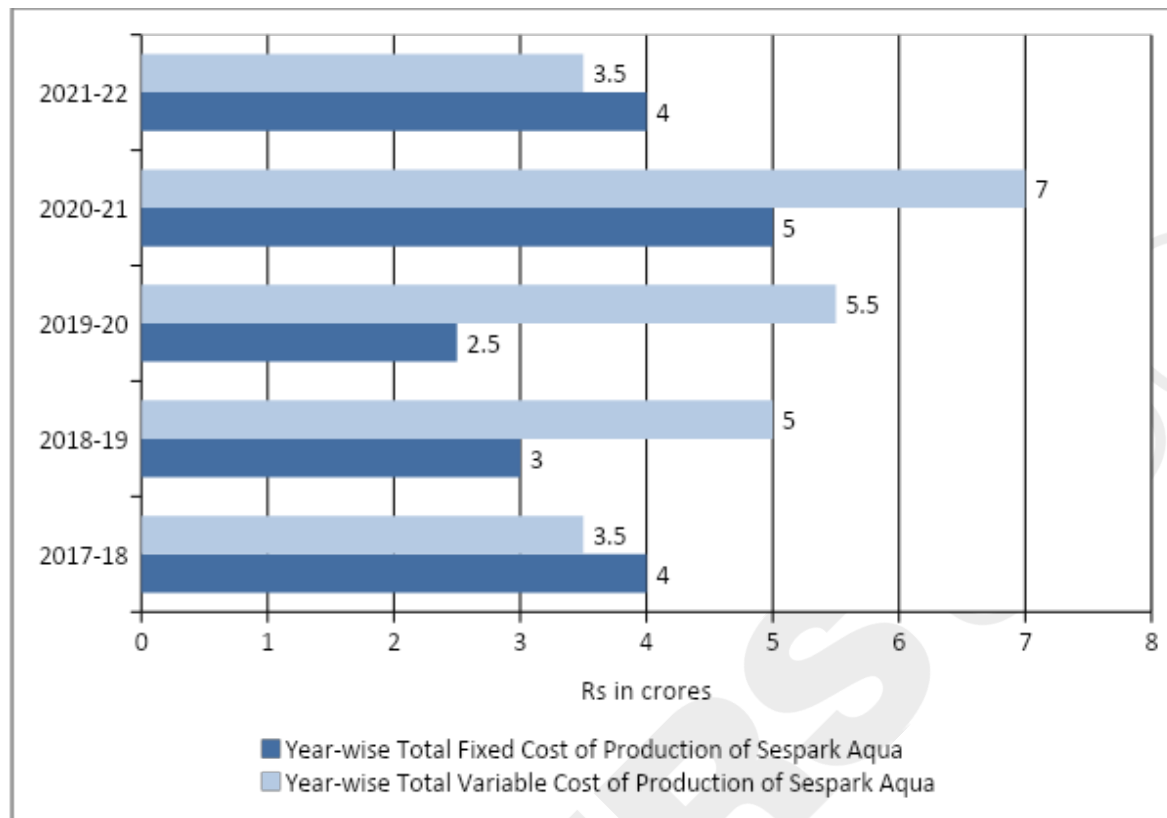
Section - 2 - Data Interpretation and Logical Reasoning

Directions for questions from 25 to 30 :

M/s Sespi Pvt Ltd, headquartered at Kolkata, started the business of bottling and selling Sparkling Water under the brand name of 'Sespark Aqua' from the beginning of 2017-18 with liquid assets worth Rs 40 crores.

The graphs given below give various details of the operations of M/s Sespi Pvt Ltd for the five years from 2017-18 to 2021-22, at the end of every year :





The Total cost of Production in a year = The Total Fixed Cost of Production in the year + The Total Variable Cost of Production in that year

Total Profit in a year = Total Sales Revenue in the year – Total cost of Production in the year

Liquid Assets at the end of a year = Liquid Assets at the beginning of the year + Total Profit in the year.

Q 25 At the end of which year was the percentage increase in liquid assets over the previous year the highest ?

- A) 2018-19
- B) 2019-20
- C) 2020-21
- D) 2021-22

Q 26 (TITA)

Which of the following options could be the correct value of liquid assets (in Rs crores, rounded to a single decimal place) with M/s Sespi Pvt Ltd at the end of 2021-22 ?

Q 27 In which year was the total cost per carton of Sespark Aqua water the highest ?

- A) 2021-22
- B) 2020-21
- C) 2019-20
- D) 2018-19

Q 28 At the end of which year was the cumulative unsold stock of Sespark Aqua the highest in M/s Sespi Pvt Ltd ?

- A) V 2020-21
- B) 2019-20
- C) 2018-19
- D) 2017-18

Q 29 (TITA)

In how many of the given years M/s Sespi Pvt Ltd could not make a profit ?

Q 30 (TITA)

Had M/s Sespi Pvt Ltd sold all the cartons of Sespark Aqua it had produced in a year, in that year itself and no more, what would be the liquid assets of M/s Sespi Pvt Ltd at the end of 2021-22 (in Rs crores rounded to the nearest integer) ?

Directions for questions from 31 to 34 :

Dr Ashok Khemka (IAS), originally from Entally in Kolkata, and famous as the only bureaucrat in the Indian Government to win the S.R. Jindal prize in 2011 for 'Crusade against Corruption', had finalized his son Mr Ganesh Khemka's marriage in Kolkata.

The time had arrived to invite the close relatives with 'shaguns' along with the invitation cards. Marrying off a child is a humongous and arduous task for any Indian father, and hence Dr Khemka wanted to complete the task on the coming Sunday, taking the minimum possible amount of time. Since all were close as well as important relatives of the bride's family, and all resided in Kolkata, Dr Khemka and his wife Mrs Jyoti Khemka decided to do the formalities themselves.

They decided to start at 10.00 am, and complete the delivery to the Badi Mausi, the Choti Mausi, the Bua, the Bade Chacha and the Chote Chacha of the bride on that day, each of whom had a different address. On consulting Google Maps, Dr Khemka found the distance in kilometers between the addresses to be as follows :

Distance in km	Badi Mausi	Choti Mausi	Bua	Bade Chacha	Chote Chacha
Badi Mausi	0	18	9	9	3
Choti Mausi	18	0	6	21	24
Bua	9	6	0	15	12
Bade Chacha	9	21	15	0	9
Chote Chacha	3	24	12	9	0
Home of Dr and Mrs Khemka in Entally	12	21	15	18	9

It was also known that Dr Khemka drove his car at a constant speed of 36 km/hour, and both took exactly twenty minutes at each of the houses to exchange pleasantries and perform the invitation formality.

Q 31 What was the earliest time by which Dr and Mrs Khemka could complete all the invitations ?

- A) 12.50 pm
- B) 12.20 pm

- C) 11.40 am
- D) 11.20 am

Q 32 What was the difference between the minimum and maximum time that Dr and Mrs Khemka would take to complete all the invitations ?

- A) 1 hour 25 minutes
- B) 1 hour 5 minutes
- C) 55 minutes
- D) 35 minutes

Q 33 If on that very Sunday the Kolkata Municipal Corporation decided to conduct underground water-supply repairs located on the 3 km stretch of road connecting addresses of the Badi Mausi and the Chote Chacha of the bride, and had blocked the road, what would be the earliest time by which Dr and Mrs Khemka could complete all the invitations ?

- A) 1.25 pm
- B) 1.05 pm
- C) 12.50 pm
- D) 12.10 pm

Q 34 At the last moment before 10.00 am, Dr and Mrs Khemka got the information that the Choti Mausi and the Bua of the bride would be at their respective homes only till 11.24 am, and hence had to be reached at the earliest. What would be the earliest time by which Dr and Mrs Khemka could complete all the invitations ?

- A) 11.55 am
- B) 12.25 pm
- C) 12.45 pm
- D) 1.05 pm

Directions for questions from 35 to 38 :

Along the eastern foothills of the Himalayas lie the district of Darjeeling in the state of West Bengal and the state of Sikkim, both of which are considered as a trekker's paradise.

Five towns in each of them deserve special mention from the point of view of trekking. They are 1) Takdah, 2) Mangan, 3) Sukhiapukhri, 4) Namchi, 5) Mirik, 6) Sarathang, 7) Pelling, 8) Lachung, 9) Sandakphu, and 10) Kurseong.

Each town in either of the district/state is connected to exactly three towns in the other state/district. One town is connected by a 4x4 wheel drive dirt road. The second town is connected by a bicycling route. The third town is connected by a foot-trekking path.

The following information is also known about them :

- i) Sarathang has a 4x4 wheel drive dirt road to Sandakphu, which in turn has a bicycling route to Namchi
- ii) Mangan has a foot-trekking path to Kurseong.
- iii) Mangan is not connected to Sukhiapukhri, which is not in the same district/state as that of Mangan
- iv) Lachung and Namchi are in the same district/state, and from each of the two towns there is no route to reach Mirik or Kurseong, both of which are towns in a different district/state than the one in which Lachung lies

v) Sarathang, which belongs to the state of Sikkim, is not connected to Sukhiapukhri which does not belong to the state of Sikkim

Q 35 For how many of the following pairs of towns is the number of ways of connection more than one, if exactly one town is travelled in between ?

- A) Mangan and Sarathang
- B) Sukhiapukhri and Namchi
- C) Lachung and Mangan
- D) Sandakphu and Kurseong

Q 36 Which of the following pairs of towns are definitely connected by a foot-trekking path ?

- A) Sarathang and Kurseong
- B) Sandakphu and Lachung
- C) Sukhiapukhri and Pelling
- D) Kurseong and Takdah

Q 37 If Pelling and Lachung are connected by a 4x4 wheel drive dirt road, Takdah is connected by a cycling route to which of the towns given below ?

- A) Mangan
- B) Kurseong
- C) Mirik
- D) Cannot be determined

Q 38 Which of the following groups of towns are definitely from Darjeeling District ?

- A) Lachung, Mangan, Namchi, Sarathang
- B) Sukhiapukhri, Mirik, Kurseong, Pelling
- C) Lachung, Mangan, Namchi, Pelling
- D) Sukhiapukhri, Mirik, Sandakphu, Kurseong

Directions for questions from 39 to 43 :

Under the reign of the Roman emperor Commodus in 600 C.E., 'munera's, or gladiator fights, held in the Colosseum Arena in Rome were a very common occurrence.

The entrance to the Colosseum Arena by the gladiators took place through five underground corridors opening out to five gates with doors arranged in a row. On one day of the gladiator fight, five infamous gladiators – Spartacus, Crixus, Maximus, Flamma and Tetrates – were to enter the arena through the gates, from left to right respectively, in that order. He whose door was opened had to step out on the arena and fight. Who of the gladiators would fight who depended entirely on the fancy of Emperor Commodus, who controlled the opening or closing of doors using a system of codes. More than two gladiators could fight each other in the arena.

If the door to a gate was to be opened, the code was A (A for Aperio in Latin or open), and if the door to a gate was to be closed, the code was C (C for Clausula in Latin or close). Thus if Emperor Commodus finally stopped at the code ACACC, it meant that he wanted the doors of the first and third gate from the left to the right to be opened, that is Spartacus and Maximus should fight.

On that particular day Emperor Commodus started when the code was initially set at CACAC. He could change the code, but only by using some number of steps, wherein in each step the state of only two consecutive doors could be changed. However he had to reach his desired code using the minimum number of steps. At least one change was mandatory.

Q 39 (TITA)

How many distinct gladiator fights could Emperor Commodus initiate at the Colosseum Arena on that particular day ?

Q 40 (TITA)

What could have been the maximum number of steps Emperor Commodus needed to implement to generate any final code, taking the minimum number of steps possible to do so, for the doors of the five gates of the Colosseum Arena on that particular day ?

Q 41 (TITA)

What could be the minimum number of steps Emperor Commodus needed to implement on the initial code if he wanted a fight between gladiators Maximus and Tetrates at the Colosseum Arena on that particular day ?

Q 42 Emperor Commodus, on that particular day, was in the mood to see fight unto death dual 'muneras' (gladiator fights with only two gladiators at a time where only one of them who was left alive after the fight was declared the winner) on the Colosseum Arena. After the first change in the code from the initial, only two doors would be opened and the respective gladiators behind the doors had to fight. After the second step of change in code, only one gladiator would come out of the opened door and fight the winner of the previous fight. And so on, until the final winner out of the five gladiators was left on the Colosseum Arena. Assuming that the opening or closing of the doors of the gates having no gladiator behind them was inconsequential, what was the minimum number of steps needed to be implemented by Emperor Commodus on that particular day to judge the final winner of the fight unto death dual 'muneras' at the Colosseum Arena ?

- A) 1
- B) 2
- C) 3
- D) 4

Q 43 On some other day, Emperor Commodus started when the code was initially set at CACAC. He could still change the code as usual by using some number of steps, but this time in each step the state of only two, but any two, doors could be changed. How many distinct gladiator fights could Emperor Commodus initiate at the Colosseum Arena on that other day in a single move ?

- A) 4
- B) 8
- C) 10
- D) 12

Directions for question 44:

Q 44 In a certain code language, some statements are coded as follows :

- a) 'you just follow dream' is coded as 'joy toy koy roy'
- b) 'one should dream great' is coded as 'toy foy dox zoy'

- c) 'great person follow you' is coded as 'doy joy koy hoy' and
- d) 'this person will follow one' is coded as 'hoy koy zoy soy coy'.

What is the code for 'great person dream' ?

- A) doy hoy toy
- B) doy koy toy
- C) foy koy toy
- D) foy hoy roy

Section - 3 - Quantitative Aptitude

Q45. The salaries of John, Sara and Romi were in the ratio 4: 7: 11 in 2012, and in the ratio 5: 11: 17 in 2015. If John's salary increased by 30% during 2012- 2015, then the average percentage increase in the total of the salaries of Sara and Romi during this period is closest to

- (a) 62 (b) 31 (c) 19 (d) 40

Q46. If x is a real number, then $\sqrt{\frac{x^2-2x}{4}}$ is a real number if and only if

- (a) $x < 2$ (b) $x > 2$ (c) $2 < x < 2$ (d) $x < 2$ and $x > 2$

Q47. (TITA)

In an examination, Ram scored 70% less than the total of the scores of Mamta and Anuradha. In another examination, the score of each of them increased by 25. The new scores of Anuradha, Mamta, and Ram were approximately in the ratio 12:11:7. Then Ram's score is less than Anuradha's score in the first examination by

Q48. (TITA)

How many pairs (m, n) of positive integers satisfy the equation $m \cdot n + 98 = m^2$?

Q49. George alone can write 20 pages in 20 hours while Samuel alone can write 40 pages in 30 hours. George starts to write and did writing for 5 hrs and took a break for 6 hrs. Meanwhile Samuel writes in the absence of George for 6 hours till George joins him.

They both worked until the 118 pages were written. What fraction of the work is done by George?

- (a) $\frac{4}{7}$ (b) $\frac{1}{2}$ (c) $\frac{34}{59}$ (d) $\frac{53}{118}$

Q50. (TITA)

In an equilateral triangle ABC, medians AD and BE intersect at O. $\tan \angle AOE$ is x times $\tan \angle OBD$. Value of x is

Q51. Two Girls Amita and Binita start from a point P on a circle. Binita starts 2 minutes after Amita, with Amita moving clock-wise and Binita moving anti-clockwise. They meet for the first time at 11:00 am when Amita has covered 70% of the track. If Amita completed 1 cycle at 11:15 am, then Binita returns to P at

- (a) 11: 57am (b) 12 :17pm (c) 12: 27pm (d) 11: 47am

Q52. (TITA)

How many factors of $45 \times 3^{14} \times 10^{11}$ are perfect cubes of odd numbers?

Q53. If $27^{x-y} = 3^{30}$ and $3^{xy}/4^{xy} = \sqrt{(27/64)}$, then $x+y$ equals, if x and y are positive real numbers

- (a) 4 (b) $\sqrt{10}$ (c) $\sqrt{53}$ (d) $\sqrt{106}$

Q54. (TITA)

Interior angles of two regular polygons of sides p and q are in the ratio of 4: 3. If p is 3 times of q , then each interior angle, in degrees, of a regular polygon with $a - b$ sides is

Q55.(TITA)

The number of common terms in the two sequences: 4, 16, 64, ..., 65536 and 8, 64, 512, ..., 16777216 is

Q56. Aman took loans from two vendors A and B at the rate of 8% interest, compounded annually, and at 6% interest per annum, compounded semi-annually, respectively for 1 year in the ratio 2: 3. While Vineet took a loan of Rs 10000 at the rate of 15% per annum at simple interest from third vendor C for two years. Annual interest paid by Aman and Vineet is same. Ratio of amount of loan taken by Aman from vendor B (in Rs) is

- (a) 13131 (b) 8754 (c) 22000 (d) 5311

Q57. (TITA)

Dickwela is thrice as old as Thirumane and Hayden is half as old as Dickwela. If Dickwela's age is 7 years less than the average age of all three, then Hayden's age, in years, is

Q58. Ahmedabad and Baroda are two railway stations 900 km apart. Vande Bharat express leaves Ahmedabad at 10:00 AM, heading towards Baroda at a speed of 80 km/hr. Another train leaves Baroda at 11:45 AM, heading towards Ahmedabad at a speed of 60 km/hr. The trains meet each other at

- (a) 4: 45 pm (b) 5: 10 pm (c) 6: 00 pm (d) 5: 25 pm

Q59. Let k be a constant. The equations $k^2x + y = 7$ and $9kx + ky = -3$ have a unique solution if and only if

- (a) $|k| \neq 3$ (b) $|k| = 3$ (c) $k \neq 3$ (d) $k = 3$

Q60. A man purchases 45 kg of salt and marked a price in order to gain 25% profit. He sells 10 kg at this price, and 10 kg at a 10% discount. Due to rain occurred, 5 kg of salt is wasted. He sells the remaining salt at a profit of m percent so that its overall profit is 20%. Then m is nearest to

- (a) 57 (b) 35 (c) 51 (d) 20

Q61. (TITA)

If $f(x) = x^2 - 2x + 3$, $g(x) = x - 2$; $f \circ g(9) + g \circ f(9)$ is

Q62. How many numbers divisible by 4 can be formed using the digits 0, 1, 4, 5, 6, 9 such that no digit is repeated?

- (a) 327 (b) 326 (c) 330 (d) 328

Q63. How many of the integers greater than 10 but less than 150 are not divisible by any of 3, 6 and 9?

- (a) 40 (b) 54 (c) 101 (d) 93

Q64. A batsman played $2n + 4$ innings and got out on every occasion. His average score in these $2n + 4$ innings was 38 runs and he scored at the average of 40 in the last two innings getting out every time. The batsman scored at an average of 48 in his first two innings. If he scored less than 35 runs in each of the remaining innings with the average of 30. Lowest score he scored was x runs. The smallest possible value of x is

- (a) 12 (b) 13 (c) 14 (d) 18

Q65. In a solution of water and alcohol, alcohol is 60% by concentration. If 5 litres of solution are removed and 20 litres of water is added its concentration of alcohol is decreased to 40%. Further 10 litres of solution are removed and 10 litres of water is added. Find the quantity of alcohol (in litres) in the new mixture.

- (a) 28 (b) 14 (c) 18.66 (d) 15.55

Q66. From the top of a tower, angle of depression with a car approaching the tower is found to be 30° at 10: 10 AM. At 10: 40, angle of depression becomes 60° . find the speed of the Car, in metres per minute if tower is 50 metres high.

(a) $10/3$

(b) $10\sqrt{3}/3$

(c) $10\sqrt{3}$

(d) $\sqrt{3}/3$

CAREERS360

Answer Key - Mock Test 19

Section - Verbal Ability & Reading Comprehension

1-D, 2-D, 3-D, 4-C, 5-A, 6-B, 7-D, 8-C, 9-D, 10-D, 11-C, 12-B, 13-D, 14-C, 15-C, 16-B, 17-D, 18-4312, 19-3142, 20-2341, 21-C, 22-D, 23-A, 24-B

Section - Data Interpretation & Logical Reasoning

25-D, 26-51.4, 27-B, 28-A, 29-2, 30-56, 31-A, 32-B, 33-C, 34-D, 35-A, 36-B, 37-C, 38-D, 39-16, 40-4, 41-2, 42-D, 43-C, 44-A

Section - Quantitative Aptitude

45-B, 46-D, 47-50, 48-1, 49-C, 50-3, 51-B, 52-30, 53-D, 54-150, 55-4, 56-A, 57-9, 58-B, 59-B, 60-C, 61-88, 62-D, 63-C, 64-D, 65-B, 66-B

Solutions - Mock Test 19

Section - Verbal Ability & Reading Comprehension

1. D

There are only two options that you need to consider in this case: options C and D.

Option A is ruled out as the author does not agree with the Venus project at all.

Option B also introduces a minor positive sentiment, which is not exhibited by the author of the passage.

Option C commits a single mistake: it says that the author is against the core team of the Venus project.

This finds no mention in the passage.

Option D is clearly the answer and it highlights the strong views expressed by the author of the passage.

2. D

Statement I can be derived from the line: Take away the price system and you will have no way to know what the people want.

Statement II can be derived from the line: You would need yet another corruptible "democratic" election process or a dictator to make decisions on your behalf.

Statement III can be derived from the line: When money is cheap people no longer compete for scarce savings to maximize the efficiency of the money supply, they just build whatever the hell they want without regard for sustainability through profit because debt by inflation is always available from the banks.

3. D

Option A: the author does not label money and currency as evils.

Option B: finds no mention in the passage.

Option C: again, these sentiments find no mention in the passage.

Option D: This is the clear answer as it encapsulates the main ideas of the author of the passage. This is the point that the author of the passage is essentially highlighting in the passage.

4. C

The answer can be derived from the last paragraph of the passage. Refer to the lines: In the new proposed system, if resources were cheap or freely available to everyone just as currency is today, competing projects would also have no incentive to maximize the efficient use of those resources. Everyone with influence (money) would support whichever pet projects provide maximum benefit to themselves. What's the difference? When currency runs out, more is printed. When money runs out, prices adjust. When resources run out, what then?

You need to use logic in the given case. You need to follow the thread of thought that what happens when we run out of currency. This is explained in the last paragraph of the passage. This is the sentiment that is targeted by this question.

5. A

In the given case, option A is the best answer. The reasons for the same are:

- a. The passage deals with an article on a current situation, thereby making it likely that its source be something where time-specific content is published.
- b. The author is analysing the given situation within a specific discussion space and does not adopt the lengthy writing style of essays or research papers. He maintains a clear and crisp writing style best suited to a newspaper. (This rules out options B and C).
- c. The author does not provide intricate details about the event and also, this article is complete in itself; it is not part of a larger discussion (as it would be if it were a part of a book).

Keeping the above points in mind, we can see that option A is the best answer in the given case.

6. B

Commentariat refers to the commentators and pundits of the news media. We can see that the word 'commentators' in option B is the biggest clue you can use to answer this question.

A peacenik is someone who prefers negotiations to armed conflict in the conduct of foreign relations. From the given context, we cannot decipher whether the author is referring to political peaceniks. Also, we need an option which essentially highlights experts or commentators who are finding faults with the effort of President Obama. We find this sentiment implied in option B.

7. D

The four reasons for the success of the peace process are as follows:

- First, violence is down considerably in the region.
- Second, settlement activity has slowed significantly.
- Third, the public on both sides supports a two-state solution.
- Fourth, there isn't a lot to negotiate.

Statement III is not a reason mentioned in the passage.

Remember, the question is asking you reasons for the success of the peace talks (not why the peace talks are taking place). It is important to understand the sentiment expressed in the question as well and what it is specifically asking. The author clearly outlines the four reasons above as the reasons for success.

8. C

The answer can be directly derived from the lines: But a closer look at the matter shows us that those ways are very rare. Slurs are in fact uniquely and stubbornly resistant to attempts to neutralize their power to hurt or offend.

9. C

Let us explore the meanings of the given options:

Examining: Consider in detail and subject to an analysis in order to discover essential features or meaning

Questioning: A request for information

Ingenuous: innocent and unsuspecting.

Explanatory: Serving or intended to explain or make clear

From the above, we can clearly see that ingenuous does not fit the given context in any which way.

10. D

In the given case, what we can say is that the two approaches answer the given question in different ways. We cannot say these approaches are adversative (Expressing antithesis or opposition) in nature. Also, since the two approaches are different in their viewpoints, we can rule out options B and C.

11. C

Title questions depend upon the main idea of the passage. In the given case, the main idea of the passage is very simple: how to improve the effectiveness of Foreign aid? The author highlights a method for the same.

Let's look at the options now.

Option A talks about the bubble bursting. Which bubble is this? Foreign aid has issues but no bubble has been burst.

Option B talks about the need for repair to Foreign Aid. This does align with the main idea of passage but when we compare this option to option C, we see that option C is far more accurate for two reasons:

a. The author highlights how Foreign Aid money needs to be used wisely and should not be allowed to go waste; this makes 'protect' a good word choice here.

b. Option C implies how the foreign aid delivery mechanism needs to be improved; this is a sentiment most definitely implied in the passage.

These two points make option C the better choice.

Option D is out-rightly rejected as it does not fit in the given context. Aid and Abet means to assist another in the commission of a crime by words or conduct. This clearly does not fit in the given context.

12. B

In this case, you need to understand the viewpoint of the author of the passage. How does the author view aid? The author of the passage is clearly supportive of foreign aid. Refer to these lines: If Americans are asked whether they want to help bring health, water, education and other crucial resources to poor people around the world, they say yes, by overwhelming majorities. But Americans are skeptical that foreign aid accomplishes these things. The truth is, much of foreign aid works.

Now we need to find an option that represents this sentiment. We find this in option B.

The meanings of the words in some of the other options are:

Nepotism: Favouritism shown to relatives or close friends by those in power (as by giving them jobs)

Obfuscation: The activity of obscuring people's understanding, leaving them baffled or bewildered

We can clearly see that these words do not fit in the given context and cannot be ascribed to the author of the passage.

13. D

Two options that can be directly ruled out are options A and C. There is no reference to teamwork or task compartmentalising in the passage.

Now evaluate option B closely. Had it been something like 'how deliverables need to be incentivised in order to program success', the option would have been correct. The problem here is that there is no mention of 'system failure' in the given case. The example is about an aid program and how it needs to be linked to targets. This makes option D the apt choice in this case.

14. C

The answer to this question can be found in the lines: *'The facts about foreign aid are crucial to drive home to the American public today, as the political debate over the budget has led many Republicans to single out foreign aid as a target for cuts. (Frank James, who writes a blog at NPR, suggests a novel way to spread the word, using Charlie Sheen's Twitter account.)'*

From the given context, we know this person does not support foreign aid and he is not a movie or television star. He is quoted as an example for Republicans opposing foreign aid. This makes option C the apt answer in the given case.

15. C

As with title questions, you need to focus on the main idea of the passage, which is:

- a. how the Vietnamese economy is in trouble and how it has been mismanaged
- b. how an economy that was beckoned to be a star for the future has collapsed or is in bad shape

Keeping these two points in mind, we can see that option C is the best answer in the given case. It encapsulates both these aspects of the passage. None of the other options do this; they either change the main subject or the main point of the passage.

16. B

First you need to know the meaning of the word euphemistic. A euphemism refers to a mild or indirect word or expression substituted for one considered to be too harsh or blunt when referring to something unpleasant or embarrassing. In the given case, the author of the passage uses this word in a sarcastic taunt highlighting how the government has cleverly named restructuring and privatization of their wasteful state-owned enterprises (SOEs) as "equitization." Remember, this statement is a taunt for the government action and points out a flaw of the system.

Option A is ruled out as there is no irony (Incongruity between what might be expected and what actually occurs) in this case.

Foolhardiness means 'The trait of giving little thought to danger' and clearly does not fit in the given context. This helps us rule out option C.

Option D is ruled out as this statement is not a critical analysis in itself; the passage is.

17. D

Option A is not implied in the passage. Yes, inflation is a problem but the author does not say it cannot be handled.

Option B is too extreme an answer option.

The Communist Party of Vietnam is mentioned in these lines: The Communist Party of Vietnam would prefer that investors see cases like Nguyen's as simply one-off local effects of the global economic slowdown, not of a systemic weakening. We can see from these lines that option C is too extreme an answer option in this case. Yes, the party is a problem but option C is too extreme a sentiment and it is tough to comment about the future from the given context.

Option D is the apt answer choice in this case. It reflects the main idea of the passage and highlights the core sentiments of the author of the passage.

18. 4312

Sentence 4 gives an introduction to the first public museums and sentence 3 mentions the British Museums of 1753. This makes them a mandatory pair. Sentence 1 is referring to the collection mentioned in sentence 3, and sentence 2 is discussing the conclusion which makes 4312 the correct order.

19. 3142

Sentence 3 is introductory in nature and therefore will be the first sentence. The next sentence will be 1 as it relates to the point of cultural values of society. 4 and 2 make a mandatory pair as sentence 4 describes the problem that innovations are obstructed and 2 gives the solution and conclusion. This makes 3142 the correct order.

20. 2341

Exp: The passage is aimed at hinting at the need for cooperation between the government and the opposition parties because it is important for a proper functioning of the parliament. Statement 2 is the opening statement of the passage as it brings forth the theme of the passage. Statement 3 follows as it describes what will happen when there would be no co-operation between the two. Statement 4 comes next as it illustrates a current problem along similar lines. Statement 1 tries to prove that the problem is as a result of hostility between the government and the opposition parties. That makes the proper sequence of sentences as 2-3-4-1

21. C

The passage mentions anime as being based on manga and compares this to inspiration of a film from a novel. There is no mention of popularity. Therefore, option C is the correct choice.

22. D

The passage mentions Amir Khusrau as being proud of his lineage and this being reflected in his writings. These two are the central points in the passage, with details of his father and mother and inter-marriages only provided for context. Therefore, option D is the correct choice.

23. B

When we closely observe the last line of the passage we are successful in noticing that there has been a dithering. So our next line should be something explaining the dithering to the reader.

Option A is pretty judgemental about the government. It is too early to come down to a judgement as we are not done with the entire scenario.

Option B is a case of dithering as the 100% FDI only in food products cannot be properly established unless there is a provision of similar nature on other products.

Hence this is our answer as it establishes continuity and provides an example for the concept in the last statement. This explains why the food processing sector has taken a back seat.

Option C is a judgement again. At this point of the passage we are required to provide a suitable example on why the food processing sector cannot perform well.

Option D speaks about a solution. We know that at the point of the passage we are discussing problems and we are not yet done with that. Hence we should not jump into the solution too early.

24. C

We notice that the last line of the paragraph ends with the fact that they have been subjected to wrong conditions-- "more than a couple of times". Now since we are left with the option of a number more than two, we would obviously be scanning for one such figure in order to get us a clear information about the survey.

Option A is suggesting that we need to look into the problem even though the figures do not matter. This

can be the line following the sentence after the figures are mentioned. Hence we can avoid this option. Option B speaks about the vacation being spoiled. This should come actually after wetting out all the problems. Hence this cannot be a suitable option. Option C gives us more numbers (data) on the survey. This is the perfect sentence that can follow the passage.

Option D is a conditional statement which can only come after the statements about the survey have been mentioned. Hence we cannot choose this as our answer.

Section - Data Interpretation & Logical Reasoning

25. D

Tabulating all the data given in the three graphs and calculating the required information about M/s Sespi Pvt Ltd, we get :

	2017-18	2018-19	2019-20	2020-21	2021-22
Production of Sespark Aqua (in cartons)	440000/10 = 44000	540000/10 = 54000	600000/10 = 60000	480000/10 = 48000	520000/10 = 52000
Sales of Sespark Aqua (in cartons)	360000/10 = 36000	500000/10 = 50000	480000/10 = 48000	460000/10 = 46000	580000/10 = 58000
Cumulative Unsold Stock of Sespark Aqua (in cartons)	44000 - 36000 = 8000	54000 - 50000 + 8000 = 12000	60000 - 48000 + 12000 = 24000	48000 - 46000 + 24000 = 26000	52000 - 58000 + 26000 = 20000
Total Sales Revenue (Rs crores)	36000*2000 = Rs 7.2 crores	50000*2200 = Rs 11 crores	48000*2400 = Rs 11.52 crores	46000*2600 = Rs 11.96 crores	58000*2200 = Rs 12.76 crores
Fixed Cost of Production (Rs crores)	Rs 4 crores	Rs 3 crores	Rs 2.5 crores	Rs 5 crores	Rs 4 crores
Variable Cost of Production (Rs crores)	Rs 3.5 crores	Rs 5 crores	Rs 5.5 crores	Rs 7 crores	Rs 3.5 crores
Total Cost of Production (Rs crores)	4+3.5 = Rs 7.5 crores	3+5 = Rs 8 crores	2.5+5.5 = Rs 8 crores	5+7 = Rs 12 crores	4+3.5 = Rs 7.5 crores
Total Yearly Profit (Rs crores)	7.2 - 7.5 = Rs 0.3 crore loss	11 - 8 = Rs 3 crore profit	11.52 - 8 = Rs 3.52 crore profit	11.96 - 12 = Rs 0.04 crore loss	12.76 - 7.5 = Rs 5.26 crore profit
Liquid Assets of M/s Sespi Pvt Ltd at the end of the year (Rs crores)	40 - 0.3 = Rs 39.7 crores	39.7 + 3 = Rs 42.7 crores	42.7 + 3.52 = Rs 46.22 crores	46.22 - 0.04 = Rs 46.18 crores	46.18 + 5.26 = Rs 51.44 crores

Increase of liquid assets of M/s Sespark Aqua from 2017-18 to 2018-19 = $(42.7 - 39.7) = \text{Rs } 3$ crores, that is a fractional increase of $(3/39.7) = 1/13$ approx

Increase of liquid assets of M/s Sespark Aqua from 2018-19 to 2019-20 = $(46.22 - 42.7) = \text{Rs } 3.52$ crores, that is a fractional increase of $(3.52/42.7) = 1/12$ approx

From 2019-20 to 2020-21 there has been a decrease of liquid assets of M/s Sespark Aqua, hence data out of contention

Increase of liquid assets of M/s Sespark Aqua from 2020-21 to 2021-22 = $(51.44 - 46.18) = \text{Rs } 5.26$ crores, that is a fractional increase of $(5.26/46.18) = 1/9$ approx

The increase from 2020-21 to 2021-22 is fractionally the greatest, as the denominator is the smallest.

Hence, the percentage increase in liquid assets over the previous year was the highest in 2021-22.

26. 51.4

Tabulating all the data about M/s Sespi Pvt Ltd given and henceforth calculated, we get :

	2017-18	2018-19	2019-20	2020-21	2021-22
Production of Sespark Aqua (in cartons)	$440000/10 = 44000$	$540000/10 = 54000$	$600000/10 = 60000$	$480000/10 = 48000$	$520000/10 = 52000$
Sales of Sespark Aqua (in cartons)	$360000/10 = 36000$	$500000/10 = 50000$	$480000/10 = 48000$	$460000/10 = 46000$	$580000/10 = 58000$
Cumulative Unsold Stock of Sespark Aqua (in cartons)	$44000 - 36000 = 8000$	$54000 - 50000 + 8000 = 12000$	$60000 - 48000 + 12000 = 24000$	$48000 - 46000 + 24000 = 26000$	$52000 - 58000 + 26000 = 20000$
Total Sales Revenue (Rs crores)	$36000 \times 2000 = \text{Rs } 7.2 \text{ crores}$	$50000 \times 2200 = \text{Rs } 11 \text{ crores}$	$48000 \times 2400 = \text{Rs } 11.52 \text{ crores}$	$46000 \times 2600 = \text{Rs } 11.96 \text{ crores}$	$58000 \times 2200 = \text{Rs } 12.76 \text{ crores}$
Fixed Cost of Production (Rs crores)	Rs 4 crores	Rs 3 crores	Rs 2.5 crores	Rs 5 crores	Rs 4 crores
Variable Cost of Production (Rs crores)	Rs 3.5 crores	Rs 5 crores	Rs 5.5 crores	Rs 7 crores	Rs 3.5 crores
Total Cost of Production (Rs crores)	$4 + 3.5 = \text{Rs } 7.5 \text{ crores}$	$3 + 5 = \text{Rs } 8 \text{ crores}$	$2.5 + 5.5 = \text{Rs } 8 \text{ crores}$	$5 + 7 = \text{Rs } 12 \text{ crores}$	$4 + 3.5 = \text{Rs } 7.5 \text{ crores}$
Total Yearly Profit (Rs crores)	$7.2 - 7.5 = \text{Rs } 0.3 \text{ crore loss}$	$11 - 8 = \text{Rs } 3 \text{ crore profit}$	$11.52 - 8 = \text{Rs } 3.52 \text{ crore profit}$	$11.96 - 12 = \text{Rs } 0.04 \text{ crore loss}$	$12.76 - 7.5 = \text{Rs } 5.26 \text{ crore profit}$
Liquid Assets of M/s Sespi Pvt Ltd at the end of the year (Rs crores)	$40 - 0.3 = \text{Rs } 39.7 \text{ crores}$	$39.7 + 3 = \text{Rs } 42.7 \text{ crores}$	$42.7 + 3.52 = \text{Rs } 46.22 \text{ crores}$	$46.22 - 0.04 = \text{Rs } 46.18 \text{ crores}$	$46.18 + 5.26 = \text{Rs } 51.44 \text{ crores}$

Hence, Rs 51.4 crores could be the correct value of liquid assets (rounded to a single decimal place) with M/s Sespi Pvt Ltd at the end of 2021-22

27. B

Tabulating all the data about M/s Sespi Pvt Ltd given and henceforth calculated, we get :

	2017-18	2018-19	2019-20	2020-21	2021-22
Production of Sespark Aqua (in cartons)	$440000/10 = 44000$	$540000/10 = 54000$	$600000/10 = 60000$	$480000/10 = 48000$	$520000/10 = 52000$
Sales of Sespark Aqua (in cartons)	$360000/10 = 36000$	$500000/10 = 50000$	$480000/10 = 48000$	$460000/10 = 46000$	$580000/10 = 58000$
Cumulative Unsold Stock of Sespark Aqua (in cartons)	$44000 - 36000 = 8000$	$54000 - 50000 + 8000 = 12000$	$60000 - 48000 + 12000 = 24000$	$48000 - 46000 + 24000 = 26000$	$52000 - 58000 + 26000 = 20000$
Total Sales Revenue (Rs crores)	$36000 \times 2000 = \text{Rs } 7.2 \text{ crores}$	$50000 \times 2200 = \text{Rs } 11 \text{ crores}$	$48000 \times 2400 = \text{Rs } 11.52 \text{ crores}$	$46000 \times 2600 = \text{Rs } 11.96 \text{ crores}$	$58000 \times 2200 = \text{Rs } 12.76 \text{ crores}$

Fixed Cost of Production (Rs crores)	Rs 4 crores	Rs 3 crores	Rs 2.5 crores	Rs 5 crores	Rs 4 crores
Variable Cost of Production (Rs crores)	Rs 3.5 crores	Rs 5 crores	Rs 5.5 crores	Rs 7 crores	Rs 3.5 crores
Total Cost of Production (Rs crores)	$4+3.5 = \text{Rs } 7.5 \text{ crores}$	$3+5 = \text{Rs } 8 \text{ crores}$	$2.5+5.5 = \text{Rs } 8 \text{ crores}$	$5+7 = \text{Rs } 12 \text{ crores}$	$4+3.5 = \text{Rs } 7.5 \text{ crores}$
Total Yearly Profit (Rs crores)	$7.2 - 7.5 = \text{Rs } 0.3 \text{ crore loss}$	$11 - 8 = \text{Rs } 3 \text{ crore profit}$	$11.52 - 8 = \text{Rs } 3.52 \text{ crore profit}$	$11.96 - 12 = \text{Rs } 0.04 \text{ crore loss}$	$12.76 - 7.5 = \text{Rs } 5.26 \text{ crore profit}$
Liquid Assets of M/s Sespi Pvt Ltd at the end of the year (Rs crores)	$40 - 0.3 = \text{Rs } 39.7 \text{ crores}$	$39.7 + 3 = \text{Rs } 42.7 \text{ crores}$	$42.7 + 3.52 = \text{Rs } 46.22 \text{ crores}$	$46.22 - 0.04 = \text{Rs } 46.18 \text{ crores}$	$46.18 + 5.26 = \text{Rs } 51.44 \text{ crores}$

Hence, the total cost per carton of Sespark Aqua water was the highest in 2020-21 at Rs 12 crores

28. A

Tabulating all the data about M/s Sespi Pvt Ltd given and henceforth calculated, we get :

	2017-18	2018-19	2019-20	2020-21	2021-22
Production of Sespark Aqua (in cartons)	$440000/10 = 44000$	$540000/10 = 54000$	$600000/10 = 60000$	$480000/10 = 48000$	$520000/10 = 52000$
Sales of Sespark Aqua (in cartons)	$360000/10 = 36000$	$500000/10 = 50000$	$480000/10 = 48000$	$460000/10 = 46000$	$580000/10 = 58000$
Cumulative Unsold Stock of Sespark Aqua (in cartons)	$44000 - 36000 = 8000$	$54000 - 50000 + 8000 = 12000$	$60000 - 48000 + 12000 = 24000$	$48000 - 46000 + 24000 = 26000$	$52000 - 58000 + 26000 = 20000$
Total Sales Revenue (Rs crores)	$36000 \times 2000 = \text{Rs } 7.2 \text{ crores}$	$50000 \times 2200 = \text{Rs } 11 \text{ crores}$	$48000 \times 2400 = \text{Rs } 11.52 \text{ crores}$	$46000 \times 2600 = \text{Rs } 11.96 \text{ crores}$	$58000 \times 2200 = \text{Rs } 12.76 \text{ crores}$
Fixed Cost of Production (Rs crores)	Rs 4 crores	Rs 3 crores	Rs 2.5 crores	Rs 5 crores	Rs 4 crores
Variable Cost of Production (Rs crores)	Rs 3.5 crores	Rs 5 crores	Rs 5.5 crores	Rs 7 crores	Rs 3.5 crores
Total Cost of Production (Rs crores)	$4+3.5 = \text{Rs } 7.5 \text{ crores}$	$3+5 = \text{Rs } 8 \text{ crores}$	$2.5+5.5 = \text{Rs } 8 \text{ crores}$	$5+7 = \text{Rs } 12 \text{ crores}$	$4+3.5 = \text{Rs } 7.5 \text{ crores}$
Total Yearly Profit (Rs crores)	$7.2 - 7.5 = \text{Rs } 0.3 \text{ crore loss}$	$11 - 8 = \text{Rs } 3 \text{ crore profit}$	$11.52 - 8 = \text{Rs } 3.52 \text{ crore profit}$	$11.96 - 12 = \text{Rs } 0.04 \text{ crore loss}$	$12.76 - 7.5 = \text{Rs } 5.26 \text{ crore profit}$
Liquid Assets of M/s Sespi Pvt Ltd at the end of the year (Rs crores)	$40 - 0.3 = \text{Rs } 39.7 \text{ crores}$	$39.7 + 3 = \text{Rs } 42.7 \text{ crores}$	$42.7 + 3.52 = \text{Rs } 46.22 \text{ crores}$	$46.22 - 0.04 = \text{Rs } 46.18 \text{ crores}$	$46.18 + 5.26 = \text{Rs } 51.44 \text{ crores}$

Hence, at the end of 2020-21 the cumulative unsold stock of Sespark Aqua was the highest in M/s Sespi Pvt Ltd at 26000 cartons

29. 2

Tabulating all the data about M/s Sespi Pvt Ltd given and henceforth calculated, we get :

	2017-18	2018-19	2019-20	2020-21	2021-22
Production of Sespark Aqua (in cartons)	440000/10 = 44000	540000/10 = 54000	600000/10 = 60000	480000/10 = 48000	520000/10 = 52000
Sales of Sespark Aqua (in cartons)	360000/10 = 36000	500000/10 = 50000	480000/10 = 48000	460000/10 = 46000	580000/10 = 58000
Cumulative Unsold Stock of Sespark Aqua (in cartons)	44000 - 36000 = 8000	54000 - 50000 + 8000 = 12000	60000 - 48000 + 12000 = 24000	48000 - 46000 + 24000 = 26000	52000 - 58000 + 26000 = 20000
Total Sales Revenue (Rs crores)	36000*2000 = Rs 7.2 crores	50000*2200 = Rs 11 crores	48000*2400 = Rs 11.52 crores	46000*2600 = Rs 11.96 crores	58000*2200 = Rs 12.76 crores
Fixed Cost of Production (Rs crores)	Rs 4 crores	Rs 3 crores	Rs 2.5 crores	Rs 5 crores	Rs 4 crores
Variable Cost of Production (Rs crores)	Rs 3.5 crores	Rs 5 crores	Rs 5.5 crores	Rs 7 crores	Rs 3.5 crores
Total Cost of Production (Rs crores)	4+3.5 = Rs 7.5 crores	3+5 = Rs 8 crores	2.5+5.5 = Rs 8 crores	5+7 = Rs 12 crores	4+3.5 = Rs 7.5 crores
Total Yearly Profit (Rs crores)	7.2 - 7.5 = Rs 0.3 crore loss	11 - 8 = Rs 3 crore profit	11.52 - 8 = Rs 3.52 crore profit	11.96 - 12 = Rs 0.04 crore loss	12.76 - 7.5 = Rs 5.26 crore profit
Liquid Assets of M/s Sespi Pvt Ltd at the end of the year (Rs crores)	40 - 0.3 = Rs 39.7 crores	39.7 + 3 = Rs 42.7 crores	42.7 + 3.52 = Rs 46.22 crores	46.22 - 0.04 = Rs 46.18 crores	46.18 + 5.26 = Rs 51.44 crores

We can observe that M/s Sespi Pvt Ltd could not make a profit in the two years of 2017-18 and 2020-21

30. 56

Tabulating all the data about M/s Sespi Pvt Ltd given and the added information that M/s Sespi Pvt Ltd had sold all the cartons of Sespark Aqua it had produced in a year, in that year itself and no more, and henceforth calculating, we get :

	2017-18	2018-19	2019-20	2020-21	2021-22
Production of Sespark Aqua (in cartons)	440000/10 = 44000	540000/10 = 54000	600000/10 = 60000	480000/10 = 48000	520000/10 = 52000
Sales of Sespark Aqua (in cartons)	44000	54000	60000	48000	52000
Cumulative Unsold Stock of Sespark Aqua (in cartons)	NIL	NIL	NIL	NIL	NIL
Total Sales Revenue (Rs crores)	44000*2000 = Rs 8.8 crores	54000*2200 = Rs 11.88 crores	60000*2400 = Rs 14.4 crores	48000*2600 = Rs 12.48 crores	52000*2200 = Rs 11.44 crores
Fixed Cost of Production (Rs crores)	Rs 4 crores	Rs 3 crores	Rs 2.5 crores	Rs 5 crores	Rs 4 crores
Variable Cost of Production (Rs crores)	Rs 3.5 crores	Rs 5 crores	Rs 5.5 crores	Rs 7 crores	Rs 3.5 crores
Total Cost of Production (Rs crores)	4+3.5 = Rs 7.5 crores	3+5 = Rs 8 crores	2.5+5.5 = Rs 8 crores	5+7 = Rs 12 crores	4+3.5 = Rs 7.5 crores

Total Yearly Profit (Rs crores)	$8.8 - 7.5 = \text{Rs } 1.3 \text{ crore profit}$	$11.88 - 8 = \text{Rs } 3.88 \text{ crore profit}$	$14.4 - 8 = \text{Rs } 6.4 \text{ crore profit}$	$12.48 - 12 = \text{Rs } 0.48 \text{ crore profit}$	$11.44 - 7.5 = \text{Rs } 3.94 \text{ crore profit}$
Liquid Assets of M/s Sespi Pvt Ltd at the end of the year (Rs crores)	$40 + 1.3 = \text{Rs } 41.3 \text{ crores}$	$41.3 + 3.88 = \text{Rs } 45.18 \text{ crores}$	$45.18 + 6.4 = \text{Rs } 51.58 \text{ crores}$	$51.58 + 0.48 = \text{Rs } 52.06 \text{ crores}$	$52.06 + 3.94 = \text{Rs } 56 \text{ crores}$

Hence, had M/s Sespi Pvt Ltd sold all the cartons of Sespark Aqua it had produced in a year, in that year itself and no more, the liquid assets of M/s Sespi Pvt Ltd at the end of 2021-22 would be exactly Rs 56 crores

31. A

To complete all the invitations at the earliest, especially because Dr Khemka drove his car at a constant speed only, Dr and Mrs Khemka had to select the shortest route.

On observing of the chart, we can conclude that :

- Dr and Mrs Khemka would go to the address of the Chote Chacha first, as it was nearest to their home at Entally
- From the Chote Chacha's place they would go to the Badi Mausi's place, as it was the nearest
- From the Badi Mausi's address they could go either to the Bua or the Bade Chacha's address, as they were equidistant
- i) Let us consider that Dr and Mrs Khemka had gone to the Bua's address from the Badi Mausi's place. Then in the next transit they would go to the Choti Mausi's address and then to the Bade Chacha's address, which was the last. Distance covered from the Bua's place = $6 + 21 = 27 \text{ km}$

ii) Let us consider that Dr and Mrs Khemka had gone to the Bade Chacha's address from the Badi Mausi's place. Then in the next transit they would go to the Bua's address and then to the Choti Mausi's address, which was the last. Distance covered from the Bade Chacha's place = $15 + 6 = 21 \text{ km}$.

The route followed in (d ii) is shorter than the one in (d i)

Hence the route followed by Dr and Mrs Khemka would be :

- The Khemka home in Entally,
- The Chote Chacha's place,
- The Badi Mausi's place,
- The Bade Chacha's place,
- The Bua's place and
- The Choti Mausi's place.

Thus, the total distance covered by Dr and Mrs Khemka would be :

$$9 + 3 + 9 + 15 + 6 = 42 \text{ km}$$

Thus, time taken by Dr and Mrs Khemka to transit the complete distance = $42/36 = 1 \text{ hour } 10 \text{ minutes}$.

Also, Dr and Mrs Khemka took $5 \times 20 = 100 \text{ minutes} = 1 \text{ hour } 40 \text{ minutes}$ to exchange pleasantries and perform the invitation formality.

So minimum time taken = 2 hours 50 minutes.

Hence, the earliest time by which Dr and Mrs Khemka could complete all the invitations = 12.50 pm

32. B

To complete all the invitations taking the maximum time, especially because Dr Khemka drove his car at a constant speed only, Dr and Mrs Khemka had to select the longest route.

The longest route that could be selected by which Dr and Mrs Khemka could complete all the invitations would be :

- The Khemka home in Entally,
- The Choti Mausi's place,
- The Chote Chacha's place,
- The Bua's place,
- The Bade Chacha's place and
- The Badi Mausi's place.

Thus, the total distance covered by Dr and Mrs Khemka would be :

$$21 + 24 + 12 + 15 + 9 = 81 \text{ km}$$

The total distance covered by Dr and Mrs Khemka to complete all the invitations by the earliest time, as found in Answer no 1, is 42 km

The difference in distance = $81 - 42 = 39 \text{ km}$

Difference in time to transit = $39/36 = 65 \text{ minutes} = 1 \text{ hour } 5 \text{ minutes}$

The time taken to exchange pleasantries and perform the invitation formality would be the same in both cases and hence can be neglected

Hence, the difference between the minimum and maximum time that Dr and Mrs Khemka would take to complete all the invitations = 1 hour 5 minutes

33. C

To ensure the minimum time to complete all the invitations without being able to use the road connecting addresses of the Badi Mausi and the Chote Chacha of the bride, the route taken by Dr and Mrs Khemka would be :

1) The Khemka home in Entally, 2) The Chote Chacha's place, 3) The Bade Chacha's place, 4) The Badi Mausi's place, 5) The Bua's place and 6) The Choti Mausi's place.

Thus, the total distance covered by Dr and Mrs Khemka would be :

$$9 + 9 + 9 + 9 + 6 = 42 \text{ km}$$

This distance is the same as the shortest route as in Answer no 1, and hence the time required would be the same

Hence, if on that Sunday the Kolkata Municipal Corporation decided to conduct underground water-supply repairs located on the 3 km stretch of road connecting addresses of the Badi Mausi and the Chote Chacha of the bride, and had blocked the road, the earliest time by which Dr and Mrs Khemka could complete all the invitation will be 12.50 pm

34. D

Having to reach the addresses of both the Choti Mausi and the Bua of the bride within 11.30 am, and also taking the minimum time to complete all the invitations, the route taken by Dr and Mrs Khemka would be:

1) The Khemka home in Entally, 2) The Bua's place, 3) The Choti Mausi's place, 4) The Badi Mausi's place, 5) The Chote Chacha's place and 6) The Bade Chacha's place.

Thus, the total distance covered by Dr and Mrs Khemka would be :

$$15 + 6 + 18 + 3 + 9 = 51 \text{ km}$$

Thus, the time taken by Dr and Mrs Khemka to complete the distance so as to cover the addresses of the Choti Mausi and the Bua of the bride = $(15+6)/36 = 21/36 = 35 \text{ minutes}$.

Also, Dr and Mrs Khemka took $2 \times 20 = 40 \text{ minutes}$ to exchange pleasantries and perform the invitation formality

So, the time taken to complete the invitations of the Choti Mausi and the Bua of the bride = 75 minutes = 1 hour 15 minutes

So, by 11.15 am the invitations of the Choti Mausi and the Bua of the bride will be complete, which is in accordance with the criterion

Thus, the time taken by Dr and Mrs Khemka to transit the complete distance = $51/36 = 85$ minutes = 1 hour 25 minutes.

Also, Dr and Mrs Khemka took $5 \times 20 = 100$ minutes = 1 hour 40 minutes to exchange pleasantries and perform the invitation formality.

So minimum time taken = 3 hours 5 minutes

Hence, the earliest time by which Dr and Mrs Khemka could complete all the invitations, having to reach the addresses of both the Choti Mausi and the Bua of the bride within 11.24 am = 1.05 pm

35. A

Since each town in either of the district/state is connected to exactly three towns in the other state/district,

From (v), Sarathang is in state of Sikkim and Sukhiyapokhri is in Darjeeling district

From (i), Sandakphu is in Darjeeling district and Namchi is in state of Sikkim

From (iii), Mangan is in state of Sikkim

From (iv), Lachung is in state of Sikkim and Mirik and Kurseong are in Darjeeling district

a) Hence, Sarathang, Namchi, Mangan and Lachung are in the state of Sikkim, and Sukhiyapokhri, Sandakphu, Mirik and Kurseong are in Darjeeling district. Since there are five towns in each district/state, Takdah and Pelling have to be located one each in the state of Sikkim or Darjeeling district in any order.

b) From (iii) and (v) Sukhiapukhri is not connected to Mangan and Sarathang. So Sukhiapukhri must be connected to Namchi, Lachung and anyone of Takdah or Pelling, depending on which one of the two is in the state of Sikkim.

c) From (iii), Lachung and Namchi are not connected to Mirik and Kurseong. So Lachung and Namchi must be connected to Sukhiapukhri, Sandakphu and anyone of Pelling or Takdah, depending on which one of the two is in Darjeeling district.

d) Also Mirik and Kurseong must be connected to Mangan, Sarathang and anyone of Takdah or Pelling, depending on which one of the two is in the state of Sikkim.

e) So Sandakphu is connected to Lachung, Namchi and Sarathang. From (i), Sandakphu is connected to Sarathang by 4x4 wheel drive dirt road, and to Namchi by a bicycling route. So Sandakphu must be connected to Lachung by a foot-trekking path.

f) Kurseong is not connected to Lachung and Namchi. So Kurseong must be connected to Mangan, Sarathang and anyone of Takdah or Pelling, depending on which one of the two is in the state of Sikkim. From (ii), Kurseong and Mangan are connected by a foot-trekking path. Sarathang already has a 4x4 wheel drive dirt road connection to Sandakphu (i), so the connection between Kurseong and Sarathang must be a bicycling route. Hence the connection between Kurseong and anyone of Takdah or Pelling must be a 4x4 wheel drive dirt road.

g) Sarathang is connected to Sandakphu by a 4x4 wheel drive dirt road. Sarathang is connected to Kurseong by a bicycling route (f). Sarathang is also connected to Mirik (d). This connection hence must be by a foot-trekking path.

h) The town out of Takdah and Pelling which lies in the state of Sikkim is connected to Mirik, Kurseong (d) and Sukhiapukhri (b). Out of them the connection to Kurseong is a 4x4 wheel drive dirt road (f). Mirik is connected to Sarathang by a foot-trekking path (g). So the connection of the town out of Takdah and

Pelling which lies in the state of Sikkim to Mirik must be a bicycle route. Hence the town out of Takdah and Pelling which lies in state of Sikkim is connected to Sukhiapukhri by a foot-trekking path.

i) Mirik is connected to Sarathang by a foot-trekking path. Mirik is also connected to the town out of Takdah and Pelling which lies in the state of Sikkim by a bicycle route (h). So the connection of Mirik to the other town of Mangan (d) must be by a 4x4 wheel drive dirt road.

j) Mangan is connected to Kurseong by a foot-trekking path (ii). Mangan is connected to Mirik by a 4x4 wheel drive dirt road (i). Hence the other place Mangan must be connected to is anyone of Pelling or Takdah, depending on which one of the two is in Darjeeling district, and that too by a bicycle route.

k) The town out of Pelling or Takdah which lies in the Darjeeling district is connected to Lachung, Namchi (c) and Mangan (j). The connection to Mangan is by a bicycle route (j). Sandakphu is connected to Lachung by a foot-trekking path (e). Hence the town out of Pelling or Takdah which lies in the Darjeeling district must be connected to Lachung by a 4x4 wheel drive dirt road. Thus the connection with Namchi must be by a foot-trekking path.

l) Namchi is connected to Sandakphu by a bicycle route (e). Namchi is also connected to anyone of Pelling or Takdah, depending on which one of the two is in Darjeeling district by a foot-trekking path (k). Namchi is also connected to Sukhiapukhri (b), which must be by a 4x4 wheel drive dirt road.

l) Lachung is connected to Sandakphu by a foot-trekking path (e). It is also connected to the town out of Pelling or Takdah which lies in the Darjeeling district by a 4x4 wheel drive dirt road (k). Lachung is also connected to Sukhiapukhri (b), which must be by a bicycle route.

m) Sukhiapukhri is connected to Namchi, Lachung and anyone of Takdah or Pelling, depending on which one of the two is in the state of Sikkim (b). Out of them the connection with Namchi is by a 4x4 wheel drive dirt road (k), the connection with Lachung by a bicycle route (l) and the connection with the town out of Takdah or Pelling, depending on which one of the two is in the state of Sikkim, is by a foot-trekking path (h).

Depicting the above results in a tabular form we get :

Sikkim Darjeeling	Sarathang	Namchi	Mangan	Lachung	Takdah / Pelling
Sukhiapukhri	X	4x4 wheel drive dirt road	X	Bicycle route	Foot-trekking path
Sandakphu	4x4 wheel drive dirt road	Bicycle route	X	Foot-trekking path	X
Mirik	Foot-trekking path	X	4x4 wheel drive dirt road	X	Bicycle route
Kurseong	Bicycle route	X	Foot-trekking path	X	4x4 wheel drive dirt road

Pelling / Takdah	X	Foot-trekking path	Bicycle route	4x4 wheel drive dirt road	X

The X marks indicate no connectivity.

We can see that from Mangan, one can travel to Mirik by a 4x4 wheel drive dirt road and then to Sarathang by a foot-trekking path. Also, from Mangan, one can travel to Kurseong by a foot-trekking path and then to Sarathang by a bicycle route.

From Sukhiapukhri one cannot travel to Namchi with only one town in between.

From Lachung, one can travel to the town out of Pelling or Takdah which lies in the Darjeeling district by a 4x4 wheel drive dirt road and then to Mangan by a bicycle route.

From Sandakphu, one can travel to Sarathang by a 4x4 wheel drive dirt road and then to Kurseong by a bicycle route.

Hence, if exactly one town is travelled in between, the number of ways of connection is more than one only for Mangan and Sarathang.

36. B

Depicting all the connections in a tabular form we get :

Sikkim / Darjeeling	Sarathang	Namchi	Mangan	Lachung	Takdah / Pelling
Sukhiapukhri	X	4x4 wheel drive dirt road	X	Bicycle route	Foot-trekking path
Sandakphu	4x4 wheel drive dirt road	Bicycle route	X	Foot-trekking path	X
Mirik	Foot-trekking path	X	4x4 wheel drive dirt road	X	Bicycle route
Kurseong	Bicycle route	X	Foot-trekking path	X	4x4 wheel drive dirt road
Pelling / Takdah	X	Foot-trekking path	Bicycle route	4x4 wheel drive dirt road	X

We can see that Sarathang and Kurseong are connected by a bicycle route.

We also have no way to find out which town out of Takdah or Pelling is in the state of Sikkim and which one is in Darjeeling district. Hence we cannot be sure of the connectivity of Sukhiapukhri and Pelling.

Kurseong is definitely not connected by a foot-trekking path to Takdah, whichever state/district it may be lying in.

Only Sandakphu is connected to Lachung by a foot-trekking path

37. C

Depicting all the connections in a tabular form we get :

Sikkim Darjeeling	Sarathang	Namchi	Mangan	Lachung	Takdah Pelling /
Sukhiapukhri	X	4x4 wheel drive dirt road	X	Bicycle route	Foot-trekking path
Sandakphu	4x4 wheel drive dirt road	Bicycle route	X	Foot-trekking path	X
Mirik	Foot-trekking path	X	4x4 wheel drive dirt road	X	Bicycle route
Kurseong	Bicycle route	X	Foot-trekking path	X	4x4 wheel drive dirt road
Pelling / Takdah	X	Foot-trekking path	Bicycle route	4x4 wheel drive dirt road	X

If Pelling and Lachung are connected by a 4x4 wheel drive dirt road, Pelling must be in Darjeeling district. Thus Takdah will be in the state of Sikkim.

In that case, Takdah is connected by a bicycle route to Mirik.

38. D

Sukhiyapokhri, Sandakphu, Mirik and Kurseong are in Darjeeling district.

39. 16

On that particular day Emperor Commodus started when the code was already set at CACAC, where it can be noted that C and A are in alternate arrangement with three doors closed and two doors opened alternately.

Since in each step of change the code of only two consecutive doors could be changed, so however many may be the number of steps applied, in the final state of the code there can only be an odd number of doors closed

That is the number of C's present in the final code can be one, three or five, with any gate capable of being coded C, depending upon the number of times the steps were applied by Emperor Commodus

Similarly, in the final state of the code there can only be an even number of doors opened.

That is the number of A's present in the final code can be four, two or zero, which also is the complementary result if the number of C's present in the final code is one, three or five, and hence

similarly any gate was capable of being coded A, depending upon the number of times the steps were applied by Emperor Commodus

In the final code the number of ways one C can be present (that is four As present) = ${}^5C_1 = 5$

In the final code the number of ways three Cs can be present (that is two As present) = ${}^5C_3 = 10$

In the final code the number of ways five Cs can be present (that is zero As present) = ${}^5C_5 = 1$

Thus the number of distinct ways in which the final code for the doors of the five gates can be formed = $5+10+1 = 16$

Hence, the number of distinct gladiator fights could Emperor Commodus initiate at the Colosseum Arena on that particular day = 16

40. 4

On that particular day Emperor Commodus started when the code was already set at CACAC

Now suppose Emperor Commodus wanted to make the final code to AACAA.

It is to be noted that only the first and fifth code (from left to right) has been changed.

To enable that, the minimum number of steps Emperor Commodus needed to take were :

Initial :	CACAC
Step 1 :	<u>A</u> CCAC
Step 2 :	AA <u>A</u> AC
Step 3 :	AAAC <u>A</u>
Step 4 :	AACA <u>A</u>

Hence, the maximum number of steps Emperor Commodus needed to implement to generate any final code, taking the minimum number of steps possible to do so, for the doors of the five gates of the Colosseum Arena was when he would want to change only the code of the first and fifth door (from left to right) from what was initially, and the number of steps to do that was 4

41. 2

If gladiators Maximus and Tetrates were to fight at the Colosseum Arena on that particular day, the doors of the third and fifth gate (from left to right) needed to be opened by Emperor Commodus

So the final code needed to be CCACA

To enable that, the minimum number of steps Emperor Commodus needed to take were :

Initial :	CACAC
Step 1 :	CC <u>A</u> AC
Step 2 :	CCACA

Hence, the minimum number of steps Emperor Commodus needed to implement on the initial code if he wanted a fight between gladiators Maximus and Tetrates at the Colosseum Arena on that particular day was 2

42. D

Let us judge this by a practical example :

Initial :	C (Spartacus)	A (Crixus)	C (Maximus)	A (Flamma)	C (Tetrates)

Step 1 : A (Spartacus) C (Crixus) C (Maximus) A (Flamma) C (Tetraites)
(Munera of Spartacus with Flamma)

Step 2 : A (nil) C(Crixus) A (Maximus) C (nil) C (Tetraites)
(Munera of Maximus with winner of first duel)

Step 3 : A (nil) A (Crixus) C (nil) C (nil) C (Tetraites)
(Munera of Crixus with winner of second duel)

Step 4 : A (nil) A (nil) C (nil) A (nil) A (Tetraites)
(Munera of Tetraites with winner of third duel, and emergence of the final winner)

Hence, it can be clearly understood that irrespective of the order of implementation of the steps, the minimum number of steps that needed to be implemented by Emperor Commodus on that particular day to judge the final winner of the fight unto death dual 'muneras' at the Colosseum Arena was 4

43. C

On that other day Emperor Commodus started when the code was already set at CACAC.

Hence, because this time in each step the state of only two, but any two, doors could be changed in a single move, the number of distinct gladiator fights Emperor Commodus could initiate at the Colosseum Arena, that is choose to change the state of any two doors = ${}^5C_2$ ways = 10 ways

44. A

Comparing statements (a) and (b), we can conclude that 'dream' is coded as 'toy'

Comparing statements (b) and (c), we can conclude that 'great' is coded as 'doy'

Comparing statements (c) and (d), we can conclude that either 'person' or 'follow' is coded as either 'koy' or 'hoy'

However, in statement (a), only 'follow' but not 'person' is present, and likewise among the codes, only 'koy' but not 'hoy' is present.

So, 'follow' is coded as 'koy'

So, 'person' is coded as 'hoy'

Hence, the code for 'great person dream' should be 'doy hoy toy' in any order

Only option A satisfies that.

Section - Quantitative Aptitude

45. B

Salaries of John, Sara and Romi are $4x$, $7x$ and $11x$ in 2012.

John's new salary = 130% of $4x = 5.2x$

Sara's new salary = $5.2x \times \frac{11}{5} = 11.44x$

Romi's new salary = $5.2x \times \frac{17}{5} = 17.68x$

Sara's and Romi's new salary = $11.44x + 17.68x = 29.12x$

Sara's and Romi's old salary = $7x + 11x = 18x$

Percentage increase in Sara's and Romi's salary = $\frac{11.12x \times 100}{18x} = 61.77\%$

Average Percentage increase in Sara's and Romi's salary = $61.77\%/2 = 30.88\%$

46. D

$$\frac{(x^2 - 2x)}{4} > 0.$$

$$\Rightarrow (x^2 - 2x) > 0$$

$$\Rightarrow x(x - 2) > 0$$

$$\Rightarrow x < 2 \text{ and } x > 2$$

47. 50

Let new scores of Anuradha, Mamta and Ram is $12x$, $11x$, and $7x$.

Old scores of Anuradha, Mamta and Ram is $12x - 25$, $11x - 25$, and $7x - 25$.

Also, $R = 30\%$ of $(M + A)$

$$\Rightarrow 7x - 25 = 0.3 (12x - 25 + 11x - 25)$$

$$\Rightarrow 7x - 25 = 6.9x - 15$$

$$\Rightarrow .1x = 10$$

$$\Rightarrow x = 10$$

Scores of Anuradha, Mamta and Ram in the first examination are $120 - 25$, $110 - 25$, and $70 - 25$ i.e. 95, 85, and 45 respectively.

Ram's score less by 50 than Anuradha's score.

48. 1

$$m^2 - mn = 98$$

$$\Rightarrow m(m - n) = 98$$

98 can be achieved by $(1, 98)$, $(2, 49)$, $(7, 14)$

$m = 14$ and $n = 7$, satisfies above condition. So, only 1 solution is possible there.

49. C

George writes 1 page in 1 hour while Samuel writes $4/3$ pages in 1 hr.

In 5 hrs George completes 5 pages and in next 6 hours Samuel completed $4 \times 6/3 = 8$ pages.

Remaining $118 - 8 - 5 = 105$ pages were written by both together,

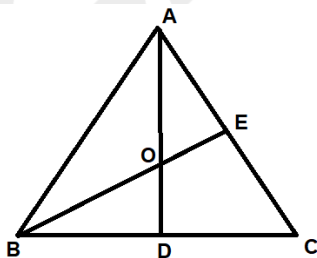
Efficiency of George: Efficiency of Samuel = $1 : 4/3 = 3 : 4$

So, out of 105 pages, Samuel writes $105 \times 4/7 = 60$ pages

Total pages written by Samuel = $60 + 8 = 68$

Fraction of work completed by Samuel = $68/118 = 34/59$

50. 3



In equilateral triangle medians are angle bisectors.

$$\text{So, } \angle OBD = \frac{1}{2} \angle B = 30^\circ$$

$$\text{Therefore } \angle BOD = 180 - 90 - 30 = 60^\circ$$

So, $\angle AOE = \angle BOD = 60^\circ$ (Vertically opposite angles are equal)

Also,

$$\tan \angle AOE = \tan 60 = \sqrt{3}$$

$$\text{and } \tan \angle OBD = \tan 30 = 1/\sqrt{3}$$

Clearly, an $\angle AOE$ is 3 times $\tan \angle OBD$.

So, $x = 3$.

51. B

Amita covers remaining 30% of the distance in 15 minutes.

So, Amita must have covered first 70% of the distance in 35 minutes.

Since, they started from opposite directions, Binita must cover 30% of the distance to meet Amita at 11 AM.

Amita took 35 minutes to meet Binita. Binita must take 33 minutes to come at meeting point since she starts 2 minutes later.

Binita covers 30% distance in 33 minutes. So, she should take 77 minutes more to reach at P.

So, time will be 12: 17 PM.

52. 30

Prime factorization of $45 \times 3^{14} \times 10^{11} = 2^{11} \times 3^{16} \times 5^{12}$

Perfect cubes of odd numbers are all the possible combinations of $[3^0, 3^3, 3^6, 3^9, 3^{12}, 3^{15}]$ and $[5^0, 5^3, 5^6, 5^9, 5^{12}]$

So, total numbers of factors which are perfect cubes of odd numbers are $= 6 \times 5 = 30$.

53. D

$$27^{x-y} = 3^{30},$$

$$\Rightarrow 3^{3(x-y)} = 3^{30}$$

$$\Rightarrow x - y = 10$$

$$\text{Also, } 3^{xy}/4^{xy} = \sqrt{(27/64)},$$

$$\Rightarrow (3/4)^{xy} = \left(\frac{3}{4}\right)^{\frac{3}{2}}$$

$$\Rightarrow xy = 3/2$$

Using identity, $(x + y)^2 = (x - y)^2 + 4xy$

$$\text{So, } (x + y)^2 = 10^2 + 4(3/2)$$

$$\text{So, } x + y = \sqrt{106}$$

54. 150

ATQ

$$\frac{(p-2) 180/p}{(q-2) 180/q} = \frac{4}{3}.$$

$$p = 3q$$

$$\text{So, } \frac{(3q-2) 180/3q}{(q-2) 180/q} = \frac{4}{3}.$$

$$\text{So, } \frac{(3q-2)}{3(q-2)} = \frac{4}{3}.$$

On solving, $q = 6$ and $p = 18$

Each interior angle in a regular polygon of sides 12 is $(12 - 2) \times 180/12 = 150^\circ$

Therefore, the no. of distinct meeting points is $(3+4 = 7)$.

Therefore, total length of the track is divided in 7 equal parts.

So, distance between two meeting points $= 245\pi/7 = 35\pi$

55. 4

Two series given in the question are GP; one with a common ratio of 4 and other is with common ratio of 8.

Series with common terms must have the common ratio of 16

So, the series formed will be 64, 256, 4096, 65536

So, 4 terms are common in both.

56. A

Interest paid by Vineet in 1 year $= 15\%$ of 10000 $= 1500$

Let Aman took loan of $200x$ and $300x$ from vendors A and B respectively.

Interest paid to vendor A in 1 year $= 8\%$ of $200x = 16x$

Interest paid to vendor B in 1 year $= 3\%$ of $300x + 3\%$ of $300x + 3\%$ of 3% of $300x$
 $= 9x + 9x + 0.27x = 18.27x$

Total Interest paid by Aman = Total interest paid by Vineet

$\Rightarrow 16x + 9x + 9x + 0.27x = 1500$

$\Rightarrow 34.27x = 1500$

$\Rightarrow x = 43.77$

Loan taken from vendor B $= 300x = 13131$

57. 9

ATQ

$D = 3T$

$H = D/2$

Also, $D = (D + T + H)/3 - 7$

$\Rightarrow D = (D + D/3 + D/2)/3 - 7$

$\Rightarrow D = 18 \text{ yrs}$

Hayden's age $= 18/2 = 9 \text{ yrs}$

58. B

Distance traveled by train from Ahmedabad from 10:00 am to 11:45 am $= 1:45 \text{ hours} \times 80 \text{ km/hr} = 140 \text{ km}$

Remaining distance to travel $= 900 - 140 = 760 \text{ km}$

Time when both trains meet $= 760/(80 + 60) = 5 \text{ hours and } 25 \text{ minutes from } 11:45 \text{ am}$

At 5: 10 pm both trains will meet each other.

59. B

For unique solution

$k^2/9k \neq 1/k$

$\Rightarrow k^2 \neq 9$

$\Rightarrow |k| \neq 3$

60. C

Let the cost price be Rs 100 per Kg; Total Cost Price = Rs 4500

Marked price = Rs 125

10 Kg were sold at Rs 125 = Rs 1250

10 Kg were sold at 90% of Rs 125 Profit = Rs 1125

Remaining 20 Kg (5 Kg wasted) were sold at the rate of Rs $(100 + m)$ = Rs $(2000 + 20m)$

ATQ

Rs 1250 + Rs 1125 + Rs $(2000 + 20m)$ = Rs 120×45 = Rs 5400

So, $m = 51.25\%$

61. 88

$\text{fog}(x) = (x-2)^2 - 3(x-2) + 3 = x^2 + 4 - 4x - 3x + 6 = x^2 - 7x + 6$

$\text{fog}(9) = 9^2 - 7 \times 9 + 6 = 81 - 63 + 6 = 24$

$\text{gof}(x) = x^2 - 2x + 3 - 2 = x^2 - 2x + 1$

$\text{gof}(9) = 9^2 - 2 \times 9 + 1 = 64$

62. D

Single digit numbers:

0 and 2 (**total numbers = 2**)

Two-digit numbers:

16, 40, 56, 60, 64, 96 (**total numbers = 6**)

Three-digit numbers:

Last two digits must be any of the following 16, 40, 56, 60, 64, 96

For 16; 100th place can be any of 4, 5 and 9 (3 numbers)

For 40; 100th place can be any of 1, 5, 6 and 9 (4 numbers)

For 56; 100th place can be any of 1, 4, and 9 (3 numbers)

For 60; 100th place can be any of 1, 4, 5 and 9 (4 numbers)

For 64; 100th place can be any of 1, 5, and 9 (3 numbers)

For 96; 100th place can be any of 1, 4, and 5 (3 numbers)

Total 3-digit numbers = 20

Four-digit numbers:

Last two digits must be any of the following 16, 40, 56, 60, 64, 96

For 16; 1000th place can be any of 4, 5 and 9 = 3 ways

And 100th place can be filled in 3 ways since digits at 1000th place and 0 can be there.

Total numbers = $3 \times 3 = 9$

Similarly, if last two digits were 56, 64 and 96; 9 numbers can be formed in each case.

For 40 and 60; 100th place can be filled in 4 ways

And 1000th place can be filled in 3 ways.

Total numbers = $4 \times 3 = 12$ in each case.

Total 4-digit numbers = $9 \times 4 + 12 \times 2 = 60$

Five-digit numbers:

Last two digits must be any of the following 16, 40, 56, 60, 64, 96

For 16, 56, 64 and 96;

10000th place can be filled in 3 ways 0 cannot be there.

1000th can be filled in 3 ways.
 100th place can be filled in 2 ways.
 Total numbers = $3 \times 3 \times 2 = 18$ in each case.

For 40 and 60; 10000th place can be filled in 4 ways
 1000th place can be filled in 3 ways.
 100th place can be filled in 2 ways.
 Total numbers = $4 \times 3 \times 2 = 24$ in each case.
Total 5-digit numbers = $18 \times 4 + 24 \times 2 = 120$

Six-digit numbers:

Last two digits must be any of the following 16, 40, 56, 60, 64, 96
 For 16, 56, 64 and 96; 100000th place can be filled in 3 ways
 10000th place can be filled in 3 ways.
 1000th can be filled in 2 ways.
 100th place can be filled in 1 way.
 Total numbers = $3 \times 3 \times 2 \times 1 = 18$ in each case.

For 40 and 60; 100000th place can be filled in 4 ways
 10000th place can be filled in 3 ways.
 1000th place can be filled in 2 ways.
 100th place can be filled in 1 way.
 Total numbers = $4 \times 3 \times 2 \times 1 = 24$ in each case.
Total 5-digit numbers = $18 \times 4 + 24 \times 2 = 120$

Total numbers = $2 + 6 + 20 + 60 + 120 + 120 = 328$

63. C

Between 10 and 150, total 139 numbers are there.
 Numbers divisible by 3; 12, 15, ..., 147 (**total numbers = 46**)
 Numbers divisible by 6; 12, 18, ..., 144 (**total numbers = 23**)
 Numbers divisible by 9; 9, 18, ..., 144 (**total numbers = 16**)
 Numbers divisible by both 3 and 6; **23 numbers**
 Numbers divisible by both 3 and 9; **16 numbers**
 Numbers divisible by both 6 and 9: 18, 36, ..., 144 (**8 numbers**)
 Total numbers divisible by 3, 6 and 9 = $46 + 23 + 16 - 23 - 16 - 8 = 38$
 Numbers not divisible by 3, 6 and 9 = $139 - 38 = 101$

64. D

The average score of the last 2 innings = 40; total = 80
 The average of the first 2 innings = 48; total = 96
 Average score of remaining 2n innings = 35; total = 60n
 The total of all the 2n+4 innings = $38(2n + 4) = 176 + 60n$
 $n = 2$; total innings = 8

The average of the middle 4 innings = 30 and in none of the innings did the batsman score 35 or above.

Let he has scored 34, 34 and 34 in 3 innings, then he must score 18 runs in fourth inning to maintain the average.

18 is the minimum value of x .

65. B

Final concentration of alcohol = initial concentration of alcohol $\left(\frac{\text{volume before addition}}{\text{volume after addition}}\right)$

$$\Rightarrow 40\% = 60\% \left(\frac{x-5}{x+15}\right), x \text{ is initial volume of solution}$$

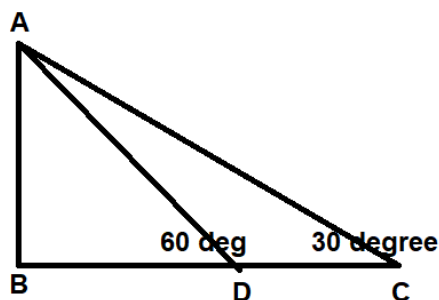
$$\Rightarrow x = 45 \text{ litres}$$

Again, using the same formula

$$\text{Final concentration of alcohol} = 40\% \left(\frac{45-10}{45}\right) = 280/9 \%$$

$$\text{Volume of alcohol in final solution} = 280/9 \% \text{ of } 45 = 14 \text{ litres}$$

66. B



$$AB = 50 \text{ metres}$$

$$\tan 30 = AB/BC$$

$$\Rightarrow 1/\sqrt{3} = 50/BC$$

$$\Rightarrow BC = 50\sqrt{3}m$$

$$\tan 60 = AB/BD$$

$$\Rightarrow \sqrt{3} = 50/BD$$

$$\Rightarrow BD = 50/\sqrt{3}m$$

$$CD = BC - BD = 50\sqrt{3} - 50/\sqrt{3} = 100\sqrt{3} m$$

$$\text{Speed} = 100\sqrt{3} / 30 = 10\sqrt{3}/3 \text{ metres/min}$$

MOCK TEST - 20

Section - 1 - Verbal Ability & Reading Comprehension

Directions for Questions 1 to 4: Read the passage given below and answer the questions that follow.

Passage-1

A woman waits on a subway platform, head bowed, pretending to ignore the insults. Perched on bar stools, a group of friends listen to racist jokes, suppressing giggles. Kneeling, a young war veteran tells his fiancée of his decision to return to combat. Two men wait expectantly at a job interview. An old man and a young graffiti artist sit together on a bench, discussing the power of language.

All of these scenes are woven together with a common thread: what it means to be Muslim in New York, nine years after the events of Sep. 11, 2001. The performance, which has been staged in churches, schools, and community centres more than a dozen times throughout the city, is called 'Under the Veil: Being Muslim (and Non- Muslim) in America, post 9/11.' It is the creation of the TE'A Project, a collaborative undertaking that combines storytelling, theatrical performance, and facilitated dialogue in an effort to create shared understanding and lasting social change. TE'A, which stands for Theatre, Engagement, and Action, is the brainchild of Radha Kramer, an indefatigable woman whose eyes sparkle when she speaks of the philosophy behind the project: an academic theory called the Insight Approach, pioneered by the twentieth-century philosopher-theologian Bernard Lonergan. Lonergan's theory, Kramer told IPS, is based on an idea essential to conflict resolution techniques: that by achieving insight into the experience of others, we can learn to empathize and thereby create opportunities for relating to one another that transcend social and cultural boundaries.

'The insight is where the conversation begins,' Kramer told IPS, 'because once you have an insight into yourself, or someone else, you're forever changed.' 'The entire TE'A process itself is an insight-generating mechanism,' she said. In fact, performances like 'Under the Veil' are the culmination of a months-long process that begins and ends not in the mind of a director or playwright, but in the surrounding community. The TE'A process begins by gathering a group of artists together to discuss what social issues are most important to them. When a consensus on one topic is reached, the company goes into their community to speak to people about their thoughts on and experiences with the issue. After several months and dozens of interviews and discussions, the artists come together to create a theatrical performance representing the voices of those they have spoken with. The piece is then presented to the community, after which a facilitated dialogue begins.

The idea, Kramer explained, is about presenting complicated social issues in a protected, non-threatening space. 'You take this theatrical performance piece that's ripe with all these issues - conflicts, complex relationships - and you put it on stage so the audience can be part of that world and engage in those relationships without being threatened by it,' she said. By engaging the audience in this way, she explained, the opportunity for insight is created. 'When you have a significant insight, like 'oh, the woman who's wearing that hijab over there might not be the person I've assumed her to be,' it opens up a new realm of curiosity: who is she?'

The flagship TE'A production of 'Under the Veil' began development last January and was first presented in May of 2009. The topic of being Muslim in a post-9/11 environment was unanimously chosen by TE'A company members. 'There's all this stuff being churned out, and no one is talking about it,' Kramer said, remembering the impetus for the choice, 'No one's asking Muslims in New York, 'What's going on? How

are you feeling? What decisions have you made since 9/11? Who have you become? Who do you wish you could be?" The result of asking these questions, Kramer said, was a portrait of diverse voices within the Muslim community.

Interestingly enough, none of the five TE'A Project cast members currently performing 'Under the Veil' are themselves Muslim. When asked about this seeming discrepancy between subject and presenter, Kramer responded thoughtfully. That's the beauty of art and theatre,' she explained. 'We can tell each others' stories. If only Jews can tell Jewish stories, and only African-Americans can tell African-American stories, then where are we? The whole point of TE'A is to say 'I care about your story.' And it's not just your story; it's our story.' In addition to ongoing performances of 'Under the Veil', TE'A is working with university students in Washington, D.C., to create a theatrical piece about the experiences of young, female, Muslim college students in the nation's capital that will be presented to universities during a winter tour.

Q1. According to the passage, 'Insight Approach' is based upon:

- A. acknowledging the emotions of others
- B. commiserating with the feelings of others
- C. interpreting the feelings of others
- D. foretelling the emotions and feelings of others

Q2. Which one of the following represents the best summary for the process adopted by TE'A to identify the topic they will perform?

- A. a culmination of group efforts of the very society it intends to portray
- B. an aberration from the conformist forms of producing artwork
- C. an anomaly from the predictable forms of theatrical knowledge
- D. an attempt at re-structuring social association

Q3. In the given context, the word 'empathize' means:

- A. the vicarious experience of feelings and emotions of another
- B. to sympathize with another person and express one's kindness for the same
- C. to have emotions of pity for another
- D. to condone the actions of another

Q4. Which, out of the following, are true as per the passage?

- I. None of the five TE'A Project cast members currently performing 'Under the Veil' are themselves Muslim as TE'A wanted to portray the plight of Muslims through an objective viewpoint.
 - II. After 9/11, Muslims have not had adequate representation of their feelings.
 - III. TE'A puts forward its ideas in a safe and non-threatening manner.
- A. I & II
 - B. II & III
 - C. I & III
 - D. All of the above

Directions for Questions 5 to 8: Read the passage given below and answer the questions that follow.

Passage 2

Subsidies for agriculture in the industrialised countries of the world grew again in 2009, benefiting the largest companies and land owners, such as Prince Albert of Monaco and Queen Elizabeth of Britain. The latest increase came despite repeated and consistent evidence that such subsidies contribute to the destruction of the livelihoods of poor farmers in developing countries, especially in Africa, and that they distort international trade. According to a new study by the Organisation for Economic Cooperation and Development (OECD), subsidies for agriculture in industrialised countries rose to around 252.5 billion dollars, or 22 percent of total farmers' receipts in 2009 -- up from 21 percent in 2008. The study, 'Agricultural Policies in OECD Countries at a Glance 2010', found that the European Union's subsidies for farmers rose from 22 to 24 percent. In the period between 2007 and 2009, EU farmers received an average of 23 percent of their gross receipts in the form of direct financial support from the state.

The OECD represents the 30 most industrialised countries of the world, including the U.S. and most members of the EU. The subsidies for farmers in OECD countries have been at the centre of a heated dispute for years, both at the level of the EU and the U.S. and within the larger framework of the World Trade Organisation and its deadlocked Doha Development Round. The EU spends about 75 billion dollars on subsidies for agriculture, even though the sector represents only about two percent of the total gross domestic product of the union. The new OECD data inflamed these complaints, the more so since it has been shown that the largest agro-businesses and even some royal houses in European monarchies benefit the most from the subsidies.

'EU subsidies for agriculture are a shame,' Marita Wiggerthale from the German office of the humanitarian organisation Oxfam told IPS. She cited the example of subsidies for milk, which form part of the EU agricultural policy. Due mostly to overproduction, the European milk prices for farmers were in early 2009 extremely low at less than 0.20 euro per litre. Instead of reducing the production to stabilise prices, the EU reintroduced subsidies for milk in 2009 to support producers. 'As a consequence, the EU is again exporting milk to the whole developing world, especially towards Africa, at 'dumping' prices,' Wiggerthale said. 'By so doing, the EU is destroying the livelihoods of farmers in the poorest countries of the world while artificially maintaining a too high level of production.' To add insult to injury, the EU is simultaneously forcing developing countries in Africa, the Caribbean and the Pacific to further open their markets through the trade deals called economic partnership agreements.

'European subsidies for agriculture continue to benefit the largest land owners,' Cahill, head of the policies, trade and adjustment division of the OECD's directorate told IPS. According to the most recent data, 11 percent of farms get 75 percent of the payments. 'Take care though,' Cahill warned, 'it is the share of the payments, not of the entire budget, some of which goes to programmes and purposes that are not payments.' Cahill also called attention to positive changes in the agricultural subsidy policies, especially in the EU. 'Despite still spending a large chunk of its budget on supporting a relatively small sector of its economy, the EU has reformed its subsidies criteria to move away from supporting exports and towards supporting producers, thus decoupling aid from production,' Cahill said. 'Such subsidies,' Cahill argued, 'are far less distorting in terms of trade than the aid directly linked to production volumes.' However, Cahill lamented that the EU and the member countries do not link the subsidies to specific targets. 'The EU could connect its aid to better environmental protection measures of agriculture, or to an increased concern for biodiversity,' Cahill told IPS. She explained that the increase in agricultural subsidies was mainly provoked by fluctuations in international commodity prices during the last four years. 'Higher commodity prices in 2007 and 2008 were behind drops in the measured support in those years and the return to 2007 level prices reversed this trend for 2009', automatically leading to relatively higher subsidies.

The OECD report also says that lower or negative economic growth in OECD countries, caused by the recent global recession, moderated demand pressures in particularly higher value-added products, such as dairy and meats. A positive supply response to higher prices in 2008 came at the same time as growth for food demand was easing. These factors all contributed to the rise in subsidies.

Q5. Which of the following are problems listed by the author with respect to subsidies?

- I. How OECD are supporting producers and not supporting exports, thereby leading to an increase in production but fall in prices.
 - II. Subsidies in OECD countries create an issue in developing countries where the livelihood is affected by the price distortion introduced by these subsidies in the developed world.
 - III. The subsidies in OECD countries allow these countries to dump products into others at an artificially low price, thereby having a negative impact on the economies of the countries where these products are dumped.
- A. I only
 - B. II only
 - C. I & III
 - D. II & III

Q6. Why have the complaints against subsidies in OECD countries been further inflamed?

- A. People such as Prince Albert of Monaco and Queen Elizabeth of Britain have benefited from the subsidies.
- B. Increase in subsidies has eroded the income of farmers in developed countries.
- C. The benefits of these subsidies have unfairly gone to large agro-businesses and even some royal houses.
- D. None of the above

Q7. The main purpose of the author of the passage can be identified as:

- A. highlight the need for unconventional thinking with respect to a particular issue
- B. recommend consideration and corrective action for a faulty practice
- C. showcase the need for a unified strategy to deal with a complicated question
- D. suggest the need for urgent analysis of certain faulty assumptions

Q8. The trade deals by the name of 'economic partnership agreements' are essentially:

- a. stratagems used by developed countries to beat the system
- b. charades used by developed countries to mock the system
- c. tactics used by developed countries to aid the system
- d. manoeuvres used by developed countries to assist the system

Directions for Questions 9 to 12: Read the passage given below and answer the questions that follow.

Passage 3

Over the past several months, the normally restrained voice of science has taken on a distinct note of panic when it comes to global warming. How did we go from debating the "uncertainty" behind climate science to near hysterical warnings from normally sober scientists about irrevocable and catastrophic consequences? Two reasons.

First, there hasn't been any real uncertainty in the scientific community for more than a decade. An unholy alliance of key fossil fuel corporations and conservative politicians have waged a sophisticated and well-funded misinformation campaign to create doubt and controversy in the face of nearly universal scientific consensus. In this, they were aided and abetted by a press which loved controversy more than truth, and by the Bush administration, which has systematically tried to distort science and silence and intimidate government scientists who sought to speak out on global warming.

But the second reason is that the scientific community failed to adequately anticipate and model several positive feedback loops that profoundly amplify the rate and extent of human-induced climate change. And in the case of global warming, positive feedback loops can have some very negative consequences. The plain fact is, we are fast approaching — and perhaps well past — several tipping points which would make global warming irreversible.

In an editorial in the Baltimore Sun on December 15th, 2004 this author outlined one such tipping point: a self-reinforcing feedback loop in which higher temperatures caused methane — a powerful heat-trapping greenhouse gas (GHG) — to escape from ice-like structures called clathrates, which raised the temperature which caused more methane to be released and so on. Even though there was strong evidence that this mechanism had contributed to at least two extreme warming events in the geologic past, the scientific community hadn't yet focused on methane ices in 2004. Even among the few pessimists who had, we believed — or hoped — that we had a decade or so before anything like it began happening again. We were wrong.

In August of 2005 a team of scientists from Oxford and Tomsk University in Russia announced that a massive Siberian peat bog the size of Germany and France combined was melting, releasing billions of tons of methane as it did. The last time it got warm enough to set off this feedback loop was 55 million years ago in a period known as the Paleocene-Eocene Thermal Maximum or PETM, when increased volcanic activity released enough GHGs to trigger a series of self-reinforcing methane burps. The resulting warming caused massive die-offs and it took more than a 100,000 years for the earth to recover. It looks like we're on the verge of triggering a far worse event.

At a recent meeting of the American Academy for the Advancement of Sciences in St. Louis, James Zachos, foremost expert on the PETM reported that greenhouse gasses are accumulating in the atmosphere at thirty times the speed with which they did during the PETM. We may have just witnessed the first salvo in what could prove to be an irreversible trip to hell on earth. There are other positive feedback loops we've failed to anticipate. For example, the heat wave in Europe that killed 35,000 people in 2003 also damaged European woodlands, causing them to release more carbon dioxide, the main GHG, than they sequester — exactly the opposite of the assumptions built into our models, which treat forests as sponges that sop up excess carbon. The same thing is happening to a number of other ecosystems that our models and scientists have treated as carbon sinks.

The Amazon rainforest, the boreal forests (one of the largest terrestrial carbon sinks in the planet), and soils in temperate areas are all releasing more carbon than they are absorbing, due to global warming-induced droughts, diseases, pest activity, and metabolic changes. In short, many of the things we treat as carbon sponges in our models aren't sopping up excess carbon; they're being wrung out and releasing extra carbon. The polar ice cap is also melting far faster than models predict, setting off another feedback loop. Less ice means more open water, which absorbs more heat which means less ice, and so on.

Q9. From the given context of the passage, which one of the following corresponds to a positive feedback loop?

- A. A produces less of B which in turn produces more of A

- B. A produces less of B which in turn produces less of A
- C. A produces more of B which in turn produces less of A
- D. A produces more of B which in turn produces more of A

Q10. From the context of the passage, we can infer the meaning of “tipping point” (with respect to global warming and climate change):

- A. as the point of significant intrusion of climate theories in our life
- B. as the point of likely permanent damage to the planet
- C. as the point of somewhat irrevocable damage to the planet
- D. as the point when climate change has an impact on the whole world and not a particular region.

Q11. The primary purpose of the passage is:

- A. to showcase the need for an investigation for something that is being alleged
- B. to highlight multiple explanations for a single phenomenon and how these add up
- C. to provide examples for a potentially damaging situation and highlight the possible consequences
- D. to challenge existing theories with regards to a particular problem and throw new light on a subject

Q12. According to the author of the passage:

- A. There is uncertainty among scientists with respect to climate change.
- B. Fossil fuel companies, driven by their own personal agenda, have tried to obfuscate the issue of global warming.
- C. Political administrations, driven by their selfish interests, have played a role in undermining the issue of global warming.
- D. Both B and C

Directions for Questions 13 to 16: Read the passage given below and answer the questions that follow.

Passage 4

Anyone looking for principle and logic in the attack on Moammar Gaddafi's tyrannical regime will be disappointed. President Obama and his advisers should acknowledge the obvious truth: They are reacting to the revolutionary fervour in the Arab world with the arbitrary "realism" that is a superpower's prerogative. Faced with an armed uprising by democracy-seeking rebels, Gaddafi threatened to turn all of Libya into a charnel house. The United States and its allies responded with overwhelming military force that was clearly intended to cripple the government and boost the revolt's chances of success. Thus, begins our third concurrent Middle East war. No one has the slightest idea how, or when, this one will end.

I have to admit that I, too, would have found it hard to stand idly by as Gaddafi drenched the streets of Benghazi in blood. But what makes it any easier to watch other despots do the same thing? In Yemen, forces loyal to dictator Ali Abdullah Saleh have slaughtered dozens of defenceless protesters seeking democratic reform. Saleh clings desperately to power despite having been abandoned by many of his political supporters and some of his generals. He has shown nothing but defiance. "Every day we hear a statement from Obama saying, 'Egypt, you can't do this, Tunisia, don't do that,'" Saleh said in a speech earlier this month. "Are you president of the United States, or president of the world?" But there has been no U.S. military intervention. Saleh has been seen as a valuable ally in the fight against al-Qaeda, which has perhaps its most active - and potentially dangerous - base in Yemen.

In Bahrain, the ruling al-Khalifa royal family has responded to peaceful demonstrations with violent repression. While the world's attention was focused on the unfolding tragedy in Japan and the looming tragedy in Libya, Bahrain's leaders brutally cleared Pearl Square of its protest encampment and even destroyed the towering monument that had become the pro-democracy movement's most powerful symbol. But for Bahrain, too, we have polite words rather than decisive action. Why? Because the U.S. Navy's 5th Fleet is based there, astride the Persian Gulf shipping lanes through which 40 percent of the world's seaborne oil shipments must pass. The base gives the United States a way to counter Iran's growing power.

Also, the al-Khalifas are close allies of the Saudi royals, who are desperate to keep the protests in Bahrain from spilling over into the nearby kingdom. The Saudi rulers sent troops to help crush the Bahrain demonstrations and have banned any kind of pro-democracy agitation at home. For the House of Saud, however, the White House has barely managed to choke out a tsk-tsk.

Why is Libya so different? Basically, because the dictators of Yemen, Bahrain and Saudi Arabia are friendly, cooperative and useful. Gaddafi is not. In explaining why the U.S. would join in establishing the Libyan no-fly zone, which immediately became much more, Obama tied himself in rhetorical knots. If Gaddafi were to commit atrocities against his people, Obama said, "The entire region could be destabilized, endangering many of our allies and partners." Well, duh. As he no doubt has noticed, the region is already destabilized. Friendly regimes are already being threatened, but not by Gaddafi. They are endangered by the democratic aspirations of their own people.

Gaddafi is crazy and evil; obviously, he wasn't going to listen to our advice about democracy. The world would be fortunate to be rid of him. But war in Libya is justifiable only if we are going to hold compliant dictators to the same standard we set for defiant ones. If not, then please spare us all the homilies about universal rights and freedoms. We'll know this isn't about justice, it's about power.

Q13. What does the author mean by the line '*They are reacting to the revolutionary fervour in the Arab world with the arbitrary "realism" that is a superpower's prerogative.*'

- A. By exhibiting consistency in their actions in the Arab world, the US is showcasing how the world's realist problems can only be handled by global superpower.
- B. With the help of its global superpower status, the US has been able to deal with problems in the Arab world in a realistic manner.
- C. By virtue of its global superpower status, the US is adopting double standards in the cloak of realism in dealing with situations in the Arab world.
- D. The US, since it is a superpower, has no qualms in dealing with the situations in the Arab world through the use of its military might.

Q14. A suitable title for the passage is:

- A. The Middle East: with its useful and non-useful tyrants
- B. The Middle East: split in the middle with its tyrannies
- C. The Middle East: in need of a middle path
- D. The Middle East: playground for the developed world

Q15. An inference that can be made in the given context is:

- A. The practical method adopted by countries such as the United States towards crises such as the ones in the Middle East can be matched by others as well.

- B. The anarchic method followed by the United States in the case of revolutions in the Arab world should not be followed by other nations.
- C. The approach of the United States towards the current situation in the Arab world should be viewed through an impartial lens and its deep cause of promoting democracy understood.
- D. The different Arab regimes should be judged by the yardstick as in the case of Libya and these should be based on principles of universal rights and freedom.

Q16. The author of the passage will agree with which of the following statements:

I. Dictatorial regimes in the Middle East face a threat from democratic ambitions that harbour in their populace.

II. There are three wars going on in the Middle-East that involve the US.

III. The crisis in Libya has destabilized the whole region

- A. I, II, and III
- B. II & III
- C. I & III
- D. I & II

Directions for the Question: Identify the apt summary for the given paragraph. Enter the option number you deem as the correct answer.

Q17. International institutions can play an important role in helping governments to seize the opportunities presented by investment in the care sector. In the Former Yugoslav Republic of Macedonia, the United Nations Development Programme undertook an initiative that helped women who had mostly worked at home their entire lives to find jobs in the care sector, enabling them to make use of their skills, by caring for children and for young adults with disabilities, while earning an income. As populations grow and age, the care sector will only increase in importance. Adapting to these new circumstances now will give countries a considerable advantage, as it bolsters women's rights and freedoms, generates jobs, and makes societies more equal. So what are we waiting for?

- A. The care sector in developing and developed countries will generate jobs and bolster the economy in the coming years.
- B. United Nations Development Programme is taking many initiatives to empower women.
- C. The care sector is a great opportunity for women to work and make use of their skills.
- D. The only job where a woman can feel safe is that of taking care of children and young adults with disabilities.

Directions for the Question: Identify the apt summary for the given paragraph. Enter the option number you deem as the correct answer.

Q18. And now, all good things, all things sweet, delicious and poetic, which embellish life and make it enjoyable, were withdrawing from her, because she was growing old! It was all finished! Yet she still found within her the tenderness of the young girl and the passionate impulses of the young woman. Nothing had grown old but her body, that miserable skin, that stuff over the bones, fading little by little like the covering of a piece of furniture. The curse of this decay had attached itself to her, and had become almost a physical suffering. This fixed idea had created a sensation of the epidermis, the sensation of growing old, continuous and imperceptible, like that of cold or of heat. She really believed that she felt an indescribable sort of itching, the slow march of wrinkles upon her forehead, the weakening of the tissues of the cheeks and throat, and the multiplication of those innumerable little marks that wear out the tired skin.

- A. Age is just a number
- B. Even if the skin feels old, the heart can feel young
- C. Old age is a curse
- D. The protagonist is very sad as she is unwell and ageing

Directions for the Question: Identify the apt summary for the given paragraph. Enter the option number you deem as the correct answer.

Q19. Given below is a short paragraph and a set of four options. Read the paragraph and select the best summary for the paragraph.

When I tell people that I had a brother who was kidnapped and murdered, I'm often asked how my parents survived. I was only four when Jon died, so for a long time I had the same question. My family suffered an unfathomable loss. Yet I grew up as free as most kids in the nineteen-seventies: my friends and I biked around town for hours, losing ourselves in the woods, the lakes, the arcades, with no cell phones to find us. When I finally had children of my own, I wondered more than ever how my mom and dad had done it. How had they found the strength not only to survive but to let me go?

- A. C It is only now that I am beginning to wonder how it was possible for my parents to go on after the death of my brother.
- B. I often find myself wondering how it was possible for my parents to move on after the death of my sibling.
- C. I used to frequently ponder the question of how it was that my parents were able to move on after the passing of my brother.
- D. I had a carefree childhood and played with my friends, but as an adult, I can't help but wonder how my parents managed.

Directions for the Question: The question below has a paragraph given with one sentence missing in at the end. From among the answer choices given, select the sentence that can fill the blank to form a coherent paragraph.

Q20. He had come to Delhi two years ago and was preparing for the UPSC preliminary exams. Before shifting his residence to Old Rajendra Nagar for coaching, he had stayed at several other places in the Capital. The friends informed that Chandran had appeared for the exam thrice but remained unsuccessful. This time, he had decided it to be his last attempt in order to fulfil his parent's dreams. Chandran had reached the centre on time. However, it was the wrong centre and had to rush to the right one, his friends told the police. The suicide came to light when one of the deceased's friend, also preparing for the exam, called him several times to discuss the question paper. When he did not answer despite repeated calls, she went to his home and found the room locked from inside.

(_____)

- a. The police were informed and then the body was recovered.
- b. A team of doctors rushed in along with the fire force to see if luck had favoured the boy.
- c. The media was mourning and criticising the boy at the same as he showed his incapability of serving the nation by committing suicide.
- d. The neighbours were informed.

Directions for the Question: The question below has a paragraph given with one sentence missing in at the end. From among the answer choices given, select the sentence that can fill the blank to form a coherent paragraph.

Q21. Gutkha and other chewable tobacco items are equally, if not more, harmful compared to cigarettes. Surveys show that these products are sometimes mixed with carcinogenic compounds called nitrosamines. This is why India banned their sale under the 2011 Food Safety and Standards Regulations. Why do they continue to be consumed, then? Experts blame their availability on loopholes in the law. The food safety rules target pre-mixed tobacco products, such as gutkha, which contains lime, sugar and other spices. (_____)

- a. This forces the government to recheck the existing law in order to reduce the consumption of these fatal fantasies.
- b. Apart from this, the government should conduct regular raids and surveys in order to keep a check on the scales of this harmful product.
- c. This leaves unflavoured items, such as khaini or surthi, out of regulatory purview.
- d. The 2011 Food and Safety Act has not made its way into the people properly and a channelised re-formation is required to set things right, under the aegis of a specially constituted central body.

Directions for questions 22: In the following question, rearrange the five sentences in order to form a meaningful paragraph.

TITA

Q22.

1. Naturally, I had been following the eye-witness accounts which first told of plunging fireballs, striking the Earth with violence that sent gouts of soil and rock spitting upward, like miniature versions of the outburst at Krakatau.
2. Riding gigantic tripod mechanisms, these unwelcome guests soon set forth with one sole purpose in mind -- destructive conquest!
3. These impacts had soon proved to be far more than mere meteoritic phenomena, since there soon emerged, like insects from a subterranean lair, three-legged beings bearing incredible malevolence toward the life of this planet.
4. It was in such an uncharacteristically dour mood that I strolled in the company of M. Beauchamp, a gentleman scientist, that pale afternoon less than an hour before I had my first contact with the horrible Martian machines.

Directions for questions 22: In the following question, rearrange the five sentences in order to form a meaningful paragraph.

TITA

Q23.

1. If not properly designed and implemented, those expenditures may not be good investments—the right knowledge structures may not have been created in consumers' minds—but they are investments nonetheless.
2. In an abstract sense, brand equity provides marketers with a strategic bridge from their past to their future. That is, all the dollars spent each year on marketing can be thought of not so much as expenses but as investments.
3. For it is consumers who will decide, based on their beliefs and attitudes about a given brand, where they think that brand should go and grant permission (or not) to any marketing tactic or program.
4. Investments in what consumers know, feel, recall, believe, and think about the brand. And that knowledge dictates appropriate and inappropriate future directions for the brand.

Directions for questions 24: In the following question, rearrange the five sentences in order to form a meaningful paragraph.

TITA**Q24.**

1. The trauma case treatment is a very critical issue in healthcare and India records one of the highest numbers of deaths in accidents.
2. In a country like this, trauma care seems to be a distant dream even though we are talking about super speciality hospitals in all districts of the country along with the fact that there should be primary healthcare centres, fully equipped, in all blocks of the country.
3. The problem is mainly acute in the rural areas where there is no doctor in a very large area and the villagers need to go a long way to make it to the doctor or sometimes succumb on their way as well.
4. Trauma care is a very sensitive issue given the importance and efficiency required to handle such cases and the main problem is that India does not have as many doctors as required in this arena.

Section - 2 - Data Interpretation and Logical Reasoning

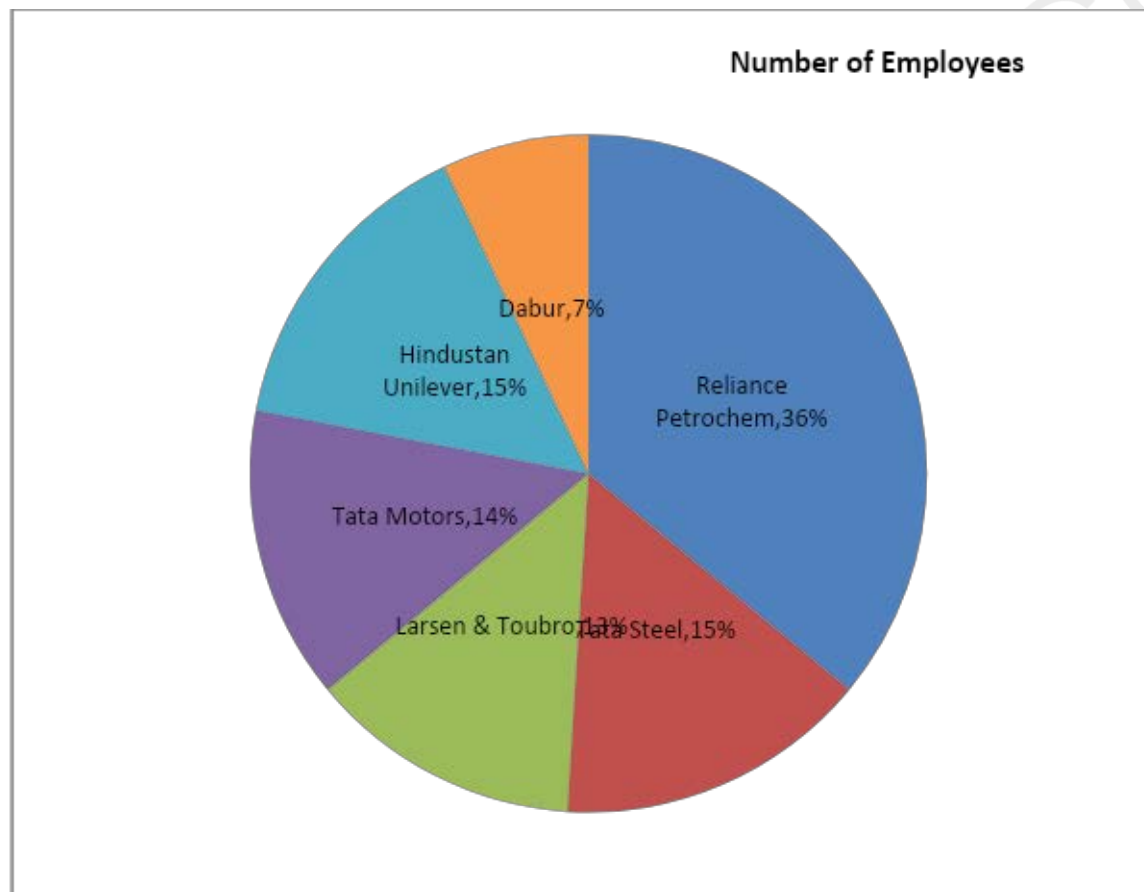
Directions for questions from 25 to 29 :

The following table shows the expenditure behind employee wages and the value of the annual production of six of the top manufacturing companies in India, in the financial year of 2021-22 :

Manufacturing Company	Annual Wages (thousand crores of Rs)	Employee (thousand)	Annual Production (thousand crores of Rs)
Reliance Petrochem	3.1		360
Tata Steel	3.4		219
Larsen & Toubro	1.5		135

Tata Motors	2.8	128
Hindustan Unilever	1.5	113
Dabur	1.1	96

The following pie-chart shows the break-up of the number of employees of the companies as a percentage of the total number of the employees of the six companies, which was 6 lakhs in 2021-22 :



Annual Wages per employee and Annual Production per employee are the average Annual Wages and Annual Production per employee of a company respectively.

Q 25(TITA)

What is the ratio (rounded to the second decimal place) of the Annual Wages per employee of Reliance Petrochem and Larsen & Toubro ?

Q 26 (TITA)

What is the ratio (rounded to the second decimal place) of the Annual production per employee of Tata Steel and Hindustan Unilever ?

Q 27 If Annual Wages as a percentage of the Annual production were calculated for all the six companies, who would rank third in the descending order ?

- A) Dabur
- B) Larsen & Toubro
- C) Hindustan Unilever
- D) Tata Motors

Q 28 For which company is the Annual Wages per employee the highest ?

- A) Tata Motors
- B) Larsen & Toubro
- C) Dabur
- D) Tata Steel

Q 29 (TITA)

The employees of a company are eligible for government ESIC facility if it's Annual Wages per employee is less than Rs 1.9 lakhs. The employees of how many of the six companies are eligible for ESIC facility after 2021-22 ?

Directions for questions from 30 to 34 :

Gautami, Helen, Ileana, Jaya, Katrina, Lara, Madhuri, Neha and Oviya were nine actresses from among whom three teams consisting respectively of two, three and four members had to be formed, one team each for each of the sequels of an epic trilogy to be shot by a renowned director, in any order.

The following were the conditions for the selection in the formation of the teams :

- a) Ileana had to have three more actresses with her, as the sequel for which she was selected had four lady characters
- b) Ileana and Oviya would represent the same character in the sequels of the trilogy, so could not be in the same team
- c) Neha and Helen would also represent the same character in the sequels of the trilogy, so could not be in the same team
- d) Lara and Madhuri would represent the character of twins in one of the sequels of the trilogy, and hence had to be together in the team
- e) Jaya was acting in the sequel which had only three lady characters

Q 30 If Jaya, Katrina and Neha form the team of three members, which of the following must be true ?

- A) Oviya must be in a two member team with Helen or Gautami
- B) Lara must be teamed up with Helen
- C) Oviya must be in a two member team with Ileana or Gautami
- D) Ileana would be in the team of four members with Lara, Madhuri and Gautami

Q 31 If Jaya had Gautami as a part of her three member team, which two members among the options below should be in the team of Ileana ?

- A) Helen and Lara
- B) Lara and Madhuri
- C) Neha and Madhuri
- D) Neha and Katrina

Q 32 If Ileana did not have Neha in her team and Oviya and Gautami constituted the two member team, then the actresses with Ileana had to be ?

- A) Helen but not Madhuri
- B) Helen and Katrina
- C) Lara, Helen and Madhuri
- D) Lara and Madhuri

Q 33 (TITA)

If Ileana and Katrina were together in the same team, and Oviya was in the team having two members, then how many sets of different teams were possible ?

Q 34 If Neha was in the same team as Ileana and Katrina, then Oviya had to be in the same team as ?

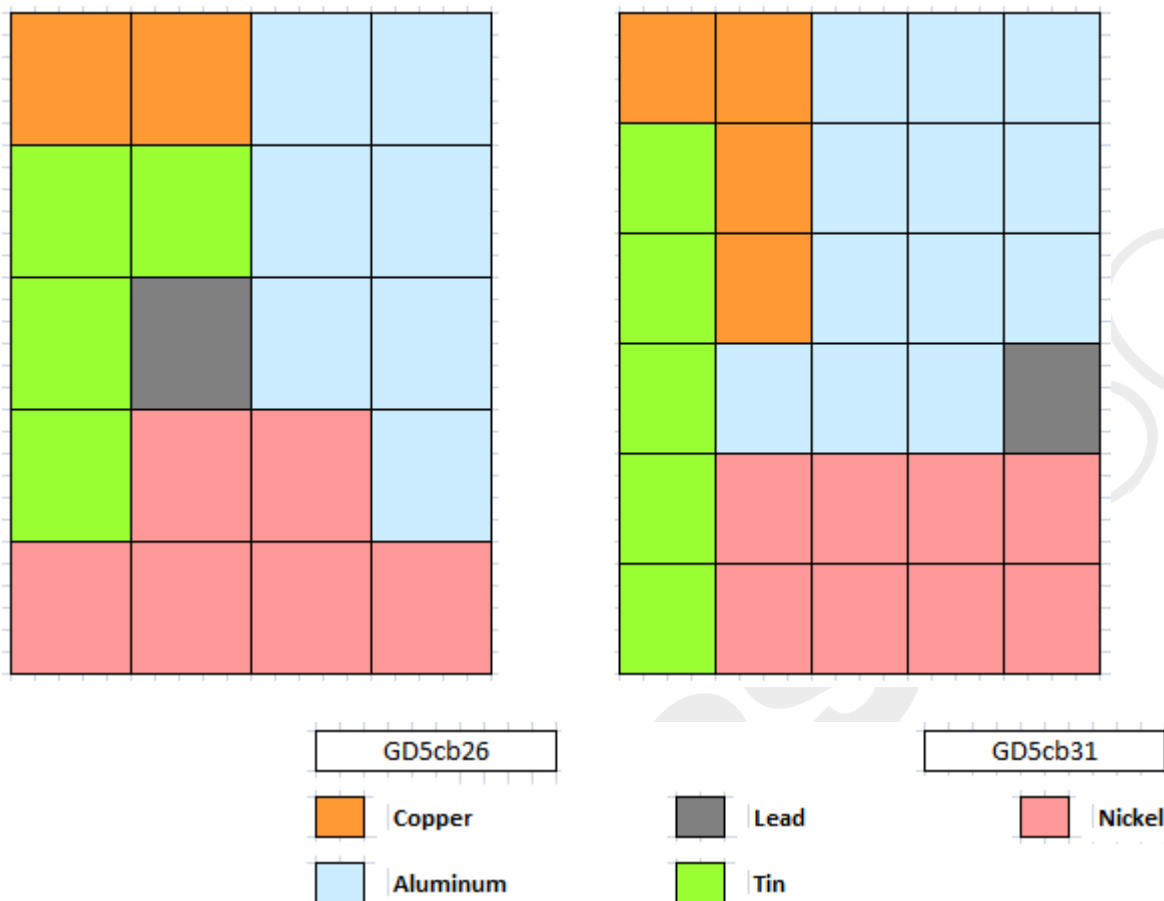
- A) Gautami
- B) Gautami and Helen
- C) Helen
- D) Helen and Jaya

Directions for questions from 35 to 38 :

GDSY Electronic Materials Technology in the Guangdong Province of China is the R&D wing of all the Printed Circuit Boards (PCBs) that are used by top companies like Samsung, Panasonic, IBM, Acer, Tesla, Bayerische Motoren Werke (BMW), Ford, Hyundai, etc. for electronic transmission

In the month of November 2022, the researchers constructed prototypes of two new types of PCB (named GD5cb26 and GD5cb31) using five different core base materials – a) Copper, b) Aluminium, c) Lead, d) Tin and e) Nickel – to improve the efficiency of transmission. The two types of PCBs differed in the core area of the PCB covered by the five base materials.

The distribution of the base materials in the two PCBs of (30 x 20) cm dimensions were as follows :



For the final prototype of the PCB GD5cb26 and the prevailing material prices, the researchers also knew the following data :

Base Material	Weight in gm required per square cm	Price in US dollars per kg
Copper	1.5	8.20
Aluminium	2	2.70
Lead	2	2.20
Tin	2.5	3.30
Nickel	1	27.80

For the final prototype of the PCB GD5cb31, the researchers knew that the number of mg of Copper, Lead and Nickel required per square cm would decrease by 20% and that of Aluminum and Tin would increase by 10%. Also, in GD5cb31, due to the usage of a minor quantity of Silver as an alloy with all the five base materials, the price per kg (in US Dollars) of all the base materials would increase by 10%.

Q 35 (TITA)

What would be the average weight (in gm) of core base material used per square cm of the batch of PCB GD5cb26 ?

Q 36 (TITA)

If industrially manufactured in batches of ten thousand units, what was the total costing (in US Dollars) of the core base material used in a batch of GD5cb31 ?

Q 37 Which core base material used in GB5cb26 had the second highest cost per square cm ?

- A) Nickel
- B) Aluminium
- C) Copper
- D) Tin

Q 38 If the total costing of the core base material used in GD5cb31 needed to be minimised by only swapping the areas of core base materials, all other factors remaining the same, how many times the areas of base materials needed to be consecutively swapped among themselves ?

- A) 5
- B) 4
- C) 3
- D) 2

Directions for questions from 39 to 42 :

During the Durga Puja holidays, bored by the mechanical and stressful life in the city of Kolkata, ten young Trainee Managers of Deloitte -- Mr Abir, Ms Baisali, Mr Chintu, Mr Deepu, Mr Emon, Ms Fatima, Mr Gaurav, Ms Haimanti, Ms Indrani and Mr Jyoti decided to go for a hike in the Dooars valley in North-Bengal to de-stress themselves.

The ten members decided to hike in three different groups, such that there were at least three members in each group. They named the groups Alcazar, Rastapopoulos and Tapioca.

Mr Abir, Mr Chintu, Mr Emon, Ms Fatima, Ms Haimanti and Mr Jyoti knew how to cook. Ms Baisali, Mr Chintu, Mr Deepu, Mr Gaurav, Ms Haimanti and Ms Indrani knew how to set up a tent. Each of the groups had at least one lady, two who could cook and two who could set up a tent. Ms Fatima is the only lady in Alcazar. Mr Abir and Mr Emon were in Tapioca.

Q 39 Which group had four members in it ?

- A) Alcazar
- B) Rastapopoulos
- C) Tapioca
- D) Cannot be determined

Q 40 Which one of the following members was definitely in Rastapopoulos ?

- A) Mr Chintu
- B) Mr Deepu
- C) Mr Gaurav
- D) Mr Jyoti

Q41 If Ms Baisali and Mr Jyoti were not in the same group, which of the following members could be concluded to be definitely in Tapioca ?

- A) Mr Gaurav
- B) Ms Indrani
- C) Mr Jyoti
- D) None of the above

Q 42 If there were two ladies in Tapioca, then which of the following three members could be in Rastapopoulos ?

- A) Mr Chintu, Mr Deepu, Mr Gaurav
- B) Mr Gaurav, Ms Haimanti, Mr Jyoti
- C) Mr Chintu, Mr Gaurav, Ms Haimanti
- D) Ms Baisali, Mr Chintu, Ms Indrani

Directions for questions from 43 to 44 :

The selection committee of a company laid down the following criteria of selection for the post of Manager – Accounts :

- 1) The candidate must be a postgraduate in Commerce
- 2) The candidate must have completed 21 years and should not be more than 35 years as on 31.07.2022
- 3) If the candidate does not satisfy the criterion in (1) above but has completed his CA examination he/she will be referred to Director – Finance, who can allow the candidate to appear in the interview if otherwise eligible
- 4) If the candidate fulfils all the criteria mentioned in (1) and (2) above, he/she will be called for group discussion
- 5) The candidate must get 50% marks to qualify in the group discussion
- 6) If the candidate qualified in the group discussion he/she will be called for interview
- 7) The candidate must get 30% marks in the interview (out of 50) to get finally selected

Based on the above criteria, decide which of the following courses of action should be taken in case of candidates described in each of the following questions :

Q 43 Mr. Adhikary who was born on 04.05.1991 did his M.Com one year back, and he was the top candidate in the group discussion.

- A) The candidate can be selected
- B) The candidate is to be referred to the Director – Finance
- C) The candidate can be called for a group discussion
- D) The candidate can be called for an interview
- E) The candidate cannot be selected

Q 44 Mr. Sengupta, whose date of birth is 14.11.1989, is a postgraduate with Commerce and has obtained 60% marks in the interview.

- A) The candidates can be selected
- B) The candidate is to be referred to Director – Finance
- C) The candidate can be called for group discussion
- D) The candidate can be called for interview

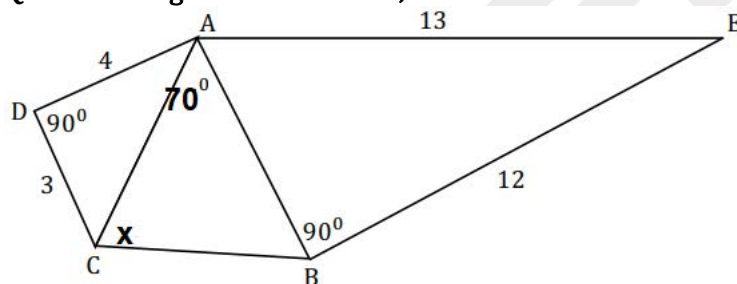
E) The candidate cannot be selected

Section - 3 - Quantitative Aptitude

Q45. The arithmetic mean of all the 5-digit numbers formed using the digits 1, 2, 3 and 4 is

- (a) 3333 (b) 2442 (c) 2222 (d) 1111

Q46. In the figure shown below, what is the value of x?



- (a) 45° (b) 65° (c) 55° (d) 50°

Q47. (TITA)

Mr. Deshmukh invests his income in three equal parts at the rate of 4% per annum, 8% per annum, and 12% per annum respectively. Minimum number of years in which interest becomes 3 times of his investment is

Ans: [25]

Let his initial investment is Rs P and investment becomes thrice i.e. interest becomes 2P.

According to question

$$\frac{P * n * 4}{300} + \frac{P * n * 8}{300} + \frac{P * n * 12}{300} \geq 2P$$

On solving, we get, $n = 25$.

Q48. (TITA) Raju has forgotten his six-digit ID number. He remembers the following: the first two digits are either 1, 5 or 2, 6, the number is even and 6 appears twice. If Raju uses a trial-and-error process to find his ID number at the most, how many trials does he need to succeed?

Q49. Ratio of the times taken by Anushka, Tanushka and Manorama to complete any job is 3: 4: 9. If they work together, they can finish the job in 8 days working 6 hours per day. However, Anushka and Tanushka started to work together and worked for 5 days working 4 hours per day. Remaining work completed by Manorma in p days working 8 hours per day. Value of p is

- (a) 63.5 (b) 21.17 (c) 34 (d) 53.16

Q50. (TITA)

In an election among 3 candidates, 70% of the voters in the voting list casted their votes. They got votes in the proportion 1: 2: 4 out of the 60% of the votes cast. Remaining 40% of the votes cast are distributed in the ratio 4: 2: 1. If the winner of the election received 5120 votes more than the candidate with the lowest votes, then the number of voters in the voting list was

Q51. (TITA)

For some natural number n, assume that 75,00 is divisible by n!. The largest possible value of n is

Q52. (TITA)

The length of each side of an equilateral triangle ABC is 3 cm. A prism is built on this base with the height of 8 cm. curved surface area of the prism, in square cm, is

Q53. Let $h(0) = -2$, $h(1) = 3$ and $h(x + 2) = 2h(x + 1) - h(x)$, where x is any rational number. Find the remainder when $h(8)h(13)$ is divided by 17

- (a) 4 (b) 10 (c) 12 (d) 14

Q54. (TITA)

How many three-digit numbers less than 500 are divisible neither by 4 nor by 6?

Q55. (TITA)

A milk man adds 25 litres of freely available water to 125 litres of milk. He sells the mixtures at a price which is 10% less than the price of pure milk. Find the overall profit percentage.

Q56. Rahim and Saleem are competing in a 1000 m race. Rahim gives Saleem a head starts of 200 m, but his speed is twice that of Saleem. When Rahim reaches the 600 m mark, Rahim reduces his speed by half but still beats Saleem by 20 s. What is Saleem's speed?

- (A) 14 m/s (B) 5 m/s (C) 3.5 m/s (D) 7 m/s

Q57. The compound interest earned on a principal amount at 5%, compounded annually, during 3rd year is Rs. 268.94. Find the principal amount (in Rs.)

- (a) 1600 (b) 1800 (c) 1700 (d) 2100

Q58. The number of ways of arranging 12 persons on a table of regular hexagon shape such that each side has 2 persons, is

- (a) $2 \cdot 11!$ (b) $6 \cdot 11!$ (c) $12!$ (d) $6!$

Q59. Three different types of balls priced at `5, `8 and `13 per piece are displayed in three different boxes by a trader. Mr. Paul bought from this shop all three types of balls spending a total sum of `768. The numbers of the balls he bought, taken in the order in which the prices are mentioned above, are in the ratio 5: 4: 3. How many balls of the costliest variety did he buy?

- (A) 104 (B) 64 (C) 48 (D) 24

Q60. The outer and inner radius of a spherical hemispherical bowl are 10 cm and 9 cm respectively. Find the cost of painting of bowl @Rs 10 cm². (Use $\pi = 3.14$)

- (a) Rs 11900 (b) Rs 11964 (c) Rs 2839 (d) Rs 22964

Q61. Each Month Andrew receives a base salary of \$1700, plus a 20 percent bonus on the total amount of his sales in excess of \$1,5000. What was the total amount of Andrew's sales last month?

(1) Last month Andrew's total salary is 120% of his basic pay.

(2) Last month Andrew donated his commission which was 25% more than that of previous month.

- (A) Statement (1) ALONE is sufficient, but statement (2) ALONE is not sufficient to answer the question asked.
 (B) Statement (2) ALONE is sufficient, but statement (1) ALONE is not sufficient to answer the question asked
 (C) statements (1) and (2) TOGETHER are sufficient to answer the question asked, but NEITHER statement ALONE is sufficient to answer the question asked.
 (D) EACH statement ALONE is sufficient to answer the question asked.
 (E) Statements (1) and (2) TOGETHER are NOT sufficient to answer the question asked, and additional data specific to the problem are needed.

Q62. There are eight rays in a plane with a common end point. The measures of the eight non overlapping angles, in degrees, are a, b, c, d, e, f, g and h + 4. The numbers a, b, c, d, e, f, g, h are consecutive integers. How many of these angles exceed 45°?

- (a) 1 (b) 2 (c) 3 (d) 4

Q63. Mathura and Ujjain are two stations p km apart. A train starts from Mathura and moves towards Ujjain at the rate of 30 km/h. After 4 hours, another train starts from Ujjain at the rate of 40 km/h and meet train coming towards Ujjain at $\frac{2}{3}$ rd of the total distance (distance is measured from) Mathura. After how much time (in hrs) train from Ujjain will reach Mathura?

- (a) 9.6 (b) 4.8 (c) 6.4 (d) 7.2

Q64. (TITA)

If $\log_5 4$, $\log_5 (3^x - 1)$, $\log_5 (3^x + 7)$ are in arithmetic progression, then the value of x is equal to

Q65. If $x^2 - 2x - 3$ is a factor of $x^4 - ax^2 + b = 0$ then the values of a and b are

- (a) -10, -9 (b) 10, 9 (c) -10, 9 (d) 10, -9

Q66. Find the remainder when 5^{91} is divided by 626.

- (a) 125 (b) 1 (c) 49 (d) 7

Answer Key - Mock Test 20

Section - Verbal Ability & Reading Comprehension

1-B, 2-A, 3-A, 4-B, 5-D, 6-C, 7-B, 8-A, 9-D, 10-B, 11-C, 12-D, 13-C, 14-A, 15-D, 16-D, 17-C, 18-B, 19-A, 20-D, 21-C, 22-4132, 23-2431, 24-1432

Section - Data Interpretation & Logical Reasoning

25- 0.75, 26-1.94, 27-C, 28-D, 29-2, 30-A, 31-B, 32-C, 33-4, 34-C, 35-1.75, 36-74239, 37-C, 38-D, 39-C, 40-D, 41-D, 42-B, 43-D, 44-A

Section - Quantitative Aptitude

45-D, 46-C, 47-25, 48-12052, 49-B, 50-64000, 51-3, 52-96, 53-D, 54-266, 55-8, 56-B, 57-C, 58-A, 59-D, 60-B, 61-A, 62-C, 63-D, 64-2, 65-B, 66-A

Solutions - Mock Test 20

Section - Verbal Ability & Reading Comprehension

1. B

Refer to the lines: *Insight Approach, pioneered by the twentieth-century philosopher-theologian Bernard Lonergan. Lonergan's theory, Kramer told IPS, is based on an idea essential to conflict resolution techniques: that by achieving insight into the experience of others, we can learn to empathize and thereby create opportunities for relating to one another that transcend social and cultural boundaries.*

We need a word that relates with the word empathize (understand and share the feelings of another).

Let's look at the meanings of the options:

Acknowledge: Declare to be true or admit the existence or reality or truth of

Commiserating: express or feel sympathy or pity; sympathize.

Interpreting: An explanation of something that is not immediately obvious

Foretelling: A statement made about the future

We can see that option B is the best fit in the given case.

2. A

Refer to the lines: *In fact, performances like 'Under the Veil' are the culmination of a months-long process that begins and ends not in the mind of a director or playwright, but in the surrounding community. The TE'A process begins by gathering a group of artists together to discuss what social issues are most important to them.* Option A can be directly derived from these lines.

3. A

Refer to the lines: *'that by achieving insight into the experience of others, we can learn to empathize and thereby create opportunities for relating to one another that transcend social and cultural boundaries'.*

These lines basically highlight that we need to understand the feelings of another person by placing ourselves in his or her shoes. This helps us identify option A as the correct answer.

4. B

Statement 1: *Interestingly enough, none of the five TE'A Project cast members currently performing 'Under the Veil' are themselves Muslim. When asked about this seeming discrepancy between subject and presenter, Kramer responded thoughtfully.* These lines do not suggest that this is done on purpose. The passage goes on to say that Non-Muslims can express the sentiments of Muslims but it still does not say that this specific instance has been done intentionally.

Statement II: Can be inferred from the lines: *'There's all this stuff being churned out, and no one is talking about it,' Kramer said, remembering the impetus for the choice, 'No one's asking Muslims in New York, 'What's going on? How are you feeling? What decisions have you made since 9/11? Who have you become? Who do you wish you could be?'"* The result of asking these questions, Kramer said, was a portrait of diverse voices within the Muslim community.

Statement III: Can be inferred from the lines: *The idea, Kramer explained, is about presenting complicated social issues in a protected, non-threatening space.*

5. D

Statement I is incorrect. Refer to the lines: *'Despite still spending a large chunk of its budget on supporting a relatively small sector of its economy, the EU has reformed its subsidies criteria to move away from supporting exports and towards supporting producers, thus decoupling aid from production,' Cahill said. 'Such subsidies,' Cahill argued, 'are far less distorting in terms of trade than the aid directly linked to production volumes.'*

Supporting producers and not exports is actually not a problem.

Statements II and III can be directly derived from the passage.

6. C

Refer to the lines: *The new OECD data inflamed these complaints, the more so since it has been shown that the largest agro-businesses and even some royal houses in European monarchies benefit the most from the subsidies.*

Option C can be directly derived from the lines.

Option A is rejected as it only provides a partial answer and also, this question is based on these specific lines in the given case.

Option B is factually incorrect (it should be developing countries instead of developed countries).

7. B

The key to answer this question is to identify what we are dealing with here. We have 4 choices:

- An issue
- A faulty practice
- A complication question
- Or faulty assumptions

From the above, we can rule out questions or assumptions. We are dealing with the act of giving subsidies to farmers here. What is this? It is a practice, though you can also claim this is an issue.

Let's now look at the full options. Option A is rejected as no unconventional thinking is being advocated here. Option B, on the other hand, clearly outlines the need for the change in the current system.

8. A

Refer to the lines: *To add insult to injury, the EU is simultaneously forcing developing countries in Africa, the Caribbean and the Pacific to further open their markets through the trade deals called economic partnership agreements.*

A stratagem is a tactic or manoeuvre intended to gain an advantage. We can see from the above lines that these stratagems are used by developed countries for their own benefit and in order to beat the system. Considering this, option A is the best answer here.

9. D

Positive feedback is a process that occurs in a feedback loop in which the effects of a small disturbance on a system include an increase in the magnitude of the perturbation. That is, A produces more of B which in turn produces more of A. In contrast, a system in which the results of a change act to reduce or counteract it has negative feedback.

Also, refer to the lines: But the second reason is that the scientific community failed to adequately anticipate and model several positive feedback loops that profoundly amplify the rate and extent of human-induced climate change.

The word amplify is the key here. It dictates the answer in the given case. It helps us identify that we need an option that is going to talk of increase.

10. B

Refer to the line: The plain fact is, we are fast approaching — and perhaps well past — several tipping points which would make global warming irreversible.

We can see from above these tipping points are where irreversible damage takes place. This sentiment finds reflection in option B. Option C is incorrect as it uses the word 'somewhat'. The author does not leave room for any doubt in the passage.

11. C

In the given case, the author of the passage is highlighting the problem of global warming with the help of various examples and implying the possible consequences that we are faced with.

He does not showcase the need for an investigation (he is sure about what he is presenting).

He does provide multiple explanations for a single phenomenon; he provides multiple examples for the current situation.

He does not challenge existing theories; he is highlighting the problem of global warming with the help of factual examples.

12. D

Refer to the lines: First, there hasn't been any real uncertainty in the scientific community for more than a decade. An unholy alliance of key fossil fuel corporations and conservative politicians have waged a sophisticated and well-funded misinformation campaign to create doubt and controversy in the face of nearly universal scientific consensus. In this, they were aided and abetted by a press which loved controversy more than truth, and by the Bush administration, which has systematically tried to distort science and silence and intimidate government scientists who sought to speak out on global warming.

Option A can be directly rejected from the first line.

The other two options are implied in this paragraph.

13. C

You need to understand the meaning of the sentence to answer this question. The first thing you need to understand here is that this is a negative statement by the author of the passage. He is clearly pointing out a flaw of the US and how it is using its superpower status. The author then goes on to use the phrase arbitrary realism, which essentially means that the US is using inconsistent standards in dealing with

problems of the real world (something that is implied in the passage by highlighting how the US has dealt differently with different Arab states). Keeping this in mind, we can see that option C is the best answer in the given case.

14. A

In this case, you need to keep in mind the central idea of the passage: of how the US changes its policies for different Middle East nations depending on the perceived benefits. In this case, the US has a different approach for different tyrants/dictators and the author specifically points this out in the passage. Considering this, we can see that option A is the best answer here.

15. D

The answer to this question can be found in the last paragraph of the passage: *'But war in Libya is justifiable only if we are going to hold compliant dictators to the same standard we set for defiant ones. If not, then please spare us all the homilies about universal rights and freedoms. We'll know this isn't about justice, it's about power.'*

16. D

Statement I can be inferred from the lines: 'Friendly regimes are already being threatened, but not by Gaddafi. They are endangered by the democratic aspirations of their own people.'

Statement II can be inferred from the lines: 'The United States and its allies responded with overwhelming military force that is clearly intended to cripple the government and boost the revolt's chances of success. Thus, begins our third concurrent Middle East war. No one has the slightest idea how, or when, this one will end.'

Statement III is a thought attributed to President Obama and not the author of the passage, as seen from the lines: 'If Gaddafi were to commit atrocities against his people, Obama said, "The entire region could be destabilized, endangering many of our allies and partners." Well, duh. As he no doubt has noticed, the region is already destabilized.' Hence, it cannot be ascribed to the author.

17. C

The main idea here is that women, who otherwise spend all their time working at home, should get an opportunity in the care sector to work as they are most suited for that job, making option 3 the appropriate option.

18. B

The lady described in this paragraph is feeling old but her spirit and heart are still young. Though she is sad about her skin showing signs of age, she feels young as is mentioned in the first few lines.

19.A

The passage talks about the loss of a brother and the fact that the author was not impacted earlier till he/she had kids of his/her own. This is captured best in option A and option A is the correct choice.

20.D

The girl could notice that the room was locked from the inside. The immediate human tendency would be to alert the neighbours. Option A would follow only after the initial attempts (e.g.: calling the ambulance) would have been made. At that point, she was unsure if the boy had passed away.

Option B could have followed option D. The neighbours might have come to know after the girl informed them. They might have attempted to break open the door (usually). The doctor might come soon after this. Hence D has got a better priority than B. Option C is something that could come later down the passage. We are actually describing the scene and we cannot bring in any second thoughts at this point. Hence option C can be avoided. Option D is the right answer because the girl alone won't be able to do something as she had already noticed that the door was locked from the inside. Hence she would have asked the neighbours for help.

The question below has a paragraph given with one sentence missing at the end. From among the answer choices given, select the sentence that can fill the blank to form a coherent paragraph.

21.C

We are talking about the limitation of the 2011 Food and Safety Act. We notice that the advantage of the act is given in the last line of the passage and hence we can understand that the next sentence should be a direct reflection of its disadvantage (limitation). Option A follows option C as it is a conclusion. Hence this cannot be our answer. Option B is a whole new concept which is entirely not associated with the paragraph. This could be the beginning of the next paragraph or next concept in the same paragraph. Option C directly exposes the limitation that the unflavoured items are not banned under the 2011 Food and Safety Act. Hence this is our answer. Option D is also a conclusive statement. We need to explain why the act has failed before drawing a judgement. Hence this can only be at the end after option C.

22. 4132

In this paragraph, sentence 4 sets the background for the passage and will be the first sentence. Sentence 1 describes the Martian machines mentioned in sentence 4. Sentence 1 will be followed by sentence 3 which describes the beings with "incredible malevolence toward the life of this planet". And this directly relates to "destructive conquest" mentioned in Sentence 3, making 32 a mandatory pair and 4132 the correct order.

23.2431

Sentence 2 defines that money spent on marketing is an Investment and sentence 4 further elaborates the purpose of that investment. 4 and 3 make a mandatory pair as 3 describes the future direction 4 mentions. 1 gives the conclusion that even bad investments are investments, making 2431 the correct order.

24. 1432

Exp: Statement 1 introduces the theme of the passage as the importance of trauma care in India and the sheer absence of such facilities in the country, so, it is the opening sentence of the passage. It is followed by statement 4 as it further underlines the importance and significance of any such treatment. Statement 3 comes after this as it gives the real position of healthcare in the country whereas statement 2 concludes the passage by stating the distant dreams that we are talking about. This makes the proper sequence of sentences as 1-4-3-2

Section - Data Interpretation & Logical Reasoning

25. 0.75

Number of employees of Reliance Petrochem = $(6 \times 10^5 \times 36)/100$

Annual Wages of Reliance Petrochem = 3.1×10^{10}

Thus Annual Wages per employee of Reliance Petrochem = $(3.1 \times 10^7)/216$

Number of employees of Larsen & Toubro = $(6 \times 10^5 \times 13)/100$

Annual Wages of Larsen & Toubro = 1.5×10^{10}

Thus Annual Wages per employee of Larsen & Toubro = $(1.5 \times 10^7)/78$

Hence, ratio of the Annual Wages per employee of Reliance Petrochem and Larsen & Toubro

= $\{(3.1 \times 10^7) \times 78\} / \{(1.5 \times 10^7) \times 216\}$

= $241.8/324$

= 0.75

26. 1.94

Number of employees of Tata Steel = $(6 \times 10^5 \times 15)/100$

Annual Production of Tata Steel = 219×10^{10}

Number of employees of Hindustan Unilever = $(6 \times 10^5 \times 15)/100$

Annual Production of Hindustan Unilever = 113×10^{10}

Since number of employees of Tata Steel and Hindustan Unilever are the same, so the ratio of the Annual production per employee of Tata Steel and Hindustan Unilever will be equal to the ratio of the Annual production of Tata Steel and Hindustan Unilever

Hence, the ratio of the Annual production per employee of Tata Steel and Hindustan Unilever

= $(219 \times 10^{10}) / (113 \times 10^{10})$

= $219/113$

= 1.94

27. C

Annual Wages as a percentage of the Annual production of Reliance Petrochem = $3.1 \times 100/360 = 0.86\%$

Annual Wages as a percentage of the Annual production of Tata Steel = $3.4 \times 100/219 = 1.55\%$

Annual Wages as a percentage of the Annual production of Larsen & Toubro = $1.5 \times 100/135 = 1.11\%$

Annual Wages as a percentage of the Annual production of Tata Motors = $2.8 \times 100/128 = 2.19\%$

Annual Wages as a percentage of the Annual production of Hindustan Unilever = $1.5 \times 100/113 = 1.33\%$

Annual Wages as a percentage of the Annual production of Dabur = $1.1 \times 100/96 = 1.15\%$

Hence the third ranker in the descending order = Hindustan Unilever with 1.33%

28. D

Number of employees of Reliance Petrochem = $(6 \times 10^5 \times 36)/100$

Annual Wages of Reliance Petrochem = 3.1×10^{10}

Thus Annual Wages per employee of Reliance Petrochem = $(3.1 \times 10^7)/216 = 0.0144 \times 10^7$

Number of employees of Tata Steel = $(6 \times 10^5 \times 15)/100$

Annual Wages of Tata Steel = 3.4×10^{10}

Thus Annual Wages per employee of Tata Steel = $(3.4 \times 10^7)/90 = 0.0379 \times 10^7$

Number of employees of Larsen & Toubro = $(6 \times 10^5 \times 13)/100$

Annual Wages of Larsen & Toubro = 1.5×10^{10}

Thus Annual Wages per employee of Larsen & Toubro = $(1.5 \times 10^7)/78 = 0.0192 \times 10^7$

Number of employees of Tata Motors = $(6 \times 10^5 \times 14)/100$

Annual Wages of Tata Motors = 2.8×10^{10}

Thus Annual Wages per employee of Tata Motors = $(2.8 \times 10^7)/84 = 0.0333 \times 10^7$

Number of employees of Hindustan Unilever = $(6 \times 10^5 \times 15)/100$

Annual Wages of Hindustan Unilever = 1.5×10^{10}

Thus Annual Wages per employee of Hindustan Unilever = $(1.5 \times 10^7)/90 = 0.0167 \times 10^7$

Number of employees of Dabur = $(6 \times 10^5 \times 7)/100$

Annual Wages of Dabur = 1.1×10^{10}

Thus Annual Wages per employee of Dabur = $(1.1 \times 10^7)/42 = 0.0262 \times 10^7$

Hence, the Annual Wages per employee is the highest for Tata Steel

29. 2

From the solution of the previous question we know that :

Annual Wages per employee of Reliance Petrochem = $(3.1 \times 10^7)/216 = 0.0144 \times 10^7 = \text{Rs } 1,44,000$

Annual Wages per employee of Tata Steel = $(3.4 \times 10^7)/90 = 0.0379 \times 10^7 = \text{Rs } 3,79,000$

Annual Wages per employee of Larsen & Toubro = $(1.5 \times 10^7)/78 = 0.0192 \times 10^7 = \text{Rs } 1,92,000$

Annual Wages per employee of Tata Motors = $(2.8 \times 10^7)/84 = 0.0333 \times 10^7 = \text{Rs } 3,33,000$

Annual Wages per employee of Hindustan Unilever = $(1.5 \times 10^7)/90 = 0.0167 \times 10^7 = \text{Rs } 1,67,000$

Annual Wages per employee of Dabur = $(1.1 \times 10^7)/42 = 0.0262 \times 10^7 = \text{Rs } 2,62,000$

We can see that the Annual Wages per employee of Reliance Petrochem and Hindustan Unilever are below the Rs 1.9 lakhs mark

Hence 2 companies is the answer

30. A

Jaya, Katrina and Neha formed the team of three members

From (a) and (b), and the above point, we can say that Ileana was in the team of four members and the team of three members was already decided

Hence Oviya had to be in the team of two members

From (d), we can conclude that Lara and Madhuri was in the team of four members along with Ileana

So we are left with Gautami and Helen, who could have occupied the single vacancies left in the team of four and the team of two, in any order

Hence, if Jaya, Katrina and Neha form the team of three members, Oviya must be in a two member team with Helen or Gautami

31. B

Jaya and Gautami were the members of the three member team

From (a), Ileana was in the four member team

So, Lara and Madhuri, who were together in a team (d), could either be in the team of two or team of four members

Let us suppose Lara and Madhuri were in the team of two members

From (b), Oviya had to be in the three member team with Jaya and Gautami

But then all the actresses left – Helen, Neha and Katrina – had to be in the same team as Ileana.

But condition (c) would be violated.

Hence, Lara and Madhuri were in the team of four members with Ileana

The others could be anywhere in the four places vacant, one in the team of four, one in the team of three and two in the team of two.

Hence, Lara and Madhuri should be in the team of Ileana

32. C

From the above data, Oviya and Gautami had completed the two member team

From (a) Ileana was in the four member team and from the data above, Neha was in the three member team along with Jaya (e)

Hence from (c), Helen was in the team of Ileana

Lara and Madhuri had to be together in the same team (d), and it was only possible if they were in the four member team along with Helen and Ileana

Hence, the actresses with Ileana had to be Lara, Helen and Madhuri

33. 4

From (a), (c) and the data given above, we can say that :

Team of 2 members	Team of 3 members	Team of 4 members
Oviya	Jaya	Ileana
		Katrina
X		
X	X	

Now as per (d), we have two cases. First, where both Lara and Madhuri are in the team of four, or the second, both are in the team of three

Case 1 : Lara and Madhuri are in the team of four

Team of 2 members	Team of 3 members	Team of 4 members

Oviya	Jaya	Ileana
		Katrina
X		Lara
X	X	Madhuri

As per (c), Neha can be in team of two with Helen and Gautami in team of three or Helen can be in team of two with Neha and Gautami in team of three
So, 2 ways.

Case 2 : Lara and Madhuri are in the team of three

Team of 2 members	Team of 3 members	Team of 4 members
Oviya	Jaya	Ileana
	Lara	Katrina
X	Madhuri	
X	X	

As per (c), Neha can be in team of two with Helen and Gautami in team of four or Helen can be in team of two with Neha and Gautami in team of four
So, 2 ways.

Hence, $2+2 = 4$ sets of different teams were possible

34. C

Since Neha was in the same team as Ileana and Katrina, and as per (e), they had to be in the four member team only.

As per (b), Oviya could not be with Neha, Ileana and Katrina

As per (c), Helen could not be with Neha, Ileana and Katrina

As per (e), there were only two vacant slots in the team with three members, as Jaya had to be one of them

Also, as per (d), Lara and Madhuri were together

So, if Lara and Madhuri were in the team of two, Oviya and Helen were in the team of three with Jaya

However, if Lara and Madhuri were in the team of three with Jaya, Oviya and Helen were in the team of two

Hence, Oviya had to be in the same team as Helen

35. 1.75

Both the PCBs GD5cb26 and GD5cb31 had dimensions of (30 x 20) sq cm, that is had an area of 600 sq cm

In GD5cb26, there were $(5 \times 4) = 20$ unit areas which is equal to 600 sq cm
Thus in GD5cb26, each unit area = 30 sq cm

From the data provided above, we can say :

Base Material	One unit of GD5cb26		
	Weight used per sq cm (gm)	Area used in (sq cm)	Total weight used (kg)
Copper	1.5	$30 \times 2 = 60$	$(1.5 \times 60)/1000 = 0.09$
Aluminium	2	$30 \times 7 = 210$	$(2 \times 210)/1000 = 0.42$
Lead	2	$30 \times 1 = 30$	$(2 \times 30)/1000 = 0.06$
Tin	2.5	$30 \times 4 = 120$	$(2.5 \times 120)/1000 = 0.30$
Nickel	1	$30 \times 6 = 180$	$(1 \times 180)/1000 = 0.18$
TOTAL	X	600	1.050

Thus, the average weight in gm of core base material used per square cm of one unit of PCB GD5cb26 = $1.050 \times 1000/600 = 1.75$

36. 74239

Both the PCBs GD5cb26 and GD5cb31 had dimensions of (30×20) sq cm, that is had an area of 600 sq cm

In GD5cb26, there were $(5 \times 4) = 20$ unit areas which is equal to 600 sq cm
Thus in GD5cb26, each unit area = 30 sq cm

In GD5cb31, there were $(6 \times 5) = 30$ unit areas which is equal to 600 sq cm
Thus in GD5cb31, each unit area = 20 sq cm

From the data provided above, we can say for GD5cb26 :

Base Material	One unit of GD5cb26				
	Weight used per sq cm (gm)	Area used in (sq cm)	Total weight used (kg)	Price per kg (US dollars)	Total cost of use (US dollars)
Copper	1.5	$30 \times 2 = 60$	$(1.5 \times 60)/1000 = 0.09$	8.20	$(0.09 \times 8.20) = 0.7380$
Aluminium	2	$30 \times 7 = 210$	$(2 \times 210)/1000 = 0.42$	2.70	$(0.42 \times 2.70) = 1.1340$
Lead	2	$30 \times 1 = 30$	$(2 \times 30)/1000 = 0.06$	2.20	$(0.06 \times 2.20) = 0.1320$

Tin	2.5	$30 \times 4 = 120$	$(2.5 \times 120)/1000 = 0.30$	3.30	$(0.30 \times 3.30) = 0.9900$
Nickel	1	$30 \times 6 = 180$	$(1 \times 180)/1000 = 0.18$	27.80	$(0.18 \times 27.80) = 5.0040$
TOTAL	X	600	1.050	X	7.9980

Also, for GD5cb31 :

Base Material	One unit of GD5cb31				
	Weight used per sq cm (gm)	Area used in (sq cm)	Total weight used (kg)	Price per kg (US dollars)	Total cost of use (US dollars)
Copper	$(1.5 \times 80)/100 = 1.2$	$20 \times 4 = 80$	$(1.2 \times 80)/1000 = 0.096$	$(8.20 \times 110)/100 = 9.02$	$(0.096 \times 9.02) = 0.8659$
Aluminium	$(2 \times 110)/100 = 2.2$	$20 \times 12 = 240$	$(2.2 \times 240)/1000 = 0.528$	$(2.70 \times 110)/100 = 2.97$	$(0.528 \times 2.97) = 1.5682$
Lead	$(2 \times 80)/100 = 1.6$	$20 \times 1 = 20$	$(1.6 \times 20)/1000 = 0.032$	$(2.20 \times 110)/100 = 2.42$	$(0.032 \times 2.42) = 0.0774$
Tin	$(2.5 \times 110)/100 = 2.75$	$20 \times 5 = 100$	$(2.75 \times 100)/1000 = 0.275$	$(3.30 \times 110)/100 = 3.63$	$(0.275 \times 3.63) = 0.9982$
Nickel	$(1 \times 80)/100 = 0.8$	$20 \times 8 = 160$	$(0.8 \times 160)/1000 = 0.128$	$(27.80 \times 110)/100 = 30.58$	$(0.128 \times 30.58) = 3.9142$
TOTAL	X	600	1.059	X	7.4239

Thus, the total costing of the core base material used in one unit of GD5cb31 = 7.4239 US Dollars

Hence, if industrially manufactured in batches of ten thousand units, the total costing of the core base material used in a batch of GD5cb31 = $7.4239 \times 10000 = 74239$ US Dollars

37.C

We know that for GD5cb26 :

Base Material	One unit of GD5cb26				
	Weight used per sq cm (gm)	Area used in (sq cm)	Total weight used (kg)	Price per kg (US dollars)	Total cost of use (US dollars)
Copper	1.5	$30 \times 2 = 60$	$(1.5 \times 60)/1000 = 0.09$	8.20	$(0.09 \times 8.20) = 0.7380$
Aluminium	2	$30 \times 7 = 210$	$(2 \times 210)/1000 = 0.42$	2.70	$(0.42 \times 2.70) = 1.1340$
Lead	2	$30 \times 1 = 30$	$(2 \times 30)/1000 = 0.06$	2.20	$(0.06 \times 2.20) = 0.1320$

Tin	2.5	$30 \times 4 = 120$	$(2.5 \times 120)/1000 = 0.30$	3.30	$(0.30 \times 3.30) = 0.9900$
Nickel	1	$30 \times 6 = 180$	$(1 \times 180)/1000 = 0.18$	27.80	$(0.18 \times 27.80) = 5.0040$
TOTAL	X	600	1.050	X	7.9980

Cost per square cm of Copper = $(1.5 \times 8.20)/1000 = 0.0123$ US Dollars

Cost per square cm of Aluminum = $(2 \times 2.70)/1000 = 0.0054$ US Dollars

Cost per square cm of Lead = $(2 \times 2.20)/1000 = 0.0044$ US Dollars

Cost per square cm of Tin = $(2.5 \times 3.30)/1000 = 0.0082$ US Dollars

Cost per square cm of Nickel = $(1 \times 27.80)/1000 = 0.0278$ US Dollars

Hence, out of the five core base materials used in GB5cb26, Copper had the second highest cost per square cm

38. D

We know that for GD5cb31 :

Base Material	One unit of GD5cb31				
	Weight used per sq cm (gm)	Area used in (sq cm)	Total weight used (kg)	Price per kg (US dollars)	Total cost of use (US dollars)
Copper	1.2	80	$(1.2 \times 80)/1000 = 0.096$	9.02	$(0.096 \times 9.02) = 0.8659$
Aluminium	2.2	240	$(2.2 \times 240)/1000 = 0.528$	2.97	$(0.528 \times 2.97) = 1.5682$
Lead	1.6	20	$(1.6 \times 20)/1000 = 0.032$	2.42	$(0.032 \times 2.42) = 0.0774$
Tin	2.75	100	$(2.75 \times 100)/1000 = 0.275$	3.63	$(0.275 \times 3.63) = 0.9982$
Nickel	0.8	160	$(0.8 \times 160)/1000 = 0.128$	30.58	$(0.128 \times 30.58) = 3.9142$
TOTAL	X	600	1.059	X	7.4239

To minimise the total costing of the core base material used in GD5cb31 by only swapping the areas of core base materials, all other factors remaining the same, we should aim to place the highest costing base material in the lowest area or vice versa.

So we should swap (in order) :

a) Nickel (higher area than Lead, highest cost) with Lead (lowest area, lowest cost)

b) Lead (lower area than Aluminum after first swap, lowest cost) with Aluminum (highest area, higher cost than Lead)

After the first swap (a) :

SWAP (a)	One unit of GD5cb31				
	Weight used per sq cm (gm)	Area used in (sq cm)	Total weight used (kg)	Price per kg (US dollars)	Total cost of use (US dollars)
Copper	1.2	80	$(1.2*80)/1000 = 0.096$	9.02	$(0.096*9.02) = 0.8659$
Aluminium	2.2	240	$(2.2*240)/1000 = 0.528$	2.97	$(0.528*2.97) = 1.5682$
Lead	1.6	160	$(1.6*160)/1000 = 0.256$	2.42	$(0.256*2.42) = 0.6195$
Tin	2.75	100	$(2.75*100)/1000 = 0.275$	3.63	$(0.275*3.63) = 0.9982$
Nickel	0.8	20	$(0.8*20)/1000 = 0.016$	30.58	$(0.016*30.58) = 0.4893$
TOTAL	X	600	1.171	X	4.5411

After the second swap (b) :

SWAP (b)	One unit of GD5cb31				
	Weight used per sq cm (gm)	Area used in (sq cm)	Total weight used (kg)	Price per kg (US dollars)	Total cost of use (US dollars)
Copper	1.2	80	$(1.2*80)/1000 = 0.096$	9.02	$(0.096*9.02) = 0.8659$
Aluminium	2.2	160	$(2.2*160)/1000 = 0.352$	2.97	$(0.352*2.97) = 1.0454$
Lead	1.6	240	$(1.6*240)/1000 = 0.384$	2.42	$(0.384*2.42) = 0.9293$
Tin	2.75	100	$(2.75*100)/1000 = 0.275$	3.63	$(0.275*3.63) = 0.9982$
Nickel	0.8	20	$(0.8*20)/1000 = 0.016$	30.58	$(0.016*30.58) = 0.4893$
TOTAL	X	600	1.123	X	4.3281

Hence, we need to swap twice consecutively to minimise the cost of the core base material used in GD5cb31, all other factors remaining the same.

39. C

The data given can be summarized as below :

	Name	Activity known	Group
1	Mr Abir	Cooking	Tapioca
2	Ms Baisali	Setting tent	
3	Mr Chintu	Cooking + Setting tent	
4	Mr Deepu	Setting tent	
5	Mr Emon	Cooking	Tapioca
6	Ms Fatima	Cooking	Alcazar
7	Mr Gaurav	Setting tent	
8	Ms Haimanti	Cooking + Setting tent	
9	Ms Indrani	Setting tent	
10	Mr Jyoti	Cooking	

Mr Chintu and Ms Haimanti were the only members who can cook as well as set up a tent.

Since there were at least three members in each group of Alcazar, Rastapopoulos and Tapioca, and there were ten members in all, the distribution had to be in the form of $10 = 3 + 3 + 4$, that is three members in two of the groups and four members in the remaining group. Also the criteria of the groups were such that each of the groups had at least one lady member, two members who could cook, and two members who could set up a tent.

We can see from the above table that here were six members who could cook and six members who could set up a tent.

Hence the group containing four members had to have two members who could only cook and two members who could only set up a tent, at least any one of them being a lady.

Tapioca had Mr Abir and Mr Emon as members, both of whom could only cook. Hence Tapioca needed two more members who could only set up a tent, out of which either one or both could be ladies.

Hence, the group named Tapioca had four members in it.

40. D

Out of the ladies, Ms Fatima was the only one who could only cook, and she was in the Alcazar group.

The criteria of the groups were such that each of the groups had at least one lady member, two members who could cook, and two members who could set up a tent.

As Tapioca had four members, Alcazar and Rastapopoulos must have had three members each. Hence one of the members of each of Alcazar and Rastapopoulos must be a member who knew both cooking and setting up a tent. The other two in each of Alcazar and Rastapopoulos must be a member who could only cook and a member who could only set up a tent.

Mr Chintu and Ms Haimanti were the only members who could do both cooking and setting up a tent. So, any one of them must be in Alcazar and the other in Rastapopoulos. But since Ms Fatima was the only lady in Alcazar, we can be sure that it is Mr Chintu who was in Alcazar and thus Ms Haimanti was in Rastapopoulos.

Now, out of the four members who could only cook, Mr Abir and Mr Emon were in Tapioca, and Ms Fatima was in Alcazar. The only one left is Mr Jyoti who was bound to be in Rastapopoulos.

Hence Mr Jyoti was definitely in Rastapopoulos.

41. D

As of now, we can tabulate our deductions as below :

	Name	Activity known	Group
1	Mr Abir	Cooking	Tapioca
2	Ms Baisali	Setting tent	
3	Mr Chintu	Cooking + Setting tent	Alcazar
4	Mr Deepu	Setting tent	
5	Mr Emon	Cooking	Tapioca
6	Ms Fatima	Cooking	Alcazar
7	Mr Gaurav	Setting tent	
8	Ms Haimanti	Cooking + Setting tent	Rastapopoulos
9	Ms Indrani	Setting tent	
10	Mr Jyoti	Cooking	Rastapopoulos

Mr Jyoti was definitely in Rastapopoulos. So he could not be in Tapioca.

As Ms Baisali and Mr Jyoti were not in the same group, Ms Baisali had to be either in Alcazar or Tapioca. But since Ms Fatima was the only lady in Alcazar, so Ms Baisali was in Tapioca.

If Ms Baisali was in Tapioca, then anyone among Mr Deepu, Mr Gaurav, or Ms Indrani had to be in Tapioca. So we cannot be definite who among Mr Gaurav and Ms Indrani was in Tapioca.

Hence, if Ms Baisali and Mr Jyoti were not in the same group, none of the members given in the options could be concluded to be definitely in Tapioca.

42. B

If there were two ladies in Tapioca, the distribution had to be as tabulated below :

	Name	Activity known	Group
1	Mr Abir	Cooking	Tapioca
2	Ms Baisali	Setting tent	Tapioca
3	Mr Chintu	Cooking + Setting tent	Alcazar
4	Mr Deepu	Setting tent	
5	Mr Emon	Cooking	Tapioca
6	Ms Fatima	Cooking	Alcazar
7	Mr Gaurav	Setting tent	
8	Ms Haimanti	Cooking + Setting tent	Rastapopoulos
9	Ms Indrani	Setting tent	Tapioca
10	Mr Jyoti	Cooking	Rastapopoulos

Rastapopoulos had Ms Haimanti + Mr Jyoti. Thus one member who could set up a tent was required.

Thus in Rastapopoulos, Mr Deepu + Ms Haimanti + Mr Jyoti was possible, and so was Mr Gaurav + Ms Haimanti + Mr Jyoti.

Hence, If there were two ladies in Tapioca, then Mr Gaurav, Ms Haimanti, Mr Jyoti could be in Rastapopoulos

43. D

Mr Adhikary is a postgraduate in Commerce. So criterion 1 fulfilled.

The age of Mr Adhikary on 31.07.2022 was 31 years 3 months. So criterion 2 fulfilled.

Mr Adhikary was the topper in the group discussion. So criterion 5 fulfilled.

So Mr Adhikary should be called for an interview.

44. A

Mr Sengupta is a postgraduate in Commerce. So criterion 1 fulfilled.

The age of Mr Sengupta on 31.07.2022 was 32 years 8 months. So criterion 2 fulfilled.

Mr Sengupta had appeared in the interview, so must have qualified in the group discussion. So criterion 5 fulfilled.

Mr Sengupta got 60% marks in the interview. So criterion 7 fulfilled.

So Mr Sengupta can be selected as Manager – Accounts.

Section - Quantitative Aptitude

45. D

Each place of 5-digit number can be filled in 4 ways; so total numbers formed = $4^5 = 1024$

Each digit comes for equal number of times at one place, so sum of the digits at each place = $1024/4$
 $(1 + 2 + 3 + 4) = 2560$

So, sum of all the numbers formed = 28444160

Arithmetic Mean = $2844160/2560 = 1111$

46. C

Using Pythagoras theorem in triangle ACD; $AC = 5$

And similarly, $AB = 5$

So, $\angle ACB = \angle ABC$ (angles opposite to equal sides are equal)

Therefore, $x + x + 70 = 180$

So, $x = 55^\circ$

47. 25

Let his initial investment is Rs P and investment becomes thrice i.e. interest becomes 2P.

According to question

$$\frac{P * n * 4}{300} + \frac{P * n * 8}{300} + \frac{P * n * 12}{300} \geq 2P$$

On solving, we get, $n = 25$.

48. 12052

The six-digit number may start with 15 or 26 and also it is an even number. We can have the following possible cases.

Case 1:

1 5 _ _ _ 6

If the last digit is 6, then in the remaining 3 places, one place can be filled by 6 and the other two places can be filled in 9 (9) ways. $\therefore$ Hence, the number of trials = $9 (9) (3) = 243$

Case 2:

1 5 _ _ _ If last position is filled by one of the digits 0, 2, 4, 8, then in the remaining 3 places, two of the place can be filled by 6 and third place can be filled by 9 ways. $\therefore$ Hence, required number of trials = $4 (9) (3) = 108$

Case 3:

2 6 _ _ _ 6 If the last position is filled by 6, then the remaining 3 positions can be filled in 9 (9) (9) ways. $\therefore$ Hence, required number of trials = $9 \times 9 \times 9 = 729$

Case 4: 0, 2, 4, 6, 8

2 6 6 ↓ 9 ↓ 9 ↓

If the last position is filled with 0, 2, 4, 8, then in remaining 3 positions one position has to be filled by 6 and the other two positions can be filled in 9 (9) ways. $\therefore$

Hence, the required number of trials = $9 (9) (3) (4) = 972$

$\therefore$ At the most, Raju has to make $243 + 108 + 729 + 972$ or 2052 trials to succeed.

49. B

Ratio of time taken; $T_a : T_t : T_m = 3 : 4 : 9$

Ratio of efficiency; $E_a : E_t : E_m = 9 : 4 : 3$

Let us assume; Anushka, Tanushka, and Manorama worked 9 units, 4 units, and 3 units per day respectively.

$$\text{Total Work} = (9 + 4 + 3) \times 8 \times 6 = 768 \text{ units}$$

$$\text{Work completed in 5 days} = (9 + 4) \times 5 \times 4 = 260 \text{ units}$$

$$\text{Remaining Work} = 768 - 260 = 508$$

$$\text{Time taken by Manorama} = 508 / (8 \times 3) = 21.17 \text{ days}$$

50. 64000

Let total Voters are $100x$

$$\text{Vote cast} = 70x$$

60% of $70x$ are distributed in the ratio of 1: 2: 4

So, votes received by A, B and C are $6x$, $12x$ and $24x$ respectively.

40% of $70x$ are distributed in the ratio of 4: 2: 1

So, votes received by A, B and C are $16x$, $8x$ and $4x$ respectively.

Votes received by A, B and C are $22x$, $20x$ and $28x$ respectively.

$$\text{So, } 28x - 20x = 5120$$

$$x = 640$$

$$\text{Total votes} = 64000$$

51. 3

Taking n as follows

$$1! = 1$$

$$2! = 2$$

$$3! = 6$$

$$4! = 24$$

So, the largest value of n such that, $3!$ is the largest value which divides 7500 completely.

52. 96

Each curved surface is a rectangle of dimensions 4×8 .

$$\text{Total Curved surface area of the prism} = 3 \times (4 \times 8) = 96 \text{ square cm.}$$

53. D

$$h(x+2) = 2h(x+1) - h(x) \quad h(x+2) - h(x+1) = h(x+1) - h(x)$$

$\therefore h(x), h(x+1)$ and $h(x+2)$ are in AP

$\therefore h(0), h(1), h(2), \dots, h(13)$ are in AP.

The first term of this AP is $h(0) = -2$ and the common difference is

$$3 - (-2) = 5$$

$$h(2) = 3 + 5 = 8 \quad h(8) - h(2) = 6(5) = 30 \text{ and}$$

$$h(13) - h(2) = 11(5) = 55 \Rightarrow h(8) = 30 + 8 \quad h(13) = 55 + 8$$

$$(\because h(2) = 8)$$

$$\therefore h(8) = 38 \text{ and } h(13) = 63$$

$$\text{Rem}(38 \times 63) / 17 = 14$$

54. 266

Required number of three-digit numbers = number of three-digit numbers less than 500
 Number of three-digit numbers which are divisible by at least one of 4 and 6 = number of three-digit numbers divisible by 4 + number of three-digit numbers divisible by 6 - number of three-digit numbers divisible by both 4 and 6. The three-digit numbers divisible by 4 are: $100 = 4(25)$, $104 = 4(26)$, ... $496 = 4(124)$. Suppose there are n such numbers. $4(124) = 4(25) + (n - 1)(4)$ $n = 100$ Similarly it can be shown that there are 67 three-digit numbers divisible by 6.

The three-digit numbers divisible by both 4 and 6 must be divisible by L.C.M. $(4, 6) = 12$. The number of three-digit numbers divisible by both 4 and 6 = 33 $\therefore 100 + 67 - 33 = 134$ numbers are divisible by either 4 or 6 and $400 - 134 = 266$ numbers are divisible by neither 4 nor 6

55. 8

Let CP of 1 litre = Rs 1; total CP = Rs 125

And SP of 1 litre = Rs 0.9; total SP = Rs $150 \times 0.9 = 135$

Profit % = $10 \times 100 / 125 = 8\%$

56. B

During the time Rahim covers 600 metres, Saleem covers 300 m, as Rahim's speed is double that of Saleem. During the time Rahim covers the balance 400 metres, Saleem covers 400 m, as their speeds are equal. Saleem had a head start of 200 m and he covers $(300 + 400) = 700$ m. Hence, when Rahim is at finishing point, Saleem is at $200 + 700 = 900$ m metres. Saleem takes 20 seconds to cover the balance 100 m. Saleem's speed = 5 m/s. Choice (B)

57. C

Interest for third year = $P \left[\left(\frac{9}{8} \right)^3 - \left(\frac{9}{8} \right)^2 \right]$

$268.94 = P \left[\left(\frac{9}{8} \right)^3 - \left(\frac{9}{8} \right)^2 \right]$

So, $P = \text{Rs } 1700$

58. A

1st person can sit in 2 ways (since there are only two distinct places)

Total number of ways = $2 \times 11!$

59. D

Ratio of prices = 5 : 8 : 13

Ratio of number of balls = 5 : 4 : 3

Ratio of amounts spent = $(5 \times 5) : (8 \times 4) : (13 \times 3) = 25 : 32 : 39$

Total number of parts of the ratio = $25 + 32 + 39 = 96$

Total amount spent, as per data = `768 Value of each part of the amounts' ratio = $768 / 96 = 8$ Amount spent on costliest variety = Value of 39 parts = 39×8 Number of costliest variety balls Paul purchased is = $(39 \times 8) / 13 = 24$

60. B

Total Surface area of the bowl = Area of outer hemisphere + Area of inner hemisphere + Area of top surface

$\Rightarrow$ Total Surface area of the bowl = $2\pi R^2 + 2\pi r^2 + (\pi R^2 - \pi r^2)$; R is radius of outer sphere and r is radius of inner sphere.

$\Rightarrow$ Total Surface area of the bowl = $3\pi R^2 + \pi r^2 = \pi(3R^2 + r^2) = \pi(3R^2 + r^2) = 3.14(300 + 81)$

$\Rightarrow$ Total Surface area of the bowl = $3.14(300 + 81) = 1196.34 \text{ cm}^2$

Cost of painting = Rs 10 x 1196.34 = Rs 11963.4

61. A

Statement 1:

Total salary = Basic Pay + Commission

Basic Pay = 100% = \$1700

Commission = 120-100 = 20% of basic pay = 20% of total sales

So, total sale = basic pay

Statement 1 alone is sufficient.

Statement 2:

As no information is given about previous month sale, current month sale cannot be calculated.

Statement 2 alone is not sufficient.

62. C

There are two possibilities to be considered (1) h is the greatest. The eight angles, in degrees, are $d - 3, d - 2, d - 1, d, d + 1, d + 2, d + 3$, and $d + 8$ (i.e. $h = d + 4$) $\therefore 8d + 8 = 360 \Rightarrow d = 44$.

The angles are 41, 42, 43, 44, 45, 46, 47 and 52 (2) h is the least. The eight angles, in degrees, are $d - 3, d - 2, d - 1, d, d + 1, d + 2, d + 3$ and d (i.e., $h = d - 4$) $\therefore 8d = 360 \Rightarrow d = 45$.

The angles are 42, 43, 44, 45, 46, 47, 48 and 45. In either case, exactly 3 angles are greater than 45° .

63. D

Let they meet after x hours the time at which the train from Ujjain left towards Mathura, then

According to question:

$(4 + x) 30 = 2p/3$ and $x(40) = p/3$

On solving, above equations, we get $x = 2.4$ hrs

So, time taken by train from Ujjain to cover total distance = $3 \times 2.4 = 7.2$ Hrs

64. 2

$\log_5 4, \log_5 (3^x - 1), \log_5 (3^x + 7)$ are in AP

$\Rightarrow \log_5 (3^x - 1) - \log_5 4 = \log_5 (3^x + 7) - \log_5 (3^x - 1)$

$\Rightarrow \log_5 [(3^x - 1)/4] = \log_5 [(3^x + 7)/(3^x - 1)]$

$\Rightarrow (3^x - 1)/4 = (3^x + 7)/(3^x - 1)$

Let $3^x = y$

$\Rightarrow (y - 1)/4 = (y + 7)/(y - 1)$

$\Rightarrow (y - 1)^2 = 4(y + 7)$

$\Rightarrow y^2 + 1 - 2y = 4y + 28$

$\Rightarrow y^2 - 6y - 27 = 0$

$\Rightarrow y^2 - 9y + 3y - 27 = 0$

$\Rightarrow (y - 9)(y + 3) = 0$

$\Rightarrow y = 9$ or -3

3^x cannot be negative. So, $3^x = 9 \Rightarrow x = 2$.

65. B

Factor of $x^2 - 2x + 3$ are $(x-3)$ and $(x+1)$

So, $x = 3$ and $x = -1$ will also satisfy $x^4 - ax^2 + b = 0$

At $x = 3$, $3^4 - a \times 3^2 + b = 0 \Rightarrow 81 - 9a + b = 0$

At $x = -1$, $(-1)^4 - a(-1)^2 + b = 0 \Rightarrow 1 - a + b = 0$

On solving above equations, $a = 10$, $b = 9$

66. A

When 5^4 i.e. 625 divided by 626, remainder is -1.

$5^{91} = (5^{4 \times 22}) \times 5^3 = (625^{22}) \times 125$

$\text{Rem}(5^{91}/626) = \text{Rem}\{(625^{22}) \times 125/626\} = \text{Rem}\{(-1)^{22} \times 125/626\} = 125$

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