CAREERS 360

PREPARATION Series

CAT 2025

A Complete Revision Kit

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Other Useful Resources

A NOTE TO THE STUDENTS

Dear CAT Aspirant,

Congratulations on accomplishing the final stretch of your CAT preparation journey! As the examination approaches, it is critical to recognize essential techniques to make the most of the remaining days. Here's a complete ebook that is designed to help you maximise your efforts in the revision days:

Verbal Ability and Reading Comprehension (VARC):

Strategic Reading:

Focus on studying quickly and comprehensively. Practice skimming and scanning to extract key facts.
Prioritise passages primarily based on your strengths and instincts. Allocate time accurately, and do not get caught on a single question.

Vocabulary Enhancement:

Brush up on high-frequency words and their usage.
Solve vocabulary-primarily based questions from previous year's papers to discover common patterns.

Data Interpretation and Logical Reasoning (DILR):

Time Management:

Allocate a set time for each topic. If you find it hard and difficult to cope with, consider shifting on and revisiting it later.
Identify those chapters that can be solved quickly and do them first.

Practice Sets:

Solve a combination of DI-LR sets each day to enhance your problem-solving accuracy.
Analyse the solutions critically to recognize the underlying ideas.

Quantitative Ability (QA):

Formula Revision:

Focus on revising key formulas and concepts. Prioritise subjects primarily based on your strengths.
Solve practice problems to enhance your knowledge of various problem-solving approaches.

Time-saving Practice:

Practice solving quantitative problems in the stipulated time.
Identify shortcuts and quicker strategies for uncommon questions.

Mock Tests:

Frequency and Analysis:

Take a full-length mock check each day to simulate the actual examination surroundings.
After each mock test, check and analyse your overall performance meticulously. Identify low-scoring portions for focused development.

Adaptive Strategy:

Adjust your test-taking strategy based on your performance in previous mocks.
Emphasise accuracy over attempting every query.

General Tips:

Health and Well-being:

Ensure you get adequate sleep and preserve a healthful way of life. Physical well-being contributes significantly to intellectual wellness.
Stay hydrated and maintain a balanced eating habit.

Mindfulness Techniques:

Practice mindfulness and relaxation techniques to control stress.

Revision Plan:

Prioritise topics based totally on their weightage and your skills.
Revise formulae, theorems, and ideas often to boost your memory.

Remember, it's ordinary to feel a mixture of pleasure and nervousness because of the exam day hassles. Stay targeted, believe in your skills, and approach the CAT examination with self-assurance. Wishing you the very best in your CAT exam. You've worked hard, and now it's time to shine!

Warm regards,

Team Careers360

ABOUT THE eBOOK

In these very last days leading up to the CAT exam, we've crafted an eBook to be your final reference manual, specialising in last-minute strategies and centred instructions. This eBook covers a spectrum of vital subjects including all the three essential sections - Quantitative Ability, Verbal Ability and Reading Comprehension, and Data Interpretation and Logical Reasoning.

Quantitative Ability (QA):

The QA section is meticulously blanketed, emphasising areas which include Basic Numbers, Divisibility, Profit and Loss, and Time, Speed and Distance and so on. The eBook gives not only the most effective refresher on fundamental principles but also strategies to tackle specific question sorts effectively.

Verbal Ability and Reading Comprehension (VARC):

The complex topic of VARC is addressed comprehensively, spread into Nouns, Pronouns, Verbs, Articles, Conjunctions, Prepositions, and more. Tips for sentence correction based on tenses, active and passive voice, and techniques for Reading Comprehension are embedded in a holistic approach.

Data Interpretation and Logical Reasoning (DI-LR):

Strategies for powerful time management in DI-LR units, along with guaranteed topics like Spider Charts, Blood Relations, and Linear Arrangement, are put into the topic to help the candidates improve their problem-solving skills on this critical phase.

Additional Resources:

In addition to the core content, we've curated a selection of precious resources to enhance your coaching further. These encompass a comprehensive mock test series, a 60-day plan to ace the examination by experts, and eBooks focusing on vocabulary building, idioms, and phrases. These assets intend to simulate the exam environment, help you track your strategies, and support you in your preparation.

Preparation Study Material:

- CAT Mock Test Series (20 Sets)
- Comprehensive 60-Day Study Material
- Vocabulary Builder and Idioms & Phrases eBooks
- Permutation & Combination Video Lectures
- DILR Expert Solutions eBook
- CAT VARC Study Material

Practice Study Material:

- MAT Sample Paper 2023
- XAT Sample Paper, Topic wise Questions with Expert's Solution
- NMAT 2023 Sample Paper and Mock Test

Computer Based Mock Tests:

- CAT Mock Test
- MAT Mock Test
- NMAT Mock Test
- SNAP Mock Test
- XAT Mock Test

In conclusion, this eBook is designed to be your go-to resource for last-minute CAT preparation, covering key concepts, strategies, and additional resources to ensure you enter the exam hall with confidence.

Best of luck in your CAT journey!

IMPORTANT TOPICS FOR CAT REVISION

Quantitative Aptitude (QA)

Basic Numbers, Classification, Conversions (Decimal to a Fraction), Base Conversion:

- Expert Insight: Understanding the properties of numbers is fundamental. Classification involves recognizing number types like prime, composite, etc. Decimal to fraction conversion and base conversion are crucial for efficient calculations.
- Focus Concepts:
  - Number Properties: Master properties like prime, composite, odd, and even numbers. Understand divisibility rules.
  - Decimal to Fraction Conversion: Practise converting decimals to fractions, especially recurring and terminating decimals.
  - Base Conversion: Master conversion between decimal, binary, octal, and hexadecimal systems.

Unit Digit and Last Two Digits:

- Expert Insight: Recognizing patterns in unit digits and mastering quick techniques for finding the last two digits is vital for numerical agility.
- Focus Concepts:
  - Cyclicity in Unit Digits: Understand cyclicity patterns in unit digits of numbers. Practice identifying and utilising these patterns.
  - Last Two Digits Techniques: Develop mental math strategies for finding the last two digits of squares and cubes.

Divisibility and Remainders:

- Expert Insight: Strong knowledge of divisibility rules and remainder concepts is foundational for problem-solving.
- Focus Concepts:
  - Divisibility Rules: Memorise and apply rules for divisibility by common numbers. Recognize when to use specific rules.
  - Remainders: Practise solving problems involving remainders. Understand the relationship between division and remainders.

Factors and Trailing Zeroes:

- Expert Insight: Prime factorization is a powerful tool for solving problems related to factors and trailing zeroes.
- Focus Concepts:
  - Prime Factorization: Practise factoring numbers into prime factors. Apply this skill to find factors efficiently.
  - Trailing Zeroes: Understand the impact of prime factors on the trailing zeroes in the product of numbers.

HCF and LCM:

- Expert Insight: HCF and LCM concepts are frequently tested and require a strong foundation in prime factorization.
- Focus Concepts:
  - Prime Factorization for HCF and LCM: Apply prime factorization to find HCF and LCM efficiently.
  - Multiple Numbers: Practice problems involving more than two numbers to enhance HCF and LCM skills.

Percentage:
- Expert Insight: Percentage is a fundamental concept applicable across various topics in QA.
- Focus Concepts:
  - Percentage as Ratios: Visualise percentages as ratios. Understand the relationship between percentages, fractions, and decimals.
  - Percentage Change: Practice problems involving percentage increase, decrease, and compound percentage changes.

Profit and Loss, Simple Interest and Compound Interest, Loans and Instalments:
- Expert Insight: Understanding profit and loss, interest calculations, and financial scenarios involving loans and instalments is crucial for real-world problem-solving.
- Focus Concepts:
  - Profit and Loss: Master the concepts of cost price, selling price, and profit/loss percentage.
  - Interest Calculations: Differentiate between simple and compound interest. Develop quick mental calculations.
  - Financial Scenarios: Practise solving problems involving loans, instalments, and interest rates.

Linear Equation, Quadratic Equation, Polynomials:
- Expert Insight: Equations and polynomials form the foundation of algebraic problem-solving.
- Focus Concepts:
  - Solving Linear Equations: Master techniques for solving linear equations. Understand the graphical representation.
  - Quadratic Equations: Recognize different forms of quadratic equations and practice solving them.
  - Polynomials: Understand polynomial properties and apply them in factorization.

Inequalities, Functions and Graph, Maxima and Minima:
- Expert Insight: Inequalities and functions are crucial for advanced problem-solving.
- Focus Concepts:
  - Solving Inequalities: Practise solving linear and quadratic inequalities. Understand interval notation.
  - Functions and Graphs: Develop the ability to interpret functions and their graphs. Recognize maxima and minima points.

Logarithm and Modulus, Average, Strategy to prepare problems involving Ages:
- Expert Insight: Logarithmic and modulus concepts add depth to quantitative reasoning.
- Focus Concepts:
  - Logarithms: Master properties and applications of logarithms. Practice problems involving logarithmic expressions.
  - Averages: Understand the concept of averages and apply it to solve problems. Recognize scenarios involving ages and apply appropriate strategies.

Mixtures, Ratio and Proportion, Ratio in Partnership:
- Expert Insight: Mastery over mixtures and ratios is crucial for solving problems in diverse scenarios.
- Focus Concepts:
  - Mixtures: Understand how different components contribute to mixtures. Practice solving problems involving mixtures.
  - Ratio and Proportion: Master the concepts of direct and inverse proportions. Apply them in solving real-world problems.

Time and Work, Time, Speed and Distance, Train, Boat and Stream:
- Expert Insight: Time, speed, and distance concepts are essential for solving problems related to motion and work.
- Focus Concepts:
  - Time and Work: Practice problems involving work rates and completion times. Recognize scenarios involving partial work.

- Time, Speed, and Distance: Master the relationships between time, speed, and distance. Apply concepts to solve problems involving trains, boats, and streams.

Linear Races and Circular Races, Escalators, PnC: Basics, Counting and Arrangements:
- Expert Insight: Concepts like permutation and combination (PnC) are fundamental for arranging and counting scenarios.
- Focus Concepts:
  - Race Scenarios: Understand strategies for linear and circular race problems. Consider relative speeds.
  - Escalators: Recognize scenarios involving the movement of people on escalators. Apply concepts of speed and time.
  - PnC Basics: Master the fundamental concepts of counting and arrangements. Practice solving problems in different contexts.

PnC: Selections and Groupings, Distributions, PnC: Ranking and Derangements, Probability:
- Expert Insight: Advanced PnC concepts, ranking, derangements, and probability add complexity to problem-solving.
- Focus Concepts:
  - Selections and Groupings: Understand scenarios involving selecting items and forming groups. Apply PnC concepts.
  - Distributions: Practice problems involving the distribution of items. Recognize patterns in distributions.
  - Ranking and Derangements: Master concepts related to ranking and derangements. Apply them in unique scenarios.
  - Probability: Understand the basic principles of probability. Practice solving problems involving probability.

Geometry - Triangles, Geometry - Quadrilaterals and Polygons, Geometry - Circles:
- Expert Insight: Geometry involves visualising and applying properties of shapes.
- Focus Concepts:
  - Triangle Properties: Master properties of triangles, including angles, sides, and special triangles.
  - Quadrilaterals and Polygons: Understand properties of different quadrilaterals and polygons.
  - Circle Properties: Familiarise yourself with circle theorems and properties.

Introduction to Mensuration, Mensuration - Pyramids, Mensuration - Spheres:
- Expert Insight: Menstruation involves calculating the measurement of geometric figures.
- Focus Concepts:
  - Introduction to Mensuration: Understand the basic concepts of measuring geometric figures.
  - Pyramids: Master the formulas for calculating the volume and surface area of pyramids.
  - Spheres: Understand the properties of spheres and practice calculating their volume and surface area.

Coordinate Geometry, Set Theory, Sequence and Series:
- Expert Insight: Coordinate geometry involves understanding the relationships between points, set theory deals with collections, and sequences and series involve patterns.
- Focus Concepts:
  - Coordinate Geometry: Understand the distance formula, midpoint formula, and equations of lines.
  - Set Theory: Master basic set operations and concepts.
  - Sequence and Series: Recognize and apply arithmetic and geometric progressions.

Statistics, Complex Numbers, Sequences:
- Expert Insight: Statistics involves interpreting data, complex numbers add depth to mathematical reasoning, and sequences involve recognizing patterns.
- Focus Concepts:
  - Statistics: Understand measures of central tendency and dispersion. Practice interpreting data.

- Complex Numbers: Master the properties and operations involving complex numbers.
- Sequences: Recognize and apply sequences in different contexts.

Miscellaneous Quantitative Aptitude:
- Expert Insight: Miscellaneous topics may involve a combination of concepts from different areas.
- Focus Concepts:
  - Application of Multiple Concepts: Practise solving problems that integrate concepts from various topics.

Data Interpretation and Logical Reasoning (DILR)

Bar Graph, Pie Chart, Line Graph:
- Expert Insight: Visual representation is key in DILR. Bar graphs display comparisons, pie charts show proportions, and line graphs depict trends over time.
- Focus Concepts:
  - Bar Graphs: Understand how to interpret data presented in bar graphs, including single and multiple bars.
  - Pie Charts: Master the interpretation of pie charts and the calculation of percentages from them.
  - Line Graphs: Recognize patterns and trends in line graphs. Focus on variations over different time periods.

Tables, Spider Chart, Caselet:
- Expert Insight: Tables present data in an organised format, spider charts represent multivariate data, and caselets involve detailed data scenarios.
- Focus Concepts:
  - Tabular Data: Practise extracting information efficiently from tables. Understand the relationships between columns.
  - Spider Charts: Recognize patterns and relationships in spider charts involving multiple variables.
  - Caselets: Develop a systematic approach to solving problems presented in caselet format.

Data Interpretation, Blood Relation, Ranking:
- Expert Insight: Data interpretation involves extracting insights from complex datasets. Blood relation and ranking involve logical reasoning skills.
- Focus Concepts:
  - Data Interpretation Sets: Practise solving diverse DI sets, including missing data sets. Understand the importance of data sufficiency.
  - Blood Relation: Create visual aids or diagrams for blood relation problems. Develop strategies for solving complex relations.
  - Ranking: Solve problems involving the relative positions of individuals or items. Recognize patterns in ranking scenarios.

Direction, Cubes, Questions on Cubes:
- Expert Insight: Spatial reasoning is crucial for direction-related problems, cubes involve visualising patterns, and cube questions test logical thinking.
- Focus Concepts:
  - Direction Problems: Develop a systematic approach to solving problems involving directions. Consider relative positions and distances.
  - Cubes and Cube Questions: Practise visualising patterns in cubes. Solve problems involving cube-related questions.

Linear Arrangement, PYQs on Linear Arrangement, Circular Arrangement:

- Expert Insight: Linear and circular arrangements test ordering skills and logical deductions.
- Focus Concepts:
  - Linear Arrangement: Practise solving problems involving the linear placement of items. Consider constraints and relative positions.
  - Circular Arrangement: Develop strategies for solving problems involving items arranged in a circular fashion. Recognize patterns in circular arrangements.

Distribution, Puzzle Sets Questions on Distribution:

- Expert Insight: Distribution problems involve allocating items, and puzzles with distribution add complexity.
- Focus Concepts:
  - Distribution Problems: Practice scenarios where items need to be distributed based on given conditions.
  - Puzzle Sets with Distribution: Solve puzzles involving the distribution of items. Consider constraints and interrelationships.

Selection, Selection Based Puzzle Questions, Miscellaneous:

- Expert Insight: Selection problems involve making choices, and miscellaneous sets may combine concepts from various areas.
- Focus Concepts:
  - Selection Problems: Develop strategies for solving problems where choices need to be made. Consider trade-offs and constraints.
  - Miscellaneous Sets: Practise solving problems that integrate concepts from various topics within DILR.

Decision Making, Decision Making Problem Solving Questions:

- Expert Insight: Decision-making scenarios involve critical thinking and strategic planning.
- Focus Concepts:
  - Decision Making Questions: Develop a structured approach to solving decision-making problems. Consider the implications of different choices.

Venn Diagram, Syllogism, Syllogism Important PYQs:

- Expert Insight: Venn diagrams represent relationships, and syllogism involves logical deduction and reasoning.
- Focus Concepts:
- Venn Diagrams: Practise interpreting information presented in Venn diagrams. Understand how to represent complex relationships.
- Syllogism: Master the rules governing syllogistic reasoning. Practice solving problems involving syllogisms.

Logical Deduction, Data Sufficiency in LR:

- Expert Insight: Logical deduction involves inferring conclusions from given information, and data sufficiency tests the adequacy of information.
- Focus Concepts:
  - Logical Deduction Problems: Practise solving problems where conclusions need to be logically deduced from given information.
  - Data Sufficiency in LR: Develop a systematic approach to determining the sufficiency of data for logical reasoning.

Games and Tournaments - Binary Logic, PYQs for Binary Logical Reasoning, Logical Connectives:

- Expert Insight: Binary logic involves decision-making based on true/false conditions. Logical connectives enhance the

complexity of reasoning.
- Focus Concepts:
  - Binary Logic: Practise solving problems involving binary conditions. Consider the implications of different binary states.
  - Logical Connectives: Master the use of logical connectives (AND, OR, NOT). Apply them in solving complex reasoning problems.

Inequalities, Mathematical Grid, Picking Up of Coins:
- Expert Insight: Inequalities involve establishing relationships, and mathematical grids test pattern recognition.
- Focus Concepts:
  - Solving Inequalities: Practise solving linear and quadratic inequalities. Understand how to represent solutions graphically.
  - Mathematical Grid: Recognize patterns and relationships in mathematical grids. Practice solving problems involving the arrangement of elements.

Clocks, Calendars, Data Sufficiency:
- Expert Insight: Clocks and calendars involve time-related problem-solving. Data sufficiency adds complexity to reasoning.
- Focus Concepts:
  - Clock Problems: Develop strategies for solving problems involving time and clocks. Consider relative positions of clock hands.
  - Calendar Problems: Practise solving problems involving dates and calendars. Recognize patterns in calendar scenarios.
  - Data Sufficiency: Apply data sufficiency techniques to solve complex reasoning problems.

Roots and Network:
- Expert Insight: Roots and network problems involve understanding relationships and connections in complex structures.
- Focus Concepts:
  - Roots Problems: Practise solving problems involving roots and connections between elements.
  - Network Problems: Recognize patterns in network structures. Develop strategies for solving problems involving interconnected elements.

Verbal Ability and Reading Comprehension (VARC)

Nouns, Pronouns, Verbs:
- Expert Insight: A strong grasp of grammar is fundamental. Nouns represent entities, pronouns replace nouns, and verbs convey actions.
- Focus Concepts:
  - Nouns: Understand different types of nouns and their usage in sentences.
  - Pronouns: Recognize and use pronouns correctly in various contexts.
  - Verbs: Master verb tenses and their appropriate usage.

Conjunction, Articles, Prepositions:
- Expert Insight: Conjunctions link words, articles specify nouns, and prepositions show relationships in space and time.
- Focus Concepts:
  - Conjunctions: Understand coordinating and subordinating conjunctions.
  - Articles: Recognize when to use definite and indefinite articles.
  - Prepositions: Master the correct usage of prepositions in different contexts.

Reading Skills, Present Tense, Past Tense:

- Expert Insight: Reading skills are crucial for comprehension. Present and past tenses convey actions in different time frames.
- Focus Concepts:
  - Reading Skills: Develop strategies for efficient reading, including skimming and scanning.
  - Present Tense: Understand the usage of present tense forms in sentences.
  - Past Tense: Master the various past tense forms and their application.

Future Tense, Sentence Correction based on Tenses, Subject-Verb Agreement:

- Expert Insight: Future tense indicates actions yet to occur. Sentence correction involves refining sentence structure, and subject-verb agreement ensures grammatical accuracy.
- Focus Concepts:
  - Future Tense: Understand and apply future tense forms appropriately.
  - Sentence Correction: Recognize common errors and apply correction strategies.
  - Subject-Verb Agreement: Ensure consistency in number agreement between subjects and verbs.

Learn New Words and Their Uses, Conditionals, Sentence Improvement based on Articles:

- Expert Insight: Vocabulary development is key. Conditionals express hypothetical situations, and sentence improvement enhances expression.
- Focus Concepts:
  - Vocabulary Building: Learn and apply new words in different contexts.
  - Conditionals: Master the use of various conditional forms.
  - Sentence Improvement: Enhance sentence structure and clarity based on given criteria.

Cloze Test based on Articles, Tenses, Prepositions, etc., Sentence Correction:

- Expert Insight: Cloze tests assess contextual understanding. Sentence correction refines language usage.
- Focus Concepts:
  - Cloze Test: Practise filling in the blanks with appropriate words based on context.
  - Sentence Correction: Apply grammar rules to improve sentence structure and clarity.

Introduction to What is RC and its PYQs -:

- Expert Insight: Reading Comprehension (RC) is a critical skill. Previous year questions (PYQs) provide insight into exam patterns.
- Focus Concepts:
  - RC Overview: Understand the purpose and structure of RC passages.
  - PYQ Analysis: Analyse previous year questions to identify patterns and areas of focus.

RC and PYQs, Strategies for RC & PYQs, Practice Questions for RC & PYQs:

- Expert Insight: RC and PYQs practice is essential. Strategies enhance comprehension and time management.
- Focus Concepts:
  - RC Practice: Engage in regular RC practice to improve comprehension skills.
  - Strategy Development: Develop effective strategies for tackling RC passages and PYQs.
  - Question Practice: Solve a variety of questions to reinforce comprehension and application skills.

Strategy to Solve the Problems Based on RC and PYQs, Active and Passive Voice, Direct and Indirect Speech:

- Expert Insight: Strategic problem-solving is crucial. Voice and speech transformations test grammatical understanding.
- Focus Concepts:

- Problem-Solving Strategy: Develop a systematic approach to solving problems based on RC and PYQs.
- Active and Passive Voice: Master the conversion between active and passive constructions.
- Direct and Indirect Speech: Understand the rules for transforming direct speech into indirect speech.

Verbal Analogies, Participles, Parallelism:

- Expert Insight: Analogies assess word relationships. Participles add nuance, and parallelism enhances sentence structure.
- Focus Concepts:
  - Verbal Analogies: Practise recognizing and applying word relationships.
  - Participles: Understand the use of present and past participles in sentences.
  - Parallelism: Ensure parallel structure in sentences for clarity and coherence.

Comparison, One Word Substitution, Synonyms and Discussion on PYQs:

- Expert Insight: Comparison involves assessing similarities and differences. Substitution and synonyms test vocabulary depth.
- Focus Concepts:
  - Comparison Skills: Develop the ability to compare effectively.
  - One Word Substitution: Practise replacing phrases with single words for conciseness.
  - Synonyms Discussion: Analyse synonyms and their contextual usage through discussions.

Strategies for Synonyms and Related PYQs, Antonyms and Discussion on PYQs, Strategies for Antonyms and Related PYQs:

- Expert Insight: Strategies enhance performance in synonym and antonym questions. PYQ analysis aids preparation.
- Focus Concepts:
  - Synonym Strategies: Develop effective strategies for solving synonym-related questions.
  - Antonym Discussion: Analyse antonyms and their contextual usage through discussions.
  - Antonym Strategies: Develop effective strategies for solving antonym-related questions.

Parajumbles Proficiency, Parajumbles - Problem Solving Strategies, Some Important PYQs of Parajumbles:

- Expert Insight: Parajumbles require logical sequencing. Strategies improve proficiency, and PYQ analysis aids preparation.
- Focus Concepts:
  - Parajumbles Proficiency: Enhance skills in logically sequencing sentences.
  - Problem-Solving Strategies: Develop effective strategies for solving Parajumbles.
  - PYQ Analysis: Analyse previous year questions to identify patterns and areas of focus.

Idioms and Phrases, Idioms and Phrases - PYQs, Critical Reasoning:

- Expert Insight: Idioms add richness to language. PYQs aid in understanding exam patterns, and critical reasoning tests analytical thinking.
- Focus Concepts:
  - Idioms and Phrases: Learn and apply idioms in appropriate contexts.
  - PYQ Analysis: Analyse previous year questions to understand the usage of idioms.
  - Critical Reasoning: Develop skills in analysing and evaluating arguments.

Verbal Ability on Critical Reasoning, PYQs on Critical Reasoning, Strategies for Critical Reasoning:

- Expert Insight: Critical reasoning assesses analytical thinking in language use. PYQ analysis aids preparation.

- Focus Concepts:
  - Critical Reasoning Skills: Enhance analytical thinking in language-related scenarios.
  - PYQ Analysis: Analyse previous year questions to identify patterns and areas of focus.
  - Strategy Development: Develop effective strategies for tackling critical reasoning questions.

Miscellaneous VARC:

- Expert Insight: Miscellaneous topics may involve a combination of concepts from different areas within VARC.
- Focus Concepts:
  - Application of Multiple Concepts: Practise solving problems that integrate concepts from various topics within VARC.

Topic-wise Practice Questions for Revision

Directions: The questions are taken from the following topics: Basic Numbers, Classification, conversions (Decimal to a Fraction), Base conversion, Unit digit and last two digits, Divisibility and Remainders, Bar Graph, Pie Chart, Line Graph, Nouns, Pronouns and Verbs

Topics Covered		
QA	**DILR**	**VARC**
Basic Numbers, Classification, conversions (Decimal to a Fraction), Base conversion	Bar Graph	Nouns
Unit digit and last two digits	Pie Chart	Pronouns
Divisibility and Remainders	Line Graph	Verbs

Part A (Quantitative Aptitude)

QUESTIONS

Q1. Find the remainder when 65^{76} is divided by 7.

a. 4
b. 3
c. 2
d. 6

Q2. Find the remainder when 381^{77} is divided by 17.

a. 12
b. 13

c. 6
d. 4

Q3. My year of birth is 1974. What would the year have been instead of 1974 if base 12 were used (for counting) instead of the decimal system?

a. 1186
b. 1022
c. 2082
d. 1192

Q4. Unit digit of $72^{43} \times 63^{84} \times 74^{97} \times 76^{76} \times 87^{109} \times 88^{90}$

a. 2
b. 6
c. 4
d. 8

Q5. The difference of $10^{35} - 4$ and $10^{34} - x$ is divisible by 3 for x =?

a. 3
b. 2
c. 4
d. 6

Q6. If $4^{2n+1} + x$ and $4^n - x$ is divisible by 5, n being an even integer, find the least value of x.

a. 1
b. 2
c. 3
d. 0

Q7. What is the remainder when $3 + 3^2 + 3^3 + \ldots.3^{2n+1}$ is divided by 6?

a. 1
b. 2
c. 3
d. 4

Q8. The remainder when the number 123456789101112 ……383940 is divided by 16 is:

a. 3
b. 4
c. 5
d. 6

ANSWER KEY

Part A (Quantitative Aptitude)

1 - C, 2 - C, 3 - A, 4 - B, 5 - C, 6 - A, 7 - C, 8 - B

SOLUTIONS

Part A (Quantitative Aptitude)

Ans 1: C

Rem (65/7) = 2

$2^{76} = (2^3)25x2$

Rem $((2^3)/7) = 1$

Rem $(1^{25}/7) = 1$

Rem $[(2x (2^{3)25})/7] = 2x1 = 2$; where Rem (x/y) represents the value of remainder when x is divided by y.

Ans 2: (c)

Rem (381/17) = 7

$7^{77} = (7^2)^{38}x7$ Rem

$((7^2)/17) = -2$

Rem $((-2)^{38}/17)$ = Rem $[((-2)^{4×9}x(-2)^2)/17]$ = Rem $[(4x16^9)/17]$

When 16 is divided by 17, remainder is -1 and $(-1)^9$ is -1.

Therefore, when $(4x16^9)$ is divided by 17, the remainder is 4x(-1) = -4.

So, the remainder when $(7^2)^{38}$ is divided by 17 = (17-4) = 13.

So, when 7^{77} is divided by 17 remainders = Rem (7x13/17)= 6

where Rem (x/y) represents the value of remainder when x is divided by y.

Ans 3: A

For that, divide 1974 by 12 as shown

Divisor	Quotient	Remainders
12	1974	6
12	164	8
12	13	1
	1	1

Write the remainders from bottom to top

So, in base 12 years of birth is (1186)

Ans 4: (b)

Cyclicity of 2 is 4 i.e. unit digit is repeated after every 4th power of 2

So, Unit digit of 72^{43} is same as unit digit of 2^3 which is equal to 8.

The cyclicity of 3 is 4 i.e. unit digit is repeated after every 4th power of 3

So, the unit digit of 63^{84} is the same as the unit digit of 3^4 which is equal to 1.

The unit digit of 4^{odd} is always 4.

The unit digit to any power of 6 is 6.

Cyclicity of 7 is 4 i.e. unit digit is repeated after every 4th power of 7

So, the Unit digit of 87^{109} is the same as the unit digit of 7^1 which is equal to 7.

Cyclicity of 8 is 4 i.e. unit digit is repeated after every 4th power of 8.

So, the unit digit of 88^{90} is the same as the unit digit of 8^2 which is equal to 4.

Therefore, the Unit digit of $72^{43} \times 63^{84} \times 74^{97} \times 76^{76} \times 87^{109} \times 88^{90}$ will be equal to the unit digit of 8x1x4x6x7x4 i.e. equal to 6.

Ans 5: (c)

Difference = $(10^{35} - 4) - (10^{34} - x) = (10^{35} - 10^{34} + x - 4) = 10^{34}(10 - 1) + (x-4) = 9x10^{34} + (x-4)$

$9x10^{34}$ is divisible by 3 since it is multiple of 3.

(x-4) is divisible by 3 if x is 4 in the given options.

Ans 6: (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, …….

So, the least value of x is 1.

Ans 7: (c)

When 3 is divided by 6, the remainder is 3.

When 3^2 is divided by 6, the remainder is 3.

When 3^2 is divided by 6, the remainder is 3.

When 3^4 is divided by 6, the remainder is 3 and so on.

So, the remainder is 3 + 3 + 3 + ……up to 2n+1 terms.

If 3 is added to an odd number of terms, after dividing by 6 it will give a remainder of 3.

Ans 8: (b)

Divide the last 4 digits of the number to find the remainder when the number is divided by 16 (according to the divisibility rule of 16)

So, Rem (3940/16) = 4

Part-B: LRDI

Direction (Q1-Q3):

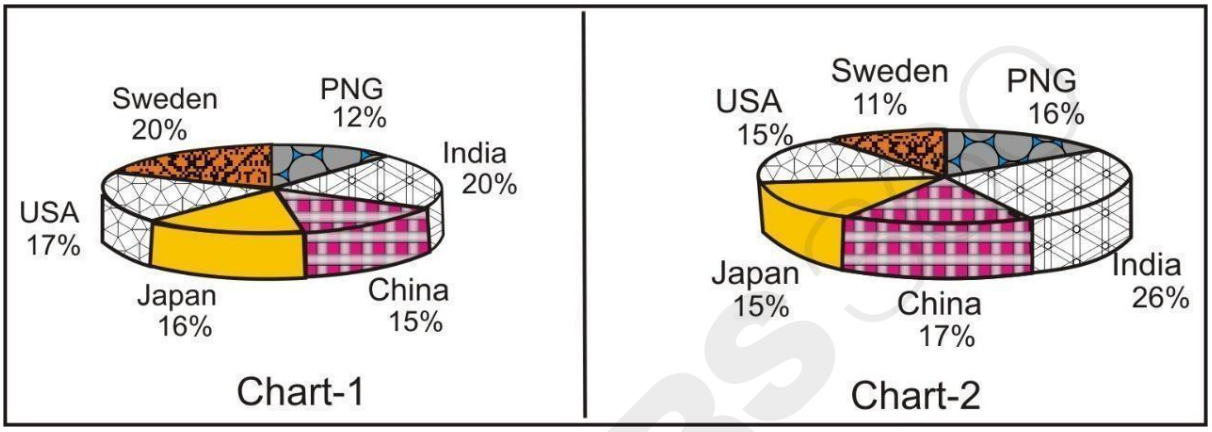


Chart 1: Shows the distribution by the value of a Commodity by top 6 countries in 200

Chart 2: Shows the distribution by the quantity of top 6 suppliers of a Commodity in 2000

The total value is Rs. 5000 crores

The total quantity is 1000 crore tonnes

Q1. The country which has the highest average price is?

a. USA
b. Sweden
c. INDIA
d. CHINA

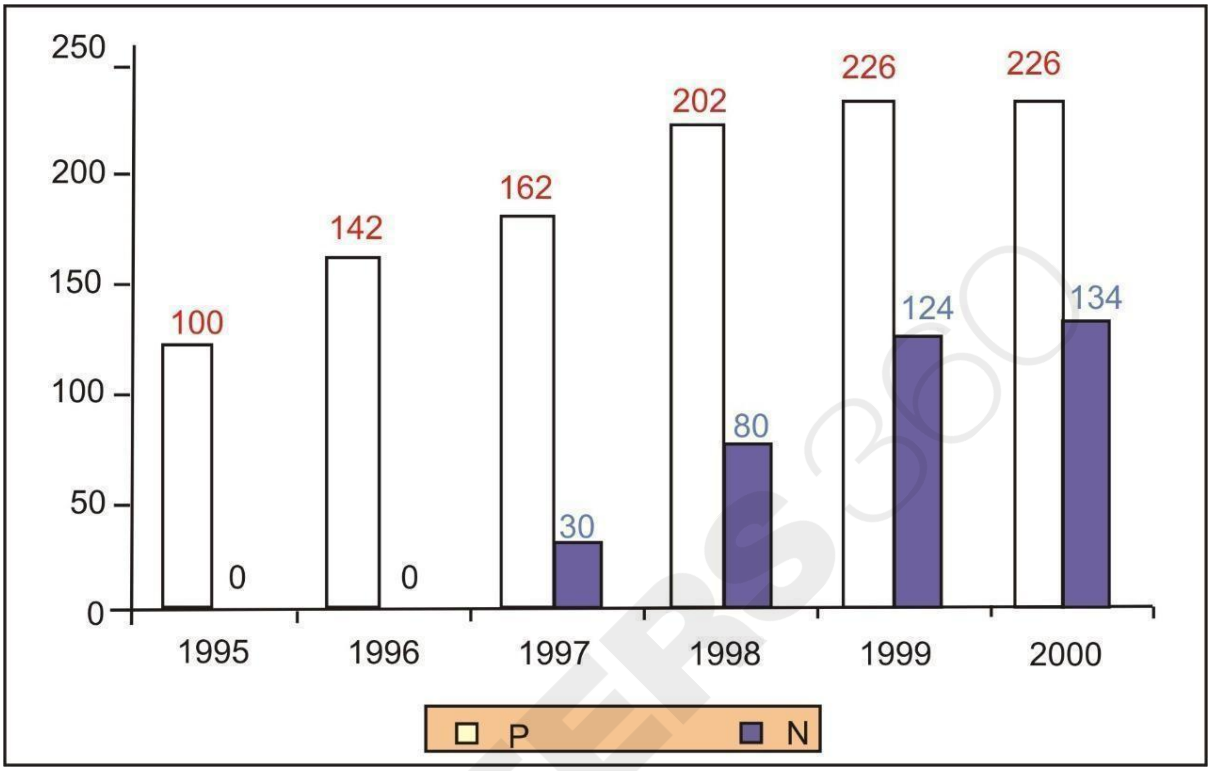
Q2. The average price (Rs. per ton) for PNG is roughly?

a. 1.2
b. 0.50
c. 3.75
d. 80

Q3. The country which has the lowest average price is?

a. USA
b. JAPAN
c. INDIA
d. CHINA

Directions for questions 4 to 6: Answer the questions on the basis of the information given below.



P and N are two brands of kitchen Slicers available in the local market. P was introduced in 1990, while N was introduced in 1997. For both these brands, 20% of the slicers bought in a particular year were considered nonoperative exactly two years later. It is known that 10 P-slicers were disposed of in 1997. The following figures show the number of P and N Slicers in operation from 1995 to 2000, as of the end of the year.

Q4. How many N Slicers were purchased in 1999?

a. 45
b. 54
c. 50
d. 20

Q5. How many N-slicers were disposed of by the end of 2000?

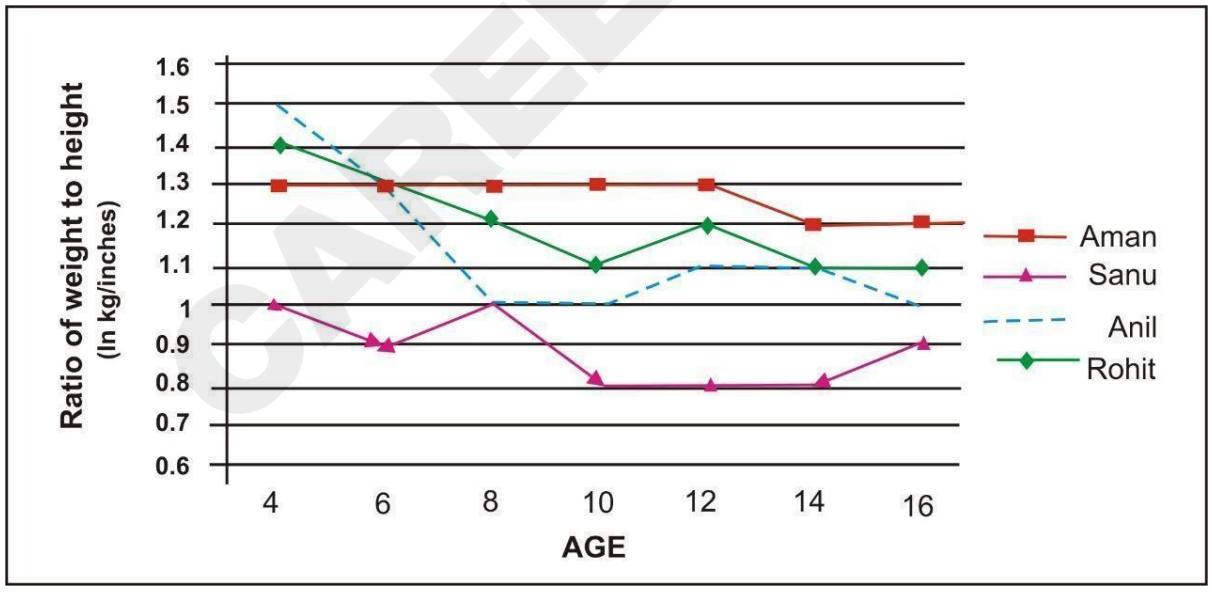
a. 20
b. 16
c. 40
d. 30

Q6. How many P-Slicers were disposed of in 2000?

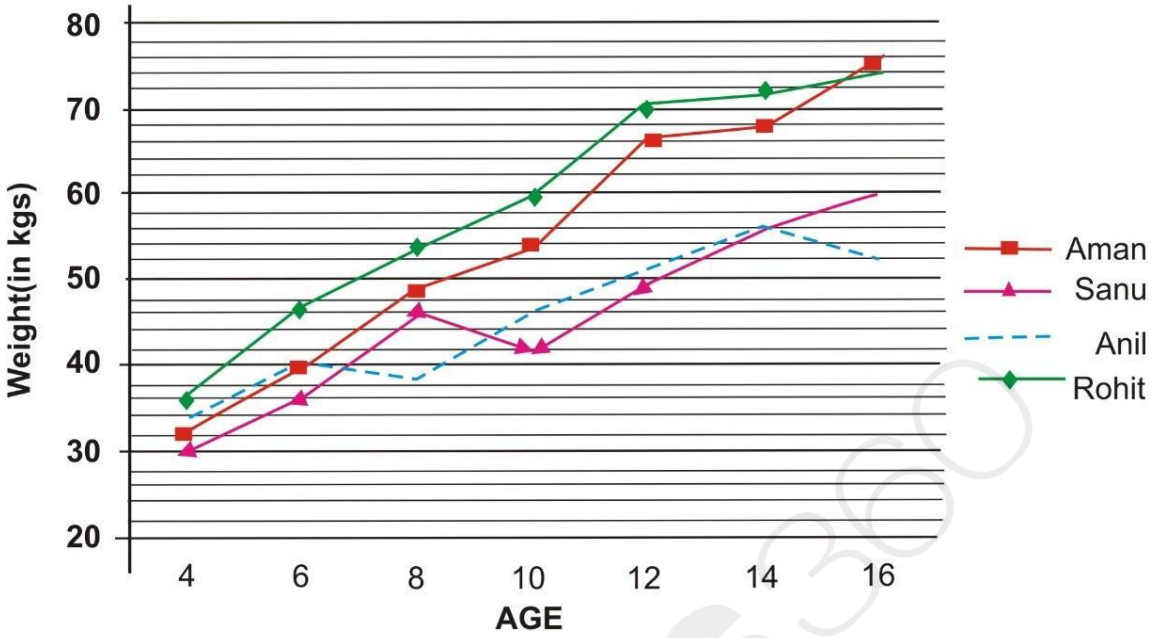
a. 20
b. 16
c. Cannot be determined from data
d. 30

Direction (Q7-9):

Four children, Aman, Sanu, Anil and Rohit become a part of a survey about their weight and height. Their weights and heights were measured every two years between the ages of 4 years and 16 years. The graph informs us about the ratio of their weights (in kgs) to their heights (in inches).



The following graph informs about the weights (in kgs) with ages at X-axis



Q7. The difference between the heights of Sanu and Rohit at the age of 10 is?

a. 1-inch
b. 1.5 inches
c. 2 inches
d. 2.5 inches

Q8. By how many inches did Anil grow in height from the age of 6 years to 10 years?

a. 7.5 inches
b. 10 inches
c. 12.5 inches
d. 15 inches.

Q9. Who among the four children was the shortest at 8 years of age?

a. Aman
b. Sanu
c. Anil
d. Rohit

ANSWER KEY

Part B (LRDI Practice Sets)

1 - B, 2 - C, 3 - C, 4 - C, 5 - B, 6 - C, 7 - C, 8 - D, 9 - A

SOLUTIONS

Part B (LRDI Practice Sets)

Ans 1: B

Average Price will be calculated by Average Price = Total value/ Total quantity

As seen from charts Sweden will have highest ratio = 20/11

So, Sweden will have the highest average Price.

Ans 2: C

Average Price will be calculated by Average Price = Total value/ Total quantity

For PNG = Price/ Quantity = (12% of 5000)/(16% of 1000) = Rs 3.75 per ton.

Ans 3: C

	Share in Value	Share in Quantity	(Share in Value)/ (Share in Quantity)
India	20%	26 %	20/26 = 0.769
China	15%	17 %	15/17 = 0.88
Japan	16%	15 %	16/15 = 1.06
USA	17 %	15 %	17/15 = 1.13
Sweden	20 %	11 %	20/11 = 1. 82
PNG	12 %	16 %	12/16 = 0.75

The country which will have the least ratio of 'share in total value' to 'share in total quantity' will have the least average value.

Average Price will be calculated by Average Price = Total value/ Total quantity

As seen from the table, PNG will have the lowest average Price.

Ans 4: C

Total N-slicers in 1999 = 124

Initially slicers in 1997 the slicers were 30 and in 1998, 50 slicers were bought

In 1999, 20% of slicers from 1997 must be disposed of (20% of 30= 6) which means 24 remains in operative condition.

So, N-Slicers bought in 1998 must be 80 – 30 = 50

So, N-Slicers bought in 1999 must be 124 – 50 - 24 = 50

Ans 5: B

Number of slicers disposed of in 1999 is 20% of 30 (bought in 1997) = 6

Number of slicers disposed of in 2000 is 20% of 50 (Which were bought in 1998) = 10

So total by end of 2000 is = 10 + 6= 16

Ans 6: C

Since P-slicers were introduced in 1990, we don't have data from 1990 to 1995. Therefore, we cannot find this answer.

Ans 7: C

we know that R = $\frac{\text{Weight}}{\text{Height}}$ and we also know the weights from the second graph.

Thus, the heights can be found as Height = $\frac{\text{Weight}}{R}$.

Height of Sanu when he was 10 years old = 42/0.8 = 52.5 inches.

Height of Rohit when he was 10 years old = 60/1.1 = 54.54 inches.

Thus, the required difference = 54.54 – 52.5 = 2.04 inches

Ans 8: D

Anil's height when he was 6 years old = 40/1.3 = 30.76

Anil's height when he was 10 years old = 46/1 = 46

Thus, Height increases by 15.24 inches.

Ans 9: A

The heights of Aman, Sanu, Anil and Rohit when 8 years old are 48/1.3, 46/1, 38/1, 54/1.2 i.e. 36.9, 46, 38, 45 respectively. Thus the shortest among them is Aman.

Part-C (VARC)

Q1: The management has suggested that he recuse himself from the allegations, whether he is elected or not.

a. have insisted that he recuses himself from the allegations, whether he is elected or not.
b. has insisted that he recuses himself from the allegations, whether or not he is elected.
c. has insisted that he recuses himself from the ongoing allegations, whether he is elected or not.
d. No correction required

Q2. Find out the proper noun in the following sentence:

The beauty of the lake is unparalleled.

a. Beauty
b. Lake
c. Both A & B
d. None of the Above

Q3. Whoever is chosen as the new Vice-Chancellor of University, it is likely to continue some of the policies regarding the dress code.

a. Whoever is chosen as the new chief, they are
b. Whomever is chosen as the new chief, he is
c. Whoever is chosen as the new chief is
d. No correction required

Q4. The Footballer, whose record is exemplary, bagged a seven-year endorsement contract with a sports equipment manufacturer.

a. who's record is exemplary, bagged eight years' endorsement contract
b. who's record is exemplary, bagged eight year's endorsement contract
c. whose record is exemplary, bagged an eight-years endorsement contract
d. No correction required

Q5. One of the problems that occur as a result of increasing population is the decrease in the opportunities of Job.

a. that occurs as a result of increasing population are the

b. that occurs as a result of increasing population is the
c. that occur as a result of increasing population are the
d. that occur as a result of increasing population is the

Q6. The sheer number of trucks on the Expressway have all but paralyzed the traffic system.

a. The sheer number of trucks on the Expressway has
b. The shear number of trucks on the Expressway have
c. The shear number of trucks on the Expressway has
d. No correction required

Q7. 'To be, or not to be, that is the question.'

Identify the verb in the sentence

a. Is
b. To be
c. Or
d. That

Q8. The striking panorama of elegantly spread flowers in the state of Uttarakhand provides evidence of why Uttarakhand, a state, is called "Valley of Flower".

a. provide evidence of why Uttarakhand, a state, is called "Valley of Flower".
b. provide evidence of why Uttarakhand, a state, are called "Valley of Flower".
c. provides evidence of why Uttarakhand, a state, is called "Valley of Flower".
d. provides evidence of why Uttarakhand, a state, are called "Valley of Flower".

ANSWER KEY

Part C (VARC)

1 - D, 2 - B, 3 - C, 4 - D, 5 - D, 6 - A, 7 - A, 8 - C

SOLUTIONS

Part C (VARC)

Ans 1: D

A verb associated with suggestion is used with a noun clause beginning with 'that', the clause (whether the clause is singular or plural) uses the base verb. So, in the given sentence, 'recuse' is correct.

So, no correction is required.

Ans 2: B

Lake is proper noun

Beauty is an abstract noun.

Ans 3: C

In the underlined portion, *"Whoever is chosen as the new Vice-Chancellor of University" is followed by 'it'* which is incorrect because 'Whoever' cannot be followed by 'it' pronoun.

'Whoever' is a singular pronoun. So, 'they' cannot be used for 'whoever' (option A is incorrect)

'Whomever' is the wrong word in this context. (Option B is incorrect)

Option C contains no error.

Ans 4: D

The underlined part is grammatically correct.

Ans 5: D

Two Verbs are used:

1. occur = it is referred to 'problems', so it is correctly used.

2. is = referred to ‘one of the problems’ which is singular. So, it is also correctly used.

Ans 6: A

The subject of the sentence is ‘the sheer number’ which is singular, since the noun (‘number’) is singular. The verb ‘have’ relates to this, and not ‘trucks’.

Therefore ‘have’ should be replaced by ‘has’.

Answer 7: A

‘Is’ acting as the main verb in the sentence

Ans 8: C

‘Panorama’ is singular. So, the verb associated with this is ‘provides’, not ‘provide

Topics Covered		
QA	**DILR**	**VARC**
Factors and Trailing Zeroes)	Tables	Conjunction
HCF and LCM	Spider Chart	Articles
Percentage	Caselett	Prepositions

Directions: The questions are taken from the following topics: Factors and Trailing Zeroes) HCF and LCM, Percentage, Tables, Spider Chart, Caselett, Conjunction, Articles and Prepositions

Part-A: Quantitative Aptitude

Questions

Q1. If 138! is divisible by 7n, then find the maximum value of n.

a. 24
b. 20
c. 21
d. 22

Q2. Find the smallest natural number n such that n! is divisible by 1430.

a. 3
b. 13
c. 11
d. 124

Q3. Find the remainder when 591 is divided by 626.

a. 125
b. 1
c. 49
d. 7

Q4. n is a number, such that 2n has 8 factors and 3n has 6 factors. 6n has.

a. 24
b. 48
c. 12
d. Cannot be determined

Q5. How many pairs of positive integers x, y exist such that LCM (x, y) - HCF (x, y) = 42? [TITA]

Q6. 8 different brands of pairs of shoes counting 16, 64, 48, 88, 92, 60, 120, and 44 were ordered by a newly opened 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 pairs of shoes in each box is also the same. What is the minimum number of boxes required to pack?

a. 129
b. 64
c. 48

d. 133

Q7. Mr Kaju Srivastava is worried about the Expenditure on PNG. The price of PNG has increased by 30%. By what percent should he reduce the consumption of PNG so that he is able to maintain his Expenditure on PNG?

a. 33.33 %
b. 21 %
c. 23 %
d. 14.28 %

Q8. 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 are 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

Directions for Questions 9 to 10: 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, and 3 AC-III Coaches having 64 berths each. There are no general Coaches on 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:

AC-I berths are 20% more expensive than AC-II berths.
AC-II berths are 20% more expensive than AC-III berths.
answer the following questions:

Q9. 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

Q10. What percent of revenue is generated from AC-I tickets in the previous question?

a. 24.23%
b. 21.13%

c. 22.23%
d. 28.9%

ANSWER KEY

1 - C, 2 - B, 3 - A, 4 - C, 5 - 10, 6 - D, 7 - C, 8 - B, 9 - D, 10 - B

SOLUTIONS

Ans1: (c)

To find the maximum value of 'n', we have to count the number of 7s in 138!

So, n = [138/7] + [138/49], where [x] = maximum integer function

So, n = 19 + 2 =21

Ans 2: (b)

Do Prime factorization of 1430

i.e. 1430 = 13 x 11 x 5 x 2

n! must be 13 or greater since before 13, n! do not contain any 13.

So, the answer must be n = 13 (13! Will contain at least one 5, one 2, one 11 and one 13)

Ans 3: (a)

When 54 i.e. 625 divided by 626, the remainder is -1.

591 = (54x22) x53 = (625^{22}) x125

Rem (591/626) = Rem $\{(625^{22})$ x125/ 626} = Rem $\{(-1)^{22}$ x125/626} = 125

Ans 4: (c)

2n has 8 factors. So, 2n must be of the form of one of the following:

2n = axbxc (no of factors = 2x2x2 = 8, here a, b and c are prime numbers)

Or

2n = axb^3 (no of factors = 2x4 = 8, here a and b are prime numbers)

It is clear from here a= 2.

3n has 6 factors. So, 3n must be of the form of one of the following:

3n = b^5 (no of factors = (5+1) = 6, where b is a prime numbers)

Or

$3n = cxb^2$ (no of factors = 2x3 = 6, here c and b are prime numbers)

It is clear from here b = 3.

Here c will be a prime number other than 2 and 3.

Case 1:

$2n = ax\ b^3 = 2n = 2x3^3$; both cases of 3n will not be possible. So 2n cannot be $ax\ b^3$.

Case 2:

$2n = axbxc = 2x3xc$; $3n = cxb^2 = cx3^2$ is possible

So, n = 3xc

$6n = 2x3^{2xc}$

No of factors = (1+1) x (2+1) x (1+1) = 2x3x2 = 12

Ans 5: **10** possible pairs are there.

Solution is as follows:

Let x = h x a; y = h x b, where h is HCF of x and y; a and b are co-primes

LCM = h x a x b

ATQ

h x a x b – h = 42

h (a x b - 1) = 42

H	(a x b - 1)	a x b	Possibility of a and b
1	42	43	(1, 43)

2	21	22	(1, 22), (2, 11)
3	14	15	(1, 15), (3, 5)
6	7	8	(1, 8)
7	6	7	(1, 7)
14	3	4	(1, 4)
21	2	3	(1, 3)
42	1	2	(1, 2)

Total possible pairs in a and b are 10.

Therefore, 10 pairs in x and y exist.

Ans 6: (d)

Take the HCF of the number of pairs of shoes and divide the total number of pair of 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

Since n is even, unit digit of 42n + 1 = 4 (Since 4^odd is always gives 4 as unit digit)

and unit digit of 4n = 6 (Since 4^{odd} is always gives 6 as unit digit)

Ans 7: (c)

Price is increased by 30% means, if initial price was Rs 10 then new price will be Rs. 13

E_2 (New Expenditure) = E_1 (old Expenditure)

Using,

E_2/E_1 = (New Price/ Old Price) x (New Consumption/ Old Consumption)

1 = 13/10 x(New Consumption/ Old Consumption)

So, (New Consumption/ Old Consumption) = 10/13

We can say consumption will reduce from 13 to 10 i.e. 23.07%

Ans 8: (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 = 100x5y/4 = 125y

Total Population (more than 18yrs) = 125y + 100y = 225y

Men = 125y × 100/225y % = 55.55%.

Ans 9: (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 = 3x64x2000 = Rs 384000

Revenue from AC-II Coaches = 6x45x2400 = Rs 648000

Revenue from AC-I Coaches = 4x24x2880 = Rs 276480

Total revenue = Rs 384000 + Rs 648000 + Rs 276480 = Rs 1308480

Ans 10: (b)

Revenue from AC-I coaches = Rs 276480

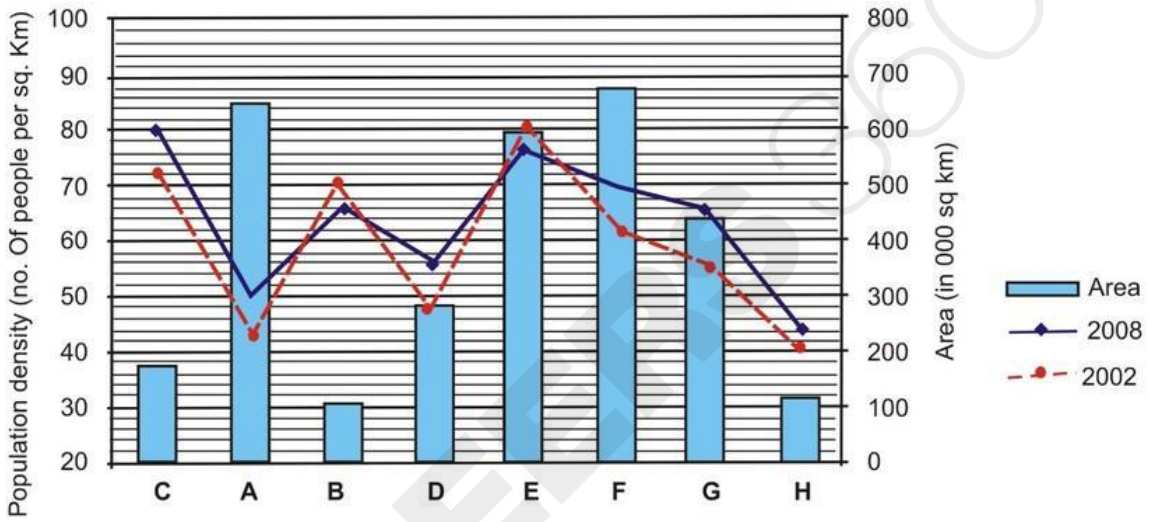
Total Revenue = Rs. 1308480

Share of AC-I = 276480 × 100/1308480 = 21.13%

Part-B: LRDI

Direction (Q1-Q3):

The graph below informs about the total area and the population density for 8 different countries. The area of all countries is the same for the two years 2002 and 2008 and is shown by the bar graph, read off from the right-hand Y-axis. The population density is dividing the total population of the country by the area and is depicted by the line graphs and is read off the left-hand Y-axis. The two line graphs refer to the population density in the years 2002 and 2008.



Q1. How many countries had a higher population in 2008 as compared to 2002?

a. 8
b. 7
c. 6
d. Cannot be determined.

Q2. Find the increase in the population of F from 2002 to 2008.

a. 5.44 mn
b. 5.44 lacs
c. 5,440
d. Cannot be determined

Q3. The country with the largest population in 2008 among the given countries is

a. A

b. E
c. F
d. Cannot be determined

Population Density = $\frac{\text{Poulation}}{\text{Area}}$ Thus, the Population of a country can be found by multiplying the population density by the area.

Directions for questions 4 to 7: Answer the questions on the basis of the information given below.

The following table gives the details of the production of 4 crops in India from the years 2007 to 2010. Winter and Summer refer to two different seasons of sowing and harvesting in the year. All 4 crops are produced in both seasons and the break-up across the two seasons is also given in the table.

Further, the table also gives the yield of the crops across the seasons and the years. Yield is defined as the production of the crop per hectare of the area under cultivation.

	2007		**2008**		**2009**		**2010**		
	Season	prod.	Yield	prod.	Yield	prod.	Yield	prod.	Yield
Rice	Winter	74.47	1.91	76.7	1.88	80.2	2.12	78.25	2.05
	Summer	11.25	3.02	12.6	2.98	12	2.88	12.5	3.15
Jowar	Winter	4.18	1.03	4.6	0.96	4.88	1.11	5.12	0.9
	Summer	2.96	0.6	3.4	0.65	3.2	0.7	3.8	0.75
Maize	Winter	11.44	1.74	10.4	1.76	9.1	1.8	12.5	1.85

	Summer	2.58	3.22	1.9	2.87	3.5	3.08	3.96	3.2
Pulses	Winter	4.94	0.45	4.7	0.45	5.11	0.55	4.98	0.55
	Summer	8.41	0.72	7.9	0.74	7.5	0.75	8.2	0.78

Production figures are in million tonnes and the Yield is in tons/hectare.

Q4. In 2008, for how many of the four crops is the yield in the summer season more than the yield in the Winter season?

a. 1
b. 2
c. 3
d. 4

Q5. In which year did the area under cultivation of Rice in the Winter season increase by the greatest rate?

a. 2007
b. 2008
c. 2009
d. 2010

Q6. Arrange the following in increasing order of their magnitudes

I. the area under cultivation of Jowar in the Summer season in the year 2009
II. the area under cultivation of Maize in the Winter season in the year 2007
III. the area under cultivation of Pulses in the Summer season in the year 2010

a. I,II, III
b. I, III, II
c. II, III, I
d. III, II, I

Q7. The area under cultivation of which crop was the highest in the Winter season of 2008?

a. Rice
b. Jowar
c. Maize
d. Pulses

ANSWER KEY

1 - C, 2 - A, 3 - B, 4 - C, 5 - B, 6 - A, 7 - A

SOLUTIONS

Part B (LRDI)

1. c

Since for all countries, the area remains the same over the two years, 2002 and 2008, then if population density has increased from 2002 to 2008, the population has increased and if population density has decreased, then the population has decreased. The number of countries having a population density in 2008 more than that in 2002 is 6 (except B and E)

2. **a**

The increase in the population of F = (70 – 62) × 680,000 i.e. 8 × 680,000 = 5,440,000 i.e. 5.44 mn.

3. **b**

Since the area has remained the same in 2002 and 2008, the percentage increase in the population is the same as the percentage increase in the population density. Thus, the required percentage growth is percentage growth from 46 to 56 i.e. a decrease of 10/46 i.e., 10/46 x100 = 21.73%

The country with the largest population is going to be one that has a higher population density as well as a higher area. Looking for this combination in the graph, the choices are narrowed down to E and F. (Each of the rest of the countries has both the area and the population density lower than one of these two countries)

Population of E in 2008 = 76 × 600 = 45600 thousand.

Population of F in 2008 = 70 × 680 = 47600 thousand.

Thus, in 2008, the highest population is F.

Part B (LRDI)

Solutions:

Since $\text{Yield} = \frac{\text{Production}}{\text{Area}}$, and we are given Production and Yield figures, so re-arranging the relation to get area, we have $\text{Area} = \frac{\text{Production}}{\text{Yield}}$. With the units given, we will get the area in million hectares.

4. **c**

Just check the table where the yield in second row is more then the yield in the first row in 2008

We see that for Rice, Maize and Pulses, the yield in Summer is more than the yield in Winter.

5. **b**

The area under cultivation of rice in Winter season in successive years can be found as $\frac{74.5}{1.91}, \frac{76.7}{1.88}, \frac{80.2}{2.12}, \frac{78.25}{2.05}$. And we have to find in which year the growth rate is the greatest. Just by solving the above fraction, we found that in 2008 we have the highest growth rate

6. **a**

I. Area = $\frac{3.2}{0.7}$ = 4.46

II. Area = $\frac{11.44}{1.74}$ =6.4

III. Area = $\frac{8.2}{0.78}$ =10.51

Thus, increasing order will be I, II, III

7. **a**

The area for Rice, Jowar, Maize and Pulses is found as $\frac{76.7}{1.88}, \frac{4.6}{0.96}, \frac{10.4}{1.76}, \frac{4.7}{0.45}$

Part-C : VARC

Q1: As Franklin ran (a)/ next the street, he wondered (b)/ what he should buy.(c)/ No Error (d)

a. (a)
b. (b)
c. (c)
d. (d)

Q2. Hardly had he visited(a)/ his friend's house(b) when got invited(c). No Error(d)

a. (a)
b. (b)
c. (c)
d. (d)

Q3. This view has been taken (a)/ by one of the ablest persons (b)/ who has written on this subject (c)/. No error(d)

a. (a)
b. (b)
c. (c)
d. (d)

Q4. Due to population, Indian(a)/ agriculture are under pressure to raise(b)/ more and more crops. (c) /No Error(d)

a. (a)
b. (b)
c. (c)
d. (d)

Q5. We must have(a)/ sympathy for the needy (b)/ and the poor. (c)/ No Error(d)

a. (a)
b. (b)
c. (c)
d. (d)

Q6. Prince Charles is an heir(a)/ to the throne(b)/ of Great Britain. (c)/ No Error(d)

a. (a)
b. (b)
c. (c)
d. (d)

Q7. The roads of Agra(a)/ are wider and cleaner(b)/ than Noida. (c)/ No Error (d)

a. (a)
b. (b)
c. (c)
d. (d)

Q8. The teacher asked(a)/ the student's father to (b)/ put his sign on the report card. (c)/ No Error(d)

a. (a)
b. (b)
c. (c)
d. (d)

ANSWER KEY

1 - B, 2 - A, 3 - C, 4 - B, 5 - D, 6 - A, 7 - C, 8 - C

SOLUTIONS

1. Ans: B.
"Along the street" should be there in place of "next the street"

2. Ans: A
In interrogative sentences, the first form of the verb should be used.

3. Ans. C
'Have' in place of 'has' should be there. (Plural verb should come with plural noun)

4. Ans: B
'Under pressure' will be there in place of 'in pressure'.

5. Ans: D
for the needy (use of definite article)

6. Ans. A
'an' in place of 'a' due to the vowel sound of an heir.

7. Ans. C
"than those of Noida" will be the correct phrase. (Comparison should be with similar things.)

8. Ans. C
'Signature' in place of 'sign'

TOPICS COVERED		
QA	**DILR**	**VARC**
Profit and Loss	Data Interpretation	Reading Skills
Simple Interest and Compound Interest	Blood Relation	Present Tense
Loans and Installments	Ranking	Past Tense

Directions: The questions are taken from the following topics:Profit and Loss, Data Interpretation, Reading Skills, Simple Interest and Compound Interest, Blood Relation Present Tense, Loans and Instalments, Ranking and Past Tense

Quant Questions

Q1. 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 to keep expenditure the same?

(a) 23.33% (b) 26.66% (c) 28% (d) 25%

Q2. Two numbers A and B are 10% and 14% greater than a third number C. Find by what percentage is the number A less than the number B.

(a) 8.33% (b) 12.28% (c) 10.62% (d) 3.5%

Q3. A dealer sold two Radio Sets for Rs 977.5 each, gaining 15% on one and losing 15% on the other set. Find his net gain or a net loss.

(a) Rs 30 loss (b) Rs 45 loss (c) Rs 30 gain (d) Rs 45 gain

Q4. A dealer professes to sell at cost price but unknowingly he uses a 550-gram weight instead of a 500-gram weight. Find the percent profit/loss to the dealer.

(a) 9.09% Loss (b) 11.11% Profit (c) 12.5% Loss (d) None of these

Q5. The profit earned when an article is sold for Rs 500 is 30% more than the loss incurred when it is sold for Rs 385. At what price should the article be sold if he wants to gain 20%?

(a) Rs 300 (b) Rs 500 (c) Rs 522 (d) Rs 600

Q6. 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 34. The sum lent was

(a) Rs 690 (b) Rs 800 (c) Rs 840 (d) Rs 780

Q7. The sum of money invested at simple interest becomes 7 times itself in 15 years. How many times will it become in 20 years?

(a) 8 times (b) 7 times (c) 6 times (d) 9 times

Q8. A person bought an Electric Car under the following scheme: A 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 739000 (d) Rs 124000

Q9. If the simple interest is 10.25% annual and compound interest is 10% annual, find the difference between the interests after 3 years on a sum of Rs 2400.

(a) Rs 50 (b) Rs 56.4 (c) Rs 45 (d) Rs 18

ANSWER KEY

1 - A, 2 - D, 3 - B, 4 - A, 5 - C, 6 - B, 7 - D, 8 - C, 9 - B

SOLUTIONS

Ans 1: (a)
Let the Price of sugar cane per unit is 100x and 100y units of sugarcane are consumed initially.
Expenditure = Cost of sugarcane + Labour cost = (100x)(100y) + 15% of (100x)(100y)
= 10000xy + 1500xy = 11500xy

After an increase in the price of sugarcane and labour costs;
Expenditure = 125xz + 20% of 125xz = 150xz; where z is new consumption of sugarcane
Since Expenditure remains the same. So,

11500xy = 150xz
So, z = 1150y/15 = 230y/3

Reduction in usage of sugarcane = 100y – 230y/3 = 70y/3
Percentage reduction in usage of sugarcane = (70y/3) x 100/100y = 23.33%

Ans 2: (d)
Let C = 100x
A = 110x
B = 114x

A is less than B by (4x × 100/114x)% i.e. 3.5%

Ans 3: (b)

There will be a net loss = 152/100% loss = 2.25 % loss.

So,

SPCP=97.75100
Here, Total SP = 977.5 x 2 = 1955

So,
1955 CP=97.75100

On solving, Total CP = 2000
So, there will be a loss of Rs 45.

Ans 4: (a)

SP per unit = CP per unit = 1 (say)

Total SP Total CP=Quantity for which shopkeeper receives the amount x SP per unit quantity for which shopkeeper pays the amount x CP per unit

Total SPTotal CP=500 x 1550 x 1 = 1011
He got a loss of 1 on 11 i.e. 9.09% loss.

Ans 5: (c)

Profit = 30% more than loss

If loss = 100x; CP = 385 + 100x
then, Profit = 130x; CP = 500 - 130x
So, 385 + 100x = 500 - 130x

⇒ 115 = 230x
⇒ x = 0.5

So, CP = 385 + 100 x 0.5 = Rs 435

Selling Price to get profit of 20% = 435+0.2 x 435= Rs 522

Ans 6: (b)

In 6 months, interest = 4.25% of Sum = 34
So, Sum = 34 x 100/4.25 = Rs 800

Ans 7: (d)

Let Principal = 100x

Interest in 15 yrs = 600x (Since the amount becomes 7 times of principal)
Interest in 20 yrs = (600x/15) x 20 = 800x

So, the amount becomes 9 times itself in 20 years.

Ans 8: (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 year – 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 739000
***For concept read the article for Day 11**

Ans 9: (b)

First, calculate CI- SI for 3 years at 10% per annum = P(R/100)2(3+ R/100)

= 2400 (10/100)2(3+ 10/100)
= Rs 74.4

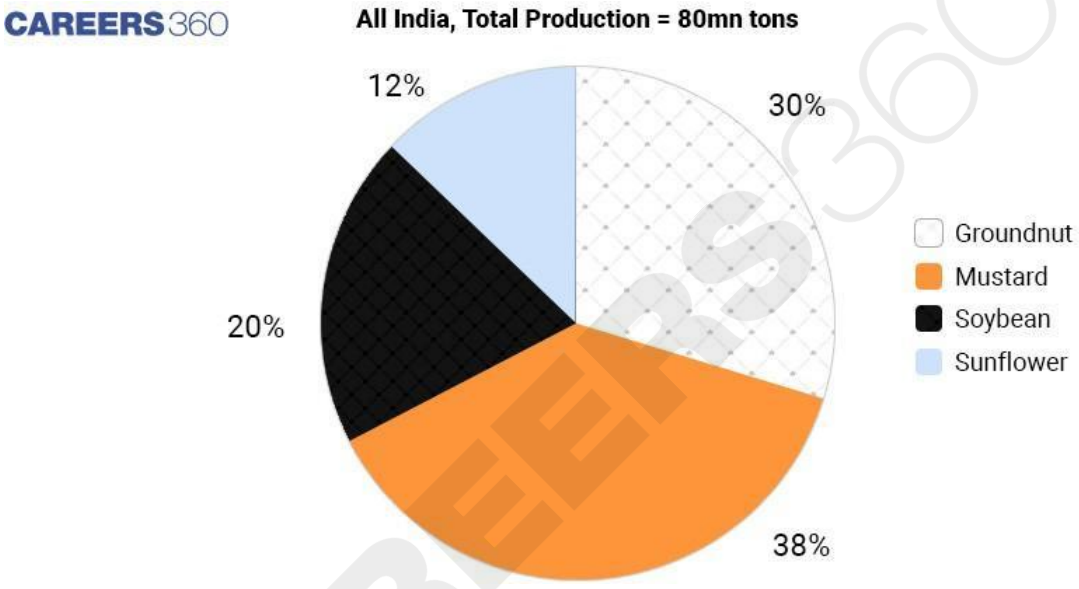
Additional SI at (10.25- 10) % for 3 years = 0.25 % of 2400 for 3 years = Rs 18

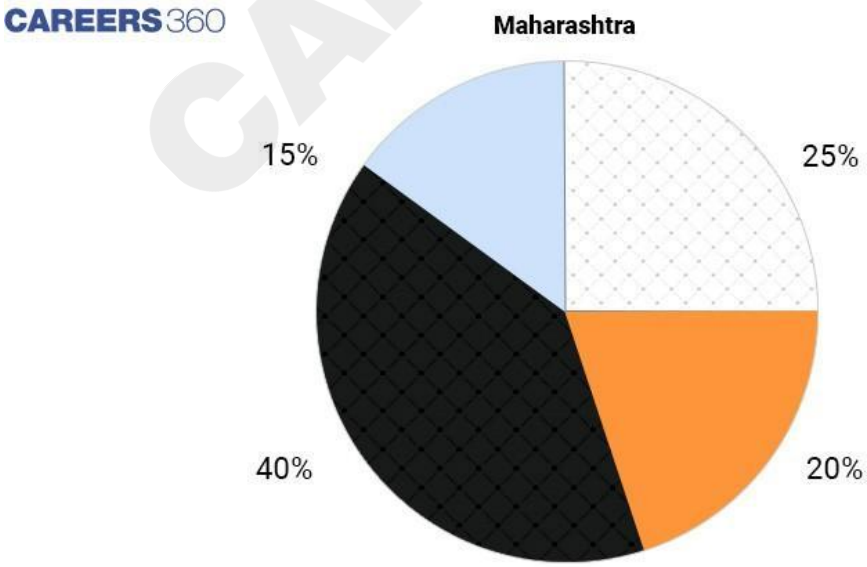
Net Difference between CI and SI for 3 years = Rs (74.4 – 18) = Rs 56.4

Part- B DILR

Direction (Q1-Q3):

The only oil seeds that are produced in India are groundnut, mustard, soybean, and sunflower. The total production of these oil seeds in 2008 was 80 mn tons. The pie chart on the left shows the break-up of this production across the four varieties. The pie chart on the right is also the percentage breakup of the total production of oil seeds across the four varieties, but this is only for the state of Maharashtra.





In all the questions “Rest of India” means all states in India other than Maharashtra.

Q1. If Maharashtra accounts for 10% of the total groundnut production in India, what percentage of the total oil-seed production of India is accounted for by Maharashtra?

a. 10%
b. 12%
c. 16.66%
d. Cannot be determined

Q2. If the production of mustard in Maharashtra is 1.5 mn tons, what percentage of the total production of oil seeds in India is accounted for by Maharashtra?

a. 7.5%
b. 8.75%
c. 9.375%
d. 10%

Q3. If the ratio of production of Sunflowers in Maharashtra and the Rest of India is 1: 4, what percentage of total oil-seed production in the Rest of India is accounted for by Sunflowers?

a. 10%
b. 12%
c. 17.5%
d. 20%

Direction (Q4- Q6)

These questions are based on the following information. Four students - Pankaj, Robin, Shushant, and Titu got the top four ranks in Maths, Analytical, and English. For each student, the ranks in no two subjects are the same. In each subject, no two students got the same rank. We know the following additional information.

- The sum of the ranks of no two students is the same.
- Robin got the first rank in Maths, Pankaj got the third rank in Analytical and Titu got the fourth rank in English.
- The sum of the ranks of Shushant is the highest.
- The rank of Robin in Analytical is not the same as the rank of Shushant in English.

Q4. Who got the third rank in Maths?

(A) Titu (B) Pankaj (C) Shushant (D) Either (A) or (B)

Q5. What is the sum of the ranks of Pankaj?

(A) 8 (B) 7 (C) 6 (D) Either (A) or (B)

Q6. Who got the second rank in English?

(A) Pankaj (B) Robin (C) Shushant (D) Either (A) or (B)

Q7. What is the sum of ranks of Robin?

(A) 6 (B) 7 (C) 8 (D) Either (A) or (B)

ANSWER KEY

1 - B, 2 - C, 3 - B, 4 - A, 5 - C, 6 - B, 7 - B

SOLUTIONS

Ans 1: (b)

25% of Maharashtra's oil-seed production = 10% of (30% of India's oil-seed production).

Thus, Maharashtra's oilseed production = 3/25 of India's oilseed production. Thus, the required percentage = 12%

Ans 2: (c)

Since mustard is 1/5th of the total oilseed production of Maharashtra, hence total oilseed production of Maharashtra = 7.5 mn tons. Thus, required percentage = 7.5/80 i.e. 9.375%

Ans 3: (b)

Total production of sunflower in entire India = 12.5% of 80 = 10. This production is divided between Maharashtra and the Rest of India in the ratio of 1: 4 i.e. Maharashtra produces 2 mn tons of sunflower. Hence it produces = 13.33 tons of oilseed. Thus, the Rest of India produces 80 – 13.33 = 66.66 tons of oilseeds of which the sunflower is 8 mn tons. Thus, the required percentage is 8/66.66 i.e. 8 × 3/2 = 12%

Solutions (Q4 to Q7)

As, the total sum = 30, and least sum (1, 2, 3) = 6, and the highest sum is (2, 3, 4) = 9, the sum of the ranks must be 6, 7, 8, and 9. From the given information, we have

Robin	Titu	Pankaj	Shushant	
Maths	1			
Analytical			3	
English		4		
Total				9

Case 1:

Considering Sushant's Rank Maths, analytical, and English are 2, 4, and 3 respectively.

Titu cannot be 4th in maths as he is 4th in English. Similarly, Pankaj cannot be 3rd in maths. So Titu is 4th and Pankaj is 3rd in maths.

In Similar ways, Robin's Rank in Analytical is 2nd and Titu's Rank is 1st. Robin's Rank cannot be calculated in English as it cannot take 1, 2, 3 and 4 according to given conditions.

Robin	Titu	Pankaj	Shushant	
Maths	1	3	4	2
Analytical	2	1	3	4
English		4		3
Total				9

Therefore, this possibility is wrong.

Case 2:

Considering Sushant's Rank Maths, analytical, and English are 3, 4, and 2 respectively.

Using the given conditions, the final table will look like

Robin	Titu	Pankaj	Shushant	
Maths	1	2	4	3

Analytical	2	1	3	4
English	3	4	1	2
Total				9

The ranks of Robin and Sushant cannot be the same in Analytical and English respectively. Therefore, this possibility is also wrong.

Case 3:

Considering Sushant's Rank Maths, analytical, and English are 4, 2, and 3 respectively.

∴ In Analytical, Robin got the fourth rank as it cannot take 1st rank. Pankaj's rank must be 2 in Maths. Robin's rank in English must be 2
∴ Shushant's ranks in English and Maths are 3 and 4 respectively.
∴ Titu got the third rank in Maths.

All conditions are true.

Robin	**Titu**	**Pankaj**	**Shushant**	
Maths	1	3	2	4
Analytical	4	1	3	2
English	2	4	1	3
Total	7	8	6	9

Ans 4: Titu got the third rank in Maths. Choice (A)

Ans 5: The sum of the ranks of Pankaj is 6. Choice (C)

Ans 6: Robin got the second rank in English. Choice (B)

Ans 7: The sum of the ranks of Robin is 7. Choice (B)

TOPICS COVERED		
QI	**DILR**	**VARC**
linear equation	Direction	Future Tense
Quadratic Equation	Cubes	Sentence correction based on Tenses
Polynomials)	Questions on Cubes	Subject verb agreement.

Directions: The questions are taken from the following topics: linear equation, Quadratic Equation, Polynomials, Direction, Cubes, Questions on Cubes, Future Tense, Sentence correction based on Tenses and Subject verb agreement.

Part-A: Quantitative Aptitude

Q1. 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) $a^2 = 4 (b + 4)$

Q2. For what value of c does the quadratic equation $x^2 – (c^2) x + 3(2c -1) = 0$ have the sum of the roots as one-third of their product?

(a) 5 (b) 1 (c) 7 (d) 3

Q3. The difference between a fraction and its reciprocal equals 48/7. Find the fraction _____[TITA]

Q4. For the given pair (x, y) of positive integers, such that 3x- 7y=1 and both x and y < 50, how many integer values of y satisfy the given conditions?

[1] 6

[2] 7

[3] 8

[4] 9

Q5. In CAT 2017 there were 62 questions. Each correct answer was rewarded with 3 marks and each wrong answer was penalised by 1 mark. In how many different combinations of the correct and wrong answers is a score of 50 possible?

[1] 14

[2] 15

[3] 16

[4] None of these

f

Q6. 'Green & Fresh' purchases y litres of fruit juice from the 'Juice n Fruits' for a total price of $ 6y2 and sells the entire y litres at a total price of $ 10 × (7 + 8y/5). Find the minimum value of y so that the 'Green & Fresh' do not make any loss.

(a) $ 50 (b) $ 5 (c) $ 15 (d) $ 7/3

Q7. 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

Q8. In the land of famous architects, an architect sells his design for Rs 720 at some profit. Had he sold the design at Rs 540, the loss incurred would have been double that of the profit earned. What are the expenses to make a design?

(a) Rs 600 (b) Rs 625 (c) Rs 660 (d) None of these

ANSWER KEY

1 - D, 2 - B, 3 - 7, 4 - 1, 5 - D, 6 - B, 7 - B, 8 - C

SOLUTIONS

Ans 1: (d)

Let roots be α and β;

Sum of roots; $\alpha + \beta = -a$
Product of roots; $\alpha\beta = b$

Also, $\alpha - \beta = 4$

$(\alpha + \beta)^2 = (\alpha - \beta)^2 + 4\alpha\beta$

So, $(-a)^2 = 42 + 4b$

$\Rightarrow a^2 = 4^2 + 4b$

$\Rightarrow a^2 = 4(4 + b)$

Ans 2: (b)

Sum of roots = c^2 (Using sum of roots = -b/a)

Product of roots = 3(2c - 1)

According to question

$c^2 = 1/3\ (3(2c - 1)) = 2c - 1$

$\Rightarrow c^2 - 2c + 1 = 0$
$\Rightarrow (c - 1)^2 = 0$
$\Rightarrow c = 1$

Solution 3:

Let the fraction be 'x'
It's 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.

Ans 4: [1]

3x = 1+ 7y
For integral solutions, (1 +7y) should be a multiple of 3.
y= 2, x = 5
y = 5, x = 12
y = 11, x = 26
y = 14, x = 33
y = 17, x = 40
y = 20, x = 47
y = 23, x = 54, where x is greater than 50. So total solutions are 6.

Ans 5: (D)

Let correct questions be x, wrong questions are y and non-attempted are z.

So, x + y + z = 62
and 3x -y + 0 = 50 (according to question)

The minimum value of x for which 3x – y =50 is 17.
The maximum value of x is when z =0.
If z = 0, x + y = 62 or y = 62 – x

So, 3x – (62 – x) = 50

So, x = 28.

Therefore, No. of valid values for x will be from 17 to 28 = 12.

Option D

Ans 6: (b)

Profit = $10(7+8y/5)-6y^2$
To find the minimum profit

$10(7 + 8y/5) - 6y^2 \geq 0$

Or, $70 + 16y - 6y^2 \geq 0$
Or, $6y^2 - 16y - 70 \leq 0$
On solving, we get
Or, $y \geq 5$ or $y \leq -7/3$

So, the minimum value of y is 5.

Ans 7: (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 the above equations, a = 10, b = 9.

Ans 8: (c)

Profit = 720 – CP
Loss = CP – 540
According to condition;

Loss = 2 x Profit

CP – 540 = 2 (720 – CP)
So, CP = Rs 660.

Part B (LRDI)

Direction: The following questions are based on the information given below:

A cuboid-shaped wooden block has 10cm length, 8 cm breadth, and 1 cm height. Two faces measuring 10 cm x 1 cm are coloured in blue.
Two faces measuring 8 cm x 1 cm are coloured in yellow.
Two faces measuring 10 cm x 8 cm are coloured in Pink.
The block is divided into 10 equal cubes of side 1 cm (from 10 cm side), and 8 equal cubes of side 1 cm(from 8 cm side).

Q1. How many cubes will have blue colour on two sides and the rest of the four sides having no colour?

A. 24 B. 48 C. 8 D. 32

Q2. How many small cubes will be formed?

A. 80 B. 19 C. 40 D. None of these

Q3. How many cubes having blue, yellow, and pink colours on at least one side of the cube will be formed? [TITA]

Q4. How many cubes will remain if the cubes having blue and pink coloured are removed?

A. 80 B. 12 C. 40 D. None of these

Direction (Q5- Q8)

A family of three generations has eight members A, B, C, D, E, F, G and H of them standing in a playground.

1. D's daughter stands 6m south of her father.
2. A stands 4m north of his wife.
3. B is the mother of D. 5m towards north-east of B is D.
4. C is the daughter-in-law of A and mother of F.
5. D's nephew stands 12m to the south of D and D's sister-in-law stands in the middle of both of them.
6. E's father stands 3m west of D.

7. E is the brother of D. E stands 10m towards the north-east of his father.

8. G stands 6m north of his daughter and 6m south of his brother-in-law.
9. G's wife stands towards the west of her husband.

Q5: How is B related to F?

a. B is the grandmother of F
b. F is the nephew of B
c. B is the mother of F
d. Relation cannot be determined.

Q6. Which of the following about C is not true?

a. C is 6 m north of F
b. C is the daughter of B
c. C is the mother of F
d. E is the husband of C.

Q7. Which of the following is not true?

a. C and H are in the same line
b. H is the cousin of F
c. Distance between E and C is 12 m.
d. E is the husband of C.

Q8. If a male member from the 1st generation is the head of the family, then who is the head of the family?

A. E B. G C. A D. F

ANSWER KEY

1 - B, 2 - A 3 - 4, 4 - 12, 5 - A, 6 - B, 7 - C, 8 - C

SOLUTIONS

Ans 1: (d)

Let roots be α and β;

Sum of roots; α + β = -a
Product of roots; αβ = b

Also, α – β = 4

$(\alpha + \beta)^2 = (\alpha - \beta)^2 + 4\alpha\beta$

So, $(-a)^2 = 42 + 4b$

$\Rightarrow a^2 = 4^2 + 4b$

$\Rightarrow a^2 = 4(4 + b)$

Ans 2: (b)

Sum of roots = c^2 (Using sum of roots = -b/a)

Product of roots = 3(2c - 1)

According to question

$c^2 = 1/3\ (3(2c - 1)) = 2c - 1$

$\Rightarrow c^2 - 2c + 1 = 0$
$\Rightarrow (c - 1)^2 = 0$
$\Rightarrow c = 1$

Solution 3:

Let the fraction be 'x'
It's reciprocal will be 1/x

So, $x – 1/x = 48/7$

$\Rightarrow x^2 – 1 = 48x/7$
$\Rightarrow 7x^2 - 48x - 7 = 0$
$\Rightarrow 7x^2 - 49x + x - 7 = 0$
$\Rightarrow 7x (x – 7) + (x - 7) = 0$

⇒ (x – 7) (7x + 1) = 0
⇒ x = 7 or x = -1/7

So, x = 7 will be the answer.

Ans 4: [1]

3x = 1+ 7y
For integral solutions, (1 +7y) should be a multiple of 3.
y= 2, x = 5
y = 5, x = 12
y = 11, x = 26
y = 14, x = 33
y = 17, x = 40
y = 20, x = 47
y = 23, x = 54, where x is greater than 50. So total solutions are 6.

Ans 5: (D)

Let correct questions be x, wrong questions are y and non-attempted are z.

So, x + y + z = 62
and 3x -y + 0 = 50 (according to question)

The minimum value of x for which 3x – y =50 is 17.
The maximum value of x is when z =0.
If z = 0, x + y = 62 or y = 62 – x

So, 3x – (62 – x) = 50

So, x = 28.

Therefore, No. of valid values for x will be from 17 to 28 = 12.

Option D

Ans 6: (b)

Profit = $10(7 +8y/5) – 6y^2$
To find the minimum profit

$10(7 +8y/5) – 6y^2 \geq 0$

Or, $70 + 16y - 6y^2 \geq 0$
Or, $6y^2 - 16y - 70 \leq 0$
On solving, we get
Or, $y \geq 5$ or $y \leq -7/3$

So, the minimum value of y is 5.

Ans 7: (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 the above equations, a = 10, b = 9.

Ans 8: (c)

Profit = 720 – CP
Loss = CP – 540
According to condition;

Loss = 2 x Profit

CP – 540 = 2 (720 – CP)
So, CP = Rs 660.

Part B (LRDI)

Ans 1: B

Except for boundary cubes, all other cubes will satisfy this condition.
Total cubes will be 80 and boundary cubes will be 32 so the rest cubes will be 80 – 32 = 48.

Ans 2: A

80

Solution 3: 4

Only corner cubes will have three surface paints and this cuboid has only four corner faces. so, the answer will be 4

Ans 4: 12

Only a single side-colored yellow cube will be left out. So, the answer will be

6 + 6 = 12 cubes.

Ans 5: A

Ans 6: B

All are true except B.

Ans 7: C

The distance between E and C cannot be determined since we don't know the distance between C and H.

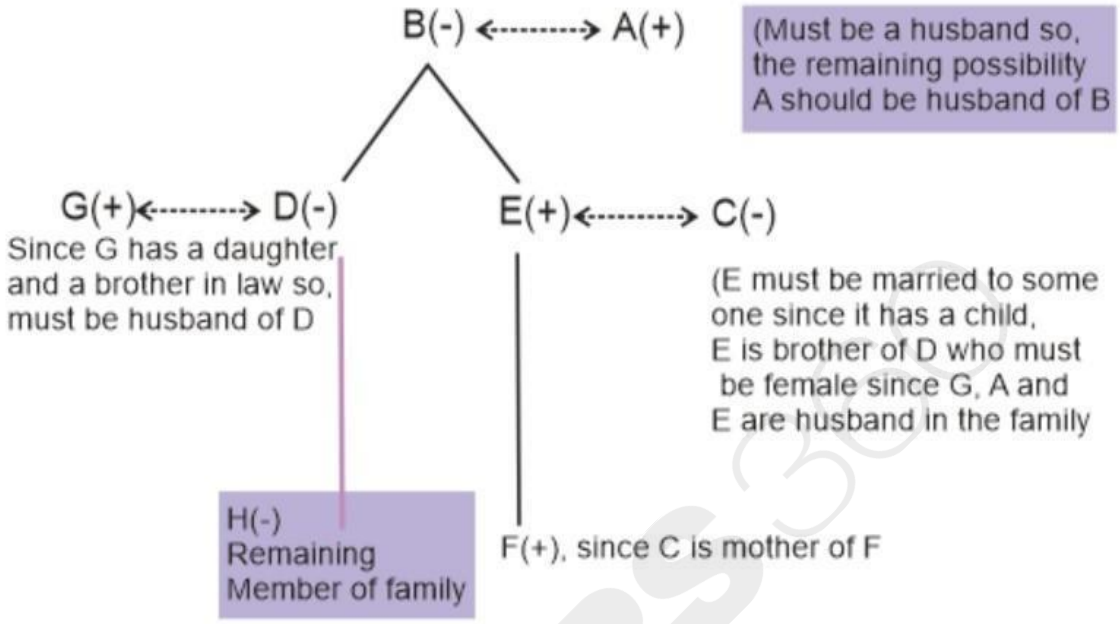
Ans 8: C

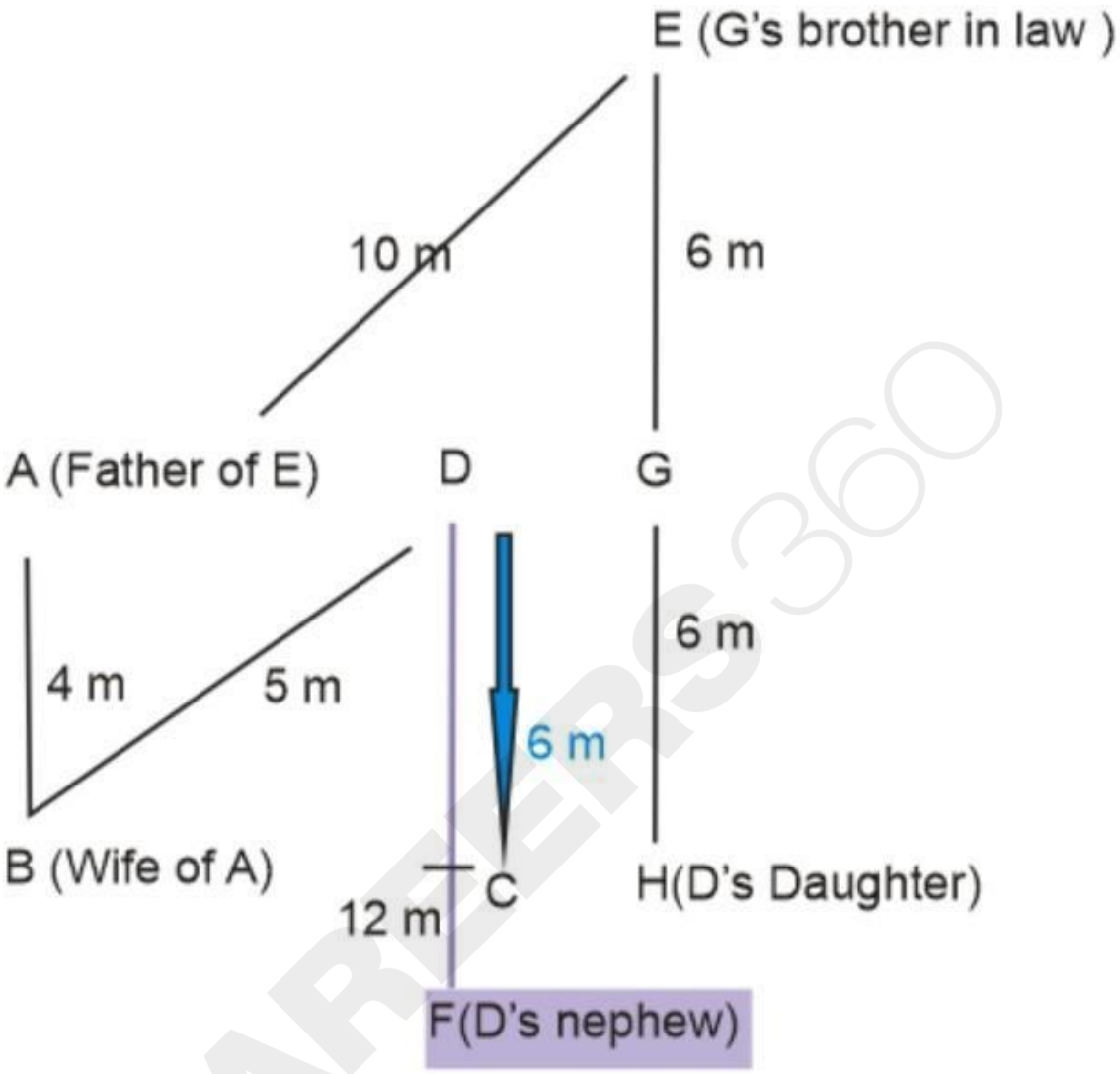
Explanation:

From the given information, draw a family tree and distance diagram as shown:

− Indicates female

+ Indicates a male




E (G's brother in law)
10 m
6 m
A (Father of E)
D
G
4 m
5 m
6 m
6 m
B (Wife of A)
C
H(D's Daughter)
12 m
F(D's nephew)

Part-C - VARC

In the questions below, find the phrase with an error.

Q1: If I was the chief minister of the country, I would make primary education and poverty my top priorities.

a. If I was the chief minister of the country, I would
b. If I were the chief minister of the country, I would
c. If I were the chief minister of the country, I will
d. No correction required

Q2. One of the problems of the diamond industry are the increasing incidences of child exploitation.

a. Industry is the increasing incidence
b. Industry are the increasing incidence
c. Industry is the increasing incidences
d. No correction required

Q3. The large number of people have all but blocked all the highways in the city.

a. The sheer number of people have all
b. The large number of people has all
c. The greater number of people have all
d. No correction Required

Q4. Being a teacher, I was hoping if there were some tips you can give me on how to handle a class.

a. Being a teacher, I was hoping that you could give me some tips.
b. As you are a teacher, I was hoping if you could give me some tips
c. Being that you are a teacher, I was hoping if you could give me some tips
d. As you are a teacher, I was hoping that you could give me some tips.
e. Error detection

Q5. As a child (a)/ I always want to (b)/ have a bicycle of my choice. (c)/ No error (d)

A. (a) B. (b) C. (c) D. (d)

Q6. Without appointment, (a)/ your desire to meet(b)/ the prime minister cannot fulfill.(c)/ No error(d)

A. (a) B. (b) C. (c) D. (d)

Q7. The professor is (a)/ delivering the lecture(b)/ for the last three hours.(c)/ No error(d)

A. (a) B. (b) C. (c) D. (d)

Q8. The skilled labors (a)/ had always contributed (b)/ in the economy.(c)/ No error (d)

A. (a) B. (b) C. (c) D. (d)

Q9. My wife paints (a)/ furniture whenever (b)/ she had time. (c)/ No error(d)

A. (a) B. (b) C. (c) D. (d)

ANSWER KEY

1 - B, 2 - C, 3 - B, 4 - D, 5 - B, 6 - C, 7 - A, 8 - B, 9 - C

SOLUTIONS

Ans 1: (B)

'Was' is associated with the past tense. In discussing hypothetical situations, the subjunctive mood is used.

The correct usage is 'If I were…I would….'

Ans 2: (C)

One of the problems is singular, as it refers to one of many problems. So, the right verb to be used with this subject is 'is', not 'are'. The correct usage is "One of the problems is…

Ans 3: (B)

The expression 'the number' indicates a single arithmetical value. So, it is followed by a singular verb. On the other hand, the expression 'a number' serves as an indefinite pronoun meaning many. So, it is followed by a plural verb.

Ans 4: (D)

The first error is corrected by either saying 'as you are a teacher', or 'being that you are a teacher'. The second error is in the use of 'if' after 'hoping'. 'Hoping' is normally followed by a noun clause beginning with 'that'(either explicitly stated or implied), or it is followed by 'for', or 'to'.

Ans 5: B

use the 2nd form of the verb. Wanted in place of want.

Ans 6: (C)

Be fulfilled in place of fulfil

Ans 7: (A)

replace is with has been

Ans 8: (B)

have in place of "had".

Ans 9: (C)

replace had with has

TOPICS COVERED		
QA	**DILR**	**VARC**
Inequalities	Linear Arrangement	Learn new words and their uses.
Functions and Graph	PYQs on Linear Arrangement	Conditionals
Maxima and Minima	Circular Arrangement	Sentence improvement based on Articles

Directions: The questions are taken from the following topics: Inequalities, Functions and Graph, Maxima and Minima, Linear Arrangement, PYQs on Linear Arrangement, Circular Arrangement, Learn new words and their uses, Conditionals and Sentence improvement based on Articles

Part-A: Quantitative aptitude

Q1. 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?

1. 340
2. 341
3. 342
4. 1024

Q2. A quadratic function f(x) attains a maximum of 12 at x = 1. The value of the function at x = 0 is 7. What is the value of f (x) at x = -11?

1. -805
2. -719
3. -859
4. -883

Q3. If the roots of the equation in y i.e. $y^3 – ay^2 + by – c =0$ are three consecutive integers, then the smallest possible value of b (nearest to its integer value) is _____ [TITA]

Q4. The sum of the integers in the solution set of $|x^2-7x| > 5$ is:

1. 10
2. 15
3. 20
4. 0

Q5. The equation $x^2 + ax + (3-b) = 0$ has real roots. What is the minimum value of $a^2 + b^2$?

1. 0
2. 2
3. 4
4. 8

Q6. 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≠0) -

a. 20
b. 40
c. 60
d. 50

Q7. The value of the base of a triangle for which area is minimum if the relation between the perpendicular distance from the vertex and the base is $p = 7b^2 - 84$ is _____(where b represents base and p represents perpendicular distance) [TITA]

Q8. Let f (x) = max (2x + 1, 3 − 4x), where x is any real number. Value of f(x) at x = 7.5 is:

1. -11
2. - 27
3. 16
4. 43

Q9. Let g (x) be a function such that g (x + 1) g (x) = 12 for every real x. Then what is the value of g (11) g (0)?

1. 1
2. 12
3. 1/12
4. 6

ANSWER KEY

1 - 2, 2 - 4, 3 - -1, 4 - 4, 5 - 4, 6 - A, 7 - 2, 8 - 3

SOLUTIONS

Ans 1: (2)

3y/2 = 7 + x
Or, y = (14 + 2x)/3; for y to be integer (14 + 2x) should be divisible by 3
x= 2; y = 6x= 5; y = 8
x = 8; y = 10
x = 11; y = 12 and so on…

So, clearly, there is an AP in x with the first term being 2 and common difference 3.

n^{th} term in x must be less than or equal to 2^{10} i.e. 1024.

Therefore, $2 + (n-1)^3 \leq 1024$

$\Rightarrow n \leq (1022/3) + 1$

Therefore, n must be 341.
Hence there can be 341 solutions.

Ans 2: (4)

If the function gets the maximum of 12 at x = 1

$f(x) = a(x - 1)^2 + 12$

So, f (0) = a + 12 = 7 {It is given as 1}

a = –5

$f(x) = -5(x - 1)^2 + 12$

$f(-11) = -5(-12 - 1)^2 + 12 = -845 + 12 = -833$

Solution 3:

In a cubic equation, the coefficient of y divided by the coefficient of y^3 represents the sum of the product of roots taken two at a time.

So, b = the sum of the product of roots taken two at a time

This is the minimum when roots are -1, 0 and 1.

So, b = -1 x 1+ -1x 0 + 1 x 0 = -1

Answer is -1.

Ans 4: [4]

$|x^2-7x| > 5$

$\Rightarrow x^2-7x > 5$ or $x^2-7x < -5$

Case 1:

$\Rightarrow x^2-7x > 5$

$\Rightarrow x^2 -7x – 5 > 0$

$\Rightarrow x > [(7\pm\sqrt{69})/2]$ which gives two solutions $x > 7$ or $x < 0$ (for x to be integer).

Case 2:

$\Rightarrow x^2-7x < -5$

$\Rightarrow x^2 -7x +5 < 0$

$\Rightarrow x < [(7\pm\sqrt{29})/2]$ which gives two solutions $x < 7$ or $x > 0$ (for x to be integer).

x = [1, 2, 3, 4, 5, 6].

There is no common solution in both cases. So, the answer is 0.

Ans 5: (4)

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.

Ans 6: (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)

So, Z (100 – p) / (100 + p) = (100 + 2.5p) Z/100

$\Rightarrow 100(100 - p) = (100 + p)(100 + 2.5p)$

$\Rightarrow -100p = 100p - 250p + 2.5p^2$

$\Rightarrow p = 20.$

Solution 7:

Area = ½ (base) (height) = ½ b $(7b^2 - 84) = 7b^{3/2} - 84b^{1/2}$

For Area to be minimum, find dA/db = 21/2 $b^2 - 42 = 0$

$\Rightarrow b^2 = 4$

$\Rightarrow b = 2$ 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 the minimum value of Area.

Hence the answer is 2.

Ans 8: (3)

f(x) = max (2x7.5 + 1, 3 – 4x7.5) at x = 7.5

f(x) = max (16, -27) at x = 7.5

Answer is 16.

Ans 9: (2)

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.

Therefore, g(11) = g(9) = g(7) = ……= g(1) = 12/g(0)

⇒ g (11) g (0) = 12.

Part-B: Logical Reasoning

Direction (Q1-Q3):

Four friends Arun, Bittu, Cirag and Dheeraj went for an excursion with their wives Priya, Renu, Sharita and Varti, not necessarily in the same order. Each couple hails from a different city amongst Madurai, Cutnee, Kurnool and Hapur, not necessarily in that order. They went to Delhi to visit the Pinkfort, where they sat in a row. Each wife always sat to the immediate right of her husband.

(i) Bittu sat to the immediate right of Priya.
(ii) Dheeraj is from Hapur and Priya is not from Madurai.
(iii) Renu and her husband were sitting to the immediate right of the couple that hailed from Cutnee.
(iv) Chirag and his wife were sitting to the immediate left of the couple from Kurnool and Chirag was sitting to the immediate right of Sharita.
(v) Arun sat to the immediate right of Renu, who is not from Madurai.

Q1. Who is Dheeraj's wife?

(A) Sharita (B) Priya (C) Varti (D) Renu

Q2. Which couple is from Cutnee?

(A) Varti and Bittu (B) Dheeraj and Renu

(C) Chirag and Priya (D) Arun and Sharita

Q3. Who is the husband in the couple, which is seated second in the row from left to right?

(A) Arun (B) Bittu (C) Cirag (D) Dheeraj

Direction (Q4- Q7)

A cube is formed by joining 216 smaller and identical cubes. The bigger cube is painted black colour on all its faces. From the bigger cube, 64 smaller cubes from a corner were taken out and the cube formed by joining these 64 smaller cubes is painted pink in all its faces. Again, this cube is fitted back into its usual position in the large cube.

Q4. How many smaller cubes have no faces painted?

Q5. How many smaller cubes have three faces painted?

Q6. How many smaller cubes have only two faces painted?

Q7. How many smaller cubes have only one face painted?

ANSWER KEY

1 - A, 2 - C, 3 - C, 4 - 45, 5 - 15, 6 - 63, 7 - 93,

SOLUTION

Males: - Arun, Bittu, Cirag and Dheeraj Females: - Priya, Renu, Sharita and Varti Cities: - Madurai, Cutnee, Kurnool and Hapur With reference to the couples, the wife always sits to the immediate right of her husband.

From (i), Bittu is not the husband of Priya.
From (ii), Dheeraj is from Hapur.
From (iii), Renu is not from Cutnee.
From (iv), Cirag is not from Kurnool and he is not the husband of Sharita.
From (v), Arun is not married to Renu and Renu is not from Madurai.

Possibility Table

HUSBAND	WIFE	CITY
Bittu	Priya,	Hapur
Dheeraj	Sharita, Reno, Priya, Varita	Hapur
Chirag	Sharita, Renu, Priya or Varita	Hapur,Kurnool, Mudrai or Cutnee
Arun	Renu	Hapur ,Cutnee,Madurai or Kurnool

So, according to the table there were two possibilities for Chirag's wife either Priya or Varita so we will consider these cases one by one

Case I: If we consider Priya as Chirag's wife and Priya can't be from Madurai so they must be from Cutnee.

So, the arrangement could look like this:

------ Sharita Chirag --- Priya Bittu---Renu Arun-------

Now after this arrangement only one man and one woman is left so we can consider the woman as Arun's wife and the man as Sharita's Husband

Dheeraj ------ Sharita Chirag --- Priya Bittu---Renu Arun **Varti**

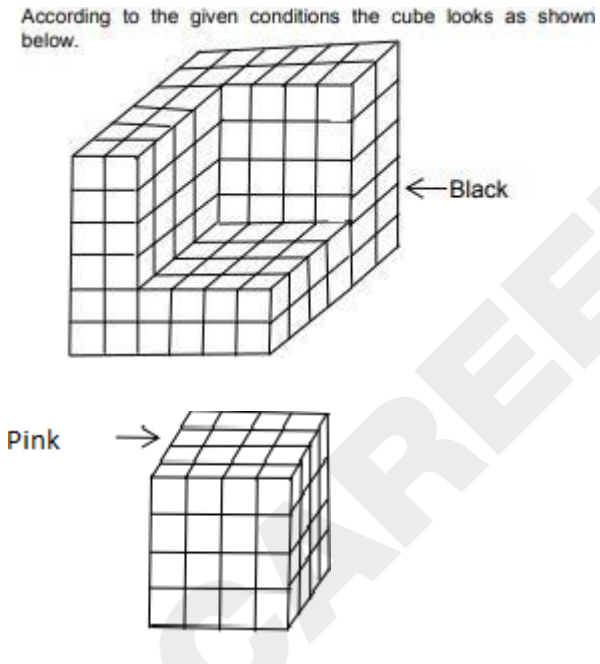
This arrangement is fulfilling all the conditions, so it is not required to consider any other case.

Ans 1: Dheeraj is married to Sharita.Choice (A)

Ans 2: Chirag and Priya are from Cutnee. Choice (C)

Ans 3: Chirag and his wife are seated second in the row. Choice (C)

Solution 4 to 7:



Ans 4: By assuming a 4 × 4 × 4 cube is also not painted with pink colour, the number of cubes with no faces painted is = $(6 – 2)^3$ = 64. Of these 64 smaller cubes now, in the second, third and fourth layer leftmost 9 cubes are painted pink, on the bottom surface four smaller cubes are painted pink and on the fourth layer back most six smaller cubes are painted. Hence, the total number of cubes with no face painted = 64 – 19 = 45.

Ans 5: The number of cubes which are three faces painted before removing 64 smaller cubes = 8 and after painting with pink colour to those 64 smaller cubes seven new cubes will have three faces painted. Hence, the total number of cubes with three faces painted = 8 + 7 = 15.

Ans 6: The number of smaller cubes painted on two faces in the larger cube after removing 4 × 4 × 4 is illustrated as shown below. 9 edges with four smaller cubes with two faces painted = 9 × 4 = 36; 3 edges with one cube with two faces painted = 3 × 1 = 3. In the pink cube there are 24 cubes on 12 edges which are painted on two faces. Hence the number of cubes with two faces painted = 36 + 3 + 24 = 63.

Ans 7: The number cubes with one face painted in the larger cube = 3 × 16 + 3 × 7 = 69. Number of cubes with one face painted in the 4 × 4 cube = 6 × 4 = 24 Hence, the total number of smaller cubes with one face painted = 69 + 24 = 93.

Part-C: VARC

In the questions below, find the phrase with an error.

Q1: If I had known, I would lend you my car.

1. I will lend you my car
2. I would lent you my car
3. I would have lent you my car
4. No improvement needed

Q2. You have no trouble at school, if you had done your homework.

1. You would have had no trouble at school.
2. You will have no trouble at school.
3. You would had no trouble at school
4. No improvement needed

Q3. If you had done better at your interview, you get that job.

1. You will get that job.
2. You would get that job.
3. You would have got that job.
4. No improvement needed

Q4. While the guests danced, the thieves broke into the house.

1. While the guests have danced
2. While the guests were dancing
3. While the guests had danced
4. No improvement needed

Error detection

Q5. Take a shower (a)/ you will (b)/ feel better. (c) / No error (d)

A. (a)
B. (b)
C. (c)
D. (d)

Q6. Whenever I look (a)/ at the moon my heart (b)/ fills with the pleasure. (c)/ No error(d)

A. (a)
B. (b)

C. (c)
D. (d)

Q7. The whole block of flats (a)/ including two shops were (b)/ destroyed in fire. (c)/ No error (d)

A. (a)
B. (b)
C. (c)
D. (d)

Q8. The man who cannot (a)/ believe his senses and the man who cannot (b)/ believe anything else are insane. (c)/ No error(d)

A. (a)
B. (b)
C. (c)
D. (d)

ANSWER KEY

1 - C, 2 - A, 3 - C, 4 - B, 5 - A, 6 - C, 7 - B, 8 - D, 9 - D

SOLUTIONS

Ans 1: (C)

if clause: had known (past perfect), Main clause: would/ could have lent.

Ans 2: (A)

if clause: had done (past perfect), the main clause: would/ could/ might have had.

Ans 3: (C)

if clause: had done (past perfect), the main clause: would/ could/ might have had.

Ans 4: (B)

Previous event is simple past, then the next event must be past continuous for continuous action.

Ans 5: A

take a shower is an idiomatic phrase. Hence No error.

Ans 6: (C)

with pleasure is an idiomatic phrase. With pleasure replaces with pleasure.

Ans 7: (B)

was is used instead of were. The whole block is considered a singular subject and the singular subject takes a singular verb.

Ans 8: (D)

when two nouns get added with the use of ‘and’ and a possessive adjective article is used before both the nouns then we use plural verb but when the possessive adjective article is used with only one noun then it is considered to be one and hence singular verb is used.

Ans 9: (D)

No article is used between By and Means of transport. Quite followed by an adjective and noun uses A

TOPICS COVERED		
QA	**DILR**	**VARC**
Logarithm and Modulus)	Circular Arrangement	Cloze test based on articles, tenses, prepositions etc.
Average	Distribution	Sentence correction
Strategy to prepare problems involving Ages	Puzzle sets questions on Distribution	Introduction to what is RC and its PYQs- Day 23

Directions: The questions are taken from the following topics: Logarithm and Modulus Average, Strategy to prepare problems involving Ages, Circular Arrangement Distribution, Puzzle sets questions on Distribution, Cloze test based on articles, tenses, prepositions etc, Sentence correction and Introduction to what is RC and its PYQ

Part-1: (Quantitative Aptitude)

Q1. $\log_{49}(7\log_2(2+\log_3(1+2\log_2 x))) = 1/2$. Find x.

1. 4
2. 1
3. 2
4. ½

Q2. The value of x satisfying $\log_{10}(x^2+3x+21) = (2-\log_{10}4)$ is:

1. 5
2. 0
3. 1
4. 3

Q3. 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

1. 5
2. 0
3. 2
4. 3

Q4. 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_____[TITA]

Q5. Consider a group of 30 persons whose average weight is 30 kg. If n new persons join this group whose average weight is m kgs. If it is known that m > 30 and m+ n =37, what is the maximum possible average weight of the group now?

1. 30.363 kgs
2. 30.193 kgs
3. 30.352 kgs
4. 30.166 kgs

Q6. 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≠0)

A. 20

B. 40

C. 60

D. 50

Q7. Find the average increase rate of increase in the price of an article in the first year is 40% and that in the second year is 30%.

(a) 41

(b) 56

(c) 40

(d) 38

Q8. A can type a sheet in 4 minutes, B in 5 minutes and C in 6 minutes. The average number of sheets typed per hour per person for all three persons is

(a) 25/3

(b) 30/3

(c) 65/3

(d) 37/3

ANSWER KEY

1 - 2, 2 - 3, 3 - 3, 4 - 1, 5 - 1, 6 - A, 7 - A, 8 - D

SOLUTIONS

Ans 1: (2)

$\log_{49}(7\log_2(2+\log_3(1+2\log_2 x))) = \frac{1}{2}$

$\Rightarrow 7\log_2(2+\log_3(1+2\log_2 x)) = 49^{1/2} = 7$

$\Rightarrow \log_2(2+\log_2(1+2\log_2 x)) = 1$

$\Rightarrow 2+\log_3(1+2\log_2 x) = 2$

$\Rightarrow \log_3(1+2\log_2 x) = 0$

$\Rightarrow (1+2\log_2 x) = 1$

$\Rightarrow 2\log_2 x = 0$

$\Rightarrow x = 1$

Ans 2: (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.

Solution 3: [3]

$\log_5 4, \log_5(3^x-1), \log_5(3^x+7)$ 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, $3x = 9 \Rightarrow x = 2$.

Ans 4:

Let the average age of children is x and there are n children in the family.

Let the age of the mother is y.

So, $nx + y = (n+1)\ 20$

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.

Ans 5: [1]

Total weight of 30+ n persons = 30x 30 + m x n = 900 + mn

Average = (900 + mn)/ (30+ n)

Use hit and trial

m =31; n =6; Average = 1086/36 =30.166

m =32; n =5; Average = 1060/35 =30.285

m =33; n =4; Average = 1086/34 =30.352

m =34; n =3; Average = 1002/33 =30.363

m =35; n =2; Average = 970/32 =30.312

m =36; n =1; Average = 936/31 =30.193

Ans 6: (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)

So, Z (100 – p) / (100 + p) = (100 + 2.5p) Z/100

⇒ 100(100 – p) = (100 + p) (100 + 2.5p)

⇒ – 100p = 100p – 250p + $2.5p^2$

⇒ p = 20.

Ans 7: (a)

Let the initial Price = 100

Price after 1st year = 140

Price after 2nd year = 182

Net increase in Price = 82

Average change per year = 41.

Ans 8: (d)

A can type 60/4 = 15 sheets in 1 hour

B can type 60/5 = 12 sheets in 1 hour

C can type 60/6 = 10 sheets in 1 hour

Total sheets typed in 1 hour = 15 + 12 + 10 = 37

Average per person = 37/3

Part-2: DILR

Direction (Q1-Q3):

Annie, Ben, Cain, Dan and Engel are five friends who purchased a book each that were related to one of the following fields: Architecture, Biotechnology, Criminology, Demography and Economics. Further, the following information is known.

A. No friend's first letter of the name matches with the field to which the book purchased is related.
B. Annie and Dan love to read books related to Criminology apart from the books they purchased.
C. Engel hates Criminology and Biotechnology and hence did not purchase them
D. The first letter of the field to which the book that Ben purchased pertains, matches with the first letter of the name of the friend who purchased a book pertaining to Biotechnology.

Q1. After a month of reading, Annie exchanges her book with Dan and then Dan exchanges this book with Engel. The exchanges resulted in the first letter of the friends matching with the field to which the book belonged without violating conditions (b) to (d).

Which of the following is true?

a. Engel bought the book related to Demographics.
b. Annie bought the book related to Demographics.
c. Dan bought a book related to Economics.
d. Engel bought a book related to Architecture.

Q2. Which of the following is not necessarily true?

a. Either Annie or Ben bought a book related to Criminology.
b. Dan bought a book related to either Architecture or Economics.
c. Either Dan or Engel bought the book related to Architecture.
d. Either Engel or Cain bought the book related to Demographics.

Q3. While delivering the books, the salesman interchanged the books of two friends in such a manner that the field to which the book belonged and the starting letter of only one of the friends matched. However, conditions (b) to (d) were not violated.

Which of the following conditions lets you completely determine the fields of the books possessed by the five friends?

a. Annie's and Engel's books were interchanged.

b. Neither Annie nor Engel possesses a book related to Economics after the salesman interchanged their books.
c. Neither Dan nor Engel had books related to Biotechnology after the interchange
d. Interchange happened between the books of Annie and Dan.

Q4. Ajay, Bablu, Chinti, Dev, Elish and Faijal are six persons in six chairs around a table with only six chairs. Ajay is opposite Dev. Chinti is to the immediate right of Ajay and is next to Elish.

Which of the following is definitely FALSE?

a. Ajay and Elish are not opposite each other.
b. Elish is between Chinti and Dev.
c. Chinti is between Ajay and Elish.
d. Bablu and Faijal are opposite each other.

Q5. A, B, C, D and E are five apartments on a floor. Each pair of apartments have a path connecting them. How many paths are there in all?

(A) 12
(B) 10
(C) 5
(D) 2

Q6. A doctor, a lawyer and an engineer meet at a place. The doctor has not come from the hotel or the club. Each of them has come from only one of the following places, the club, the hotel and the theatre. Also, no two people have come from the same place. If the engineer has come from the hotel, then the lawyer has not come from

a. the theatre or the hotel.
b. the theatre or the club.
c. the club or the hotel.
d. the club or the theatre or the hotel.

ANSWER KEY

1 - A, 2 - D, 3 - B, 4 - D, 5 - B, 6 - A

SOLUTIONS

Solution 1: (A)

Let us represent the person's name with A, B, C, D and E and also the fields to which each book belongs to A, B, C, D and E.

Person	Book
A	D / [illegible]
B	Criminology
C	Biotechnology
D	A / [illegible]
E	D / A

Annie exchanges with Dan and Dan exchanges with Engel so the book possessed by Annie goes to Engel. Hence, Annie purchased a book related to Economics. Don Purchased a book related to Architecture and Engel purchased a book related to Demographic.

Ans 2: (D)

See Solution of Q1.

Statement (A) is true.

Statement (B) is true.

Statement (C) is true.

Statement (D) is not necessarily true.

Ans 3: (B)

Condition (A) Annie and Engel's books were interchanged. There can be two possibilities with this condition with Annie taking books related to Demography or Architecture.

Condition (B) states that neither Annie nor Engel possess books related to economics.

Since Annie and Engel did not get a book related to economics that means Dan possessed a book related to economics, Annie possessed a book related to Architecture and Engel possessed a book related to demographics.

Ans 4: (D)

Ajay is opposite Dev. Chinti is to the immediate right of Ajay and next to Elish. So, the arrangement is as follows:

Ans 5: (B)

A, B, C, D and E are five apartments. Each pair has a path between them. The pairs may be AB, AC, AD, AE, BC, BD, BE, CD, CE, or DE. So, there are altogether 10 paths. i.e. ${}^5C_2 = 10$.

Ans 6: (A)

It is clear that the Doctor is not from a Hotel or Club, Engineer is from a Hotel. So, the Lawyer must be from the club. So, the combination is as follows. Engineer – Hotel Doctor – Theatre Lawyer – Club So, the Lawyer has not come from Theatre or Hotel.

Part-3: VARC

In the questions below, find the phrase with error.

Q1: If he was to decide to go to college, I for one, would recommend that he go to Yale University.

1. If he were to decide to go to college
2. Had he decided to go to college
3. In the event that he decides to go to college
4. No correction required
5. Error Detection

Q2. Our mathematics teacher often emphasises (a)/ on the need (b)/ for a lot practice (c)/ No error (d)

A. (a)

B. (b)

C. (c)

D. (d)

Q3. I do not mind (a)/ to be disturbed (b)/ while watching T.V. (c)/ No error (d)

A. (a)

B. (b)

C. (c)

D. (d)

Q4. Reforms can elevate (a)/ poverty and usher (b)/ in economic prosperity (c)/ No error (d)

A. (a)

B. (b)

C. (c)

D. (d)

Fill the appropriate word/Phrase

Q5._____, doesn't she?

1. Anna doesn't visit her friend daily
2. Anna has a red pen
3. Anna doesn't play volleyball
4. Anna does not do a quick revision before exam

Reading Comprehension

IT'S LIKE READING Dostoevsky on a bad summer day. There are so many tormented souls out there caught in a morality play. Its emotional intensity is only matched by the inevitability of the x xx it raises about country, religion, power, and retribution. It's big, shapeless, chaotic, and in the end, a rewarding experience of the imagination. But then, you're not reading Great Russian. You're living in, dare I say, a creative phase of politics. Rich in ideas and arguments, intense in its interplay of passions, nuanced in its undertones of morality and ethics, and ambitious in its pursuit of freedom, politics today, as a genre in creativity, is as good as the original works in other realms of the human mind, be it fiction or philosophy.

A sign of the times could be the profusion of political titles in publishing. They are mostly built on the themes of populism, outsiderhood, globalisation and resentment. Hardly a week passes without a full-length review in the Books pages on yet another tome on a world gone astray, a world that's being led to an incendiary denouement by revolutionaries and revisionists. The moment deserves such interventions because, by common intellectual consensus, in the evolution of post-World War II politics, we are at the next history-shifting stage after 1989, Europe's annus mirabilis.

Then, the stage was an extension of literature: what was imagined in a controlled society sought freedom as the Lie unravelled. In Russia, once imagined by Gogol, and lately reclaimed by Solzhenitsyn, the sight of the last general secretary of the Soviet Union letting the empire crack and go away needed another prophet, another novelist. Elsewhere, in a vassal state, revolution earned an adjective as romantic as 'velvet', and in the vanguard of its freedom struggle were writers and singers. In the end, the philosopher would be king. It was a time when an idea that promised man an alternative more liberating than religion proved to be history's biggest ghost story.

Today, it's the idea of freedom, as it has always been, that propels politics. It's a different cast. No figures larger than their historical size. No one is pretending to be the last arbiter of our destiny. And no one is talking in a language that would be taught generation after generation. The disappearance of grandeur from the arena even prompted some pundits a while ago to wail

over the death of politics. This moment in politics has an overwhelming sense of ordinariness about it. The new salvation theologians are all ordinary guys, tapping into the fears of people who have lost their balance in a world moving at a pace they cannot cope with. They can easily be categorised into types.

Q6. What does the author mean by the phrase "a creative phase of politics"?

(I) Politics today, as a genre in creativity, is as good as the original works in other realms of the human mind, be it fiction or philosophy.

(II) Politics today, on moral and creative grounds, is big, shapeless, chaotic, and in the end, a rewarding experience of the imagination.

(III) Politics today is rich in ideas and arguments, fervent in its interplay of passions and nuanced in its undertones of morality and ethics.

a. Only (I) is correct
b. Only (II) is correct
c. Both (I) and (II) are correct
d. Both (I) and (III) are correct
e. All are correct

Q7. Which of the following statements summarizes Paragraph 04 in the best possible manner?

a. Modern politics has evolved after the death of primaeval politics and it finds no relevance in its classical glory as the idea of freedom and the sense of ordinariness have substituted the core ideologies.
b. In an unequal world, the old bipolarity of politics has ceased to work, for the Left and the Right have not only lost the social space, they have lost the argument to a new set of liberators for whom it is not ideology that matters but ideas that feed on resentment.
c. The importance and culture of politics have diminished since the arrival of ordinary people in the arena that witnessed the death of ancient political ideologies.
d. As history choreographs a heady piece of politics, a certain amount of pessimism has taken over the fears of people who have lost their balance in a world moving at a pace they cannot cope with.
e. None of the above.

Directions: Choose the word/group of words which is most similar in meaning to the word/group of words printed in bold as used in the passage.

Q8. Vanguard

a. Pattern
b. Avant-garde
c. Criterion
d. Inspiration
e. Standard

Q9. Denouement

a. Misfortune
b. Adjournment
c. Genesis
d. Epilogue
e. Transpiration

Q10. Grandeur

a. Inclusiveness
b. Sophistication
c. Magnification
d. Indifference
e. Classicalism

ANSWER KEY

1 - A, 2 - B, 3 - B, 4 - A, 5 - B, 6 - D, 7 - A, 8 - B, 9 - C, 10 - D

SOLUTION

Ans 1: (A)

According to the imaginary condition we use 'were' (past simple) in place of was. We use past simple with the modal with its past form as the main clause.

Ans 2: (B)

Start/emphasis/deny/order etc. these verbs generally do not take prepositions.

Ans 3: (B)

use being disturbed instead of to be disturbed

Mind verb uses gerund.

Ans 4: (A)

Replace elevate with alleviate

Explanation: Elevate- to give sb/sth a higher position or rank.

Alleviate- to make sth less severe.

Ans 5: (B)

has is used to show possession. It is Present Indefinite's Affirmative sentence hence doesn't she is used.

Ans 6: (D)

Explanation: Refer to 1st paragraph of the passage, You're living in, dare I say, a creative phase of politics. Rich in ideas and arguments, intense in its interplay of passions, nuanced in its undertones of morality and ethics, and ambitious in its pursuit of freedom, politics today, as a genre in creativity, is as good as the original works in other realms of the human mind, be it fiction or philosophy. So only statements (i) and (iii) explain what the author meant to convey. Hence option (d) is correct.

Ans 7: (A)

Explanation: Read the 4th paragraph carefully, it is clearly mentioned how politics has evolved over time, and modern politics has no significance in comparison to the old and historical ones.

Today politics has its own ideologies which are marked as ordinary by the author. Hence, only option (a) summarises the paragraph appropriately and explains its context briefly and precisely.

Ans 8: (B)

Explanation: Vanguard means a position at the forefront of new developments or ideas. Avant-garde means a group of artists, musicians, or writers working with new and experimental ideas and methods. Hence both are similar in meaning.

Directions: Choose the word/group of words which is most opposite in meaning to the word/group of words printed in bold as used in the passage.

Ans 9: (C)

Explanation: Denouement means the outcome of a situation when something is decided or made clear. Genesis means the origin or mode of formation of something. Hence both are opposite meanings.

Ans 10: (D)

Explanation: Grandeur means splendour and impressiveness, especially of appearance or style. Indifference means unimportance. Hence both have opposite meanings.

TOPICS COVERED		
QA	**DILR**	**VARC**
Logarithm and Modulus	Circular Arrangement	Cloze test based on articles, tenses, prepositions etc.
Average	Distribution	Sentence correction
Strategy to prepare problems involving Ages	Puzzle sets questions on Distribution	Introduction to what is RC and its PYQs- Day 23

Directions: The questions are taken from the following topics:Mixtures, Ratio and proportion, Ratio in partnership, Selection, Selection based puzzle questions and Miscellaneous, RC and PYQs, Strategies for RC & PYQs- and Practice questions for RC &PYQs

Part-1: (Quantitative Aptitude)

Q1. A cistern contains 40 litres of Alcohol. 4 litres of alcohol are taken out of it and replaced by water. The process is repeated two more times. Find the proportion of water and alcohol in the resulting mixture.

(a) 729: 281

(b) 281: 729

(c) 19: 81

(d) 81: 19

Q2. A mixture worth Rs 7.41 a kg is formed by mixing two types of flour, one costing Rs 3.31 per kg while the other Rs 9.81 per kg. In what proportion must they have been

mixed?

(a) 5: 12

(b) 12: 5

(c) 24: 41

(d) 41: 24

Q3. In the MP Zoo, there are Lions and ducks. If the heads are counted, there are 148, while the legs are 396. What will be the number of Lions in the zoo?

(a) 136

(b) 68

(c) 50

(d) 22

Q4. If $2x^2 + 3y^2 = 7xy$, what is the ratio of x to y?

(a) 1: 4

(b) 3: 2

(c) 4: 5

(d) 1: 2

Q5. If the work done by (x + 2) boys in (x - 1) days is to the work done by (x + 2) women in (x – 3) days is in the ratio 9: 10, then the number of women is

(a) 10

(b) 12

(c) 8

(d) 15

Q6. If P = {8, 12, 16, 20, 24, 28, 32}, another set Q is formed whose elements are the average of all the possible pairs of the elements taken from set P. What is the average of all elements of set Q. [TITA]

Q7. A started a business with 30, 000. After 3 months B joined him with 40, 000. C 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, the share of C is_____[TITA]

ANSWER KEY

1 - B, 2 - C, 3 - C, 4 - D, 5 - B, 6 - 20, 7 - 228000

SOLUTIONS

Ans 1: (b)

Final Proportion of Alcohol = Initial Proportion of Alcohol(Volume before addition of waterVolume after addition)n

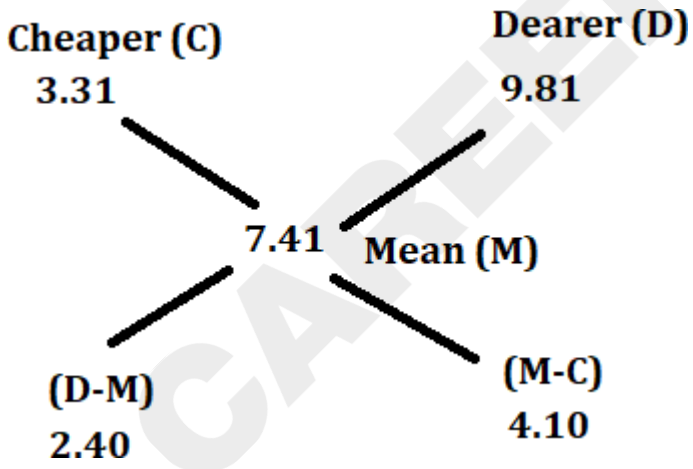
n = number of replacements = 3
Initial Proportion of Alcohol = 100% or 1

Volume before addition of water = 40-4 = 36
Volume after addition of water = 36 + 4 = 40

Final Proportion of Alcohol = 1(36/40)x3 = 729/1000

Proportion of water = 1 – 729/1000 = 281/1000
Water: Alcohol = 281: 729

Ans 2: (C)



CM= D-MM-C= 2.44.1=24:41

Ans 3: [C]

If all the animals were ducks, the number of heads and legs would be 148 and 296 respectively. If we reduce the number of ducks by 1 and increase the number of Lions by 1, we would get an increment in legs by 2.

Since the number of legs we need to increase is 100 (396 – 296 = 100), we need to have 50 Lions and 98 ducks.

Ans 4: (d)

$2x^2 + 3y^2 = 7xy$

Divide the above equation by xy.

$2(x/y) + 3(y/x) = 7$

Let $a = x/y$

So, $2a + 3/a = 7$

$\Rightarrow 2a^2 - 7a + 3 = 0$

$\Rightarrow a = 3$ or $a = 1/2$

Ans 5: [b]

According to question:

$(x+2)(x-1)/(x+2)(x-3)=9/7$

$\Rightarrow (x-1)/(x-3)=9/7$
$\Rightarrow x = 10$

Number of women = 12

Solution 6: 20

Trick: Let P = {a, b, c}

Q = {(a+b)/2, (b+c)/2, (c+a)/2}

Average of elements of Q = {(a+b)/2+ (b+c)/2+ (c+a)/2}/3 = (a+ b+ c)/3

Therefore, answer is = Average of {8, 12, 16, 20, 24, 28, 32} = 20

Solution 7: 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

Logical Reasoning and Data Interpretation

Direction (Q1-Q4):

A kid is promised by his father that starting the following Monday, pocket money of five rupees per day will be given every day in the morning. The kid has school five days a week from Monday to Friday and wants to spend that amount for purchasing snacks during breaks in the school. He equally likes chocolate (`5), Samosa (`10) and pastry (`15). He purchases not more than one item on any day. He makes a purchase if he has a sufficient amount to purchase an item and he will not purchase the same item in the next two purchases. (Assume the kid did not have any other money and there are no holidays other than Saturdays and Sundays)

Q1. Which of the following is true with regard to the pattern in which the kid makes his purchases?

I. More data is required to identify a pattern.

II. The pattern of the purchases is repetitive.

III. If the first purchase of the kid is known, then the pattern will be repetitive.

(A) Only I and III

(B) Only II

(C) Only I

(D) Either I or III

Q2. What is the maximum possible amount available with the kid on any Monday?

(A) `15

(B) `20

(C) `25

(D) Cannot be determined

Additional information for questions 3 and 4: During the second week, the kid tasted a complimentary fruit worth 5, and decided to add to the fruit his purchase list from the following Monday, along with the other three such that the price of every next purchase increases and decreases alternately.

Q3. Which of the following is definitely true?

(A) The kid does not purchase on a Wednesday.

(B) The kid does purchase on a Thursday

(C) The kid does not purchase on a Friday

(D) The kid does purchase on a Tuesday

Q4. What is the maximum possible amount available with the kid on any Monday (after he decided to eat the fruit)?

(A) `15

(B) `20

(C) `25

(D) Cannot be determined

Direction (Q5-Q8)

G, H, I, J, O, P, Q and S – are a group of eight family members. All are having dinner, sitting around a circular table, facing towards the centre of the table. Among them, there are four males and four females. No two females are adjacent to each other. Each married couple, except one, has at least one child and there are two unmarried persons.

P is the son-in-law of G, who is four places away from J. I is two places away to the left of his/her only daughter. H is the sister-in-law of Q. P and O are seated on either side of J. G is the grandmother of S who is the nephew of H. No married person is seated adjacent to his/her spouse.

Q5. How is J related to O?

(A) Granddaughter

(B) Daughter

(C) Grandson

(D) Cannot be determined

Q6. Who is sitting three places away to the right of P?

(A) H

(B) Q

(C) S

(D) Cannot be determined

Q7. How is Q related to O?

(A) Brother-in-law

(B) Son-in-law

(C) Daughter-in-law

(D) Father-in-law.

Q8. Which of the following alternatives does not fit into the group where the second person in a pair is to the left of the first person?

(A) GQ

(B) HO

(C) JP

(D) SI

ANSWER KEY

1 - B, 2 - C, 3 - D, 4 - A, 5 - A, 6 - A, 7 - B, 8 - D

SOLUTIONS

Solutions (Q1-Q4):

Solution:

The kid receives `5 per day, ⇒ earns `35 per week, but earns a maximum of `25 in the first five days. Implies spends a maximum of `25 in the first five days ⇒ purchases only two items in the first week.

The amount available by next Monday is the sum of savings during the first five days and the amount earned during the weekend. The kid earns `10 on the weekend which is available for next Monday. Thus, from the second week onwards, he can purchase all the items at least once. The amount available on the second Monday will be among `15, `20 or `10.

Whatever items the kid purchases in the first week, the total amount the kid can spend up to the second week is the income of the first week and the first five days of the second week. i.e., `35 + `25 = `60.

By repeating the purchase of three items twice, the kid purchases all the items twice.

Starting the second week, in n weeks the kid purchases all the items at least n times and at most (n + k) times. In order for the purchases to make a pattern, n (35) = (n + k) (30) ⇒ n = 6k.

⇒ for every 6 weeks, (k = 1), all the items would be purchased seven times.

Pastry = P = `15
Samosa = S = `10
Chocolate = C = `5

Week	Balance +income Weekday	Expenses	Weekend Income	Balance	Purchases
	A	B	C	A – B + C	
1	0+25	15+5 5 + 10	10	15 10 + 10 = 20	C, S
2	20 +25	15+5+10+15	10	0 + 10 = 10	P,C,S, P
3	10+25	5+10+15+5	10	0+10 = 10	C,S,P,C
4	10+25	10+15+5	10	5+10 = 15	S,P,C
5	15+25	10+15+5+10	10	0+10 = 10	S,P,C,S
6	10+25	15+5+10	10	5+10 = 15	P,C,S
7	15+25	15+5+10	10	10+10 = 20	P,C,S
8	20+25	15+5+10+15	10	0+10	P,C,S,P

Ans 1: (B):
From the above, given data is sufficient to determine that the pattern of the purchases is repetitive. Hence only II is true.

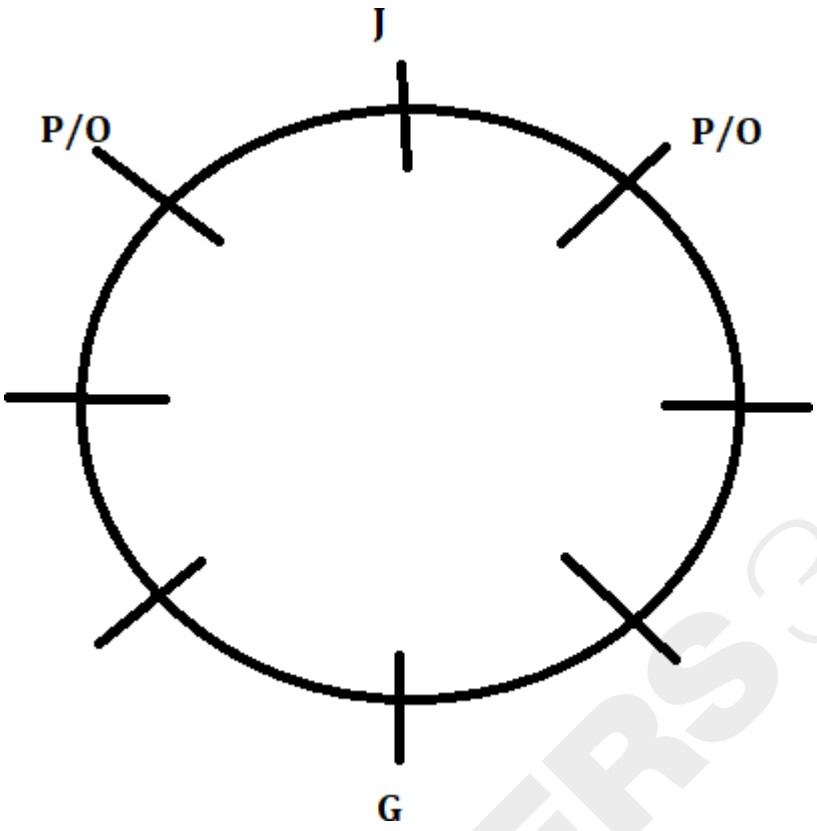
Ans 2: (C):
From the table, the maximum savings available on any Monday is `20, plus he would receive pocket money of `5, thus the maximum amount available on any Monday = `25.

Ans 3: (D):
Given that the kid makes a purchase as soon as he accumulates sufficient money to make his next purchase as per the defined conditions. With the new condition, the possible combinations in the five days of the week, for the kid to purchase the four items Chocolate (C), Fruit (F), Samosa (S) and Pastry (P) is F/C, S/P, C/F, __, P/S (No purchase on Thursday). Only (D) is definitely true.

Ans 4: (A):
In the third week, opening balance = `10. Earns `25 during the five-week days. Spends `35 during five days. And earns `10 during the weekend. The kid starts with a balance of `10 every week. The maximum amount the kid has on any Monday in `15.

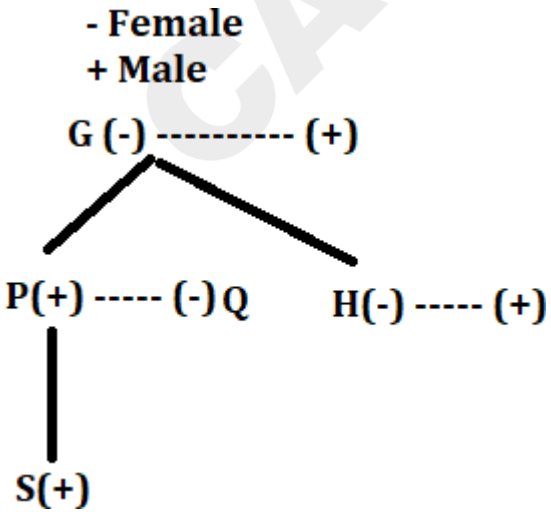
Solution: (Q5-Q8)

G is four places away from J ⇒ G and J are opposite each other. P and O are on either side of J. The representation will be as follows.



As P is a male, J must be a female and O must be a male. H is the sister-in-law of Q, and the spouse of P can be either H or Q.

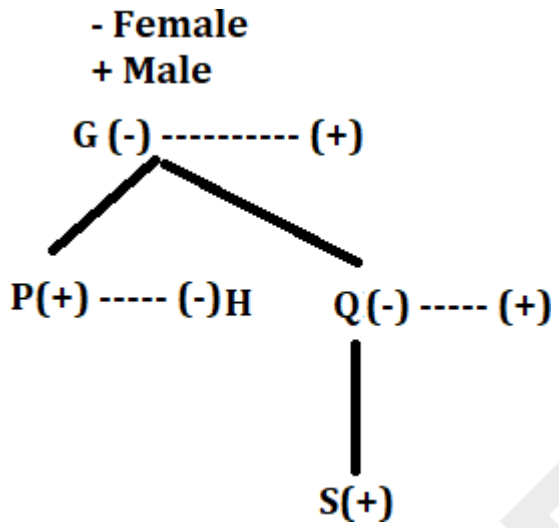
Case (i): Let the spouse of P be Q. Then the representation will be as follows.



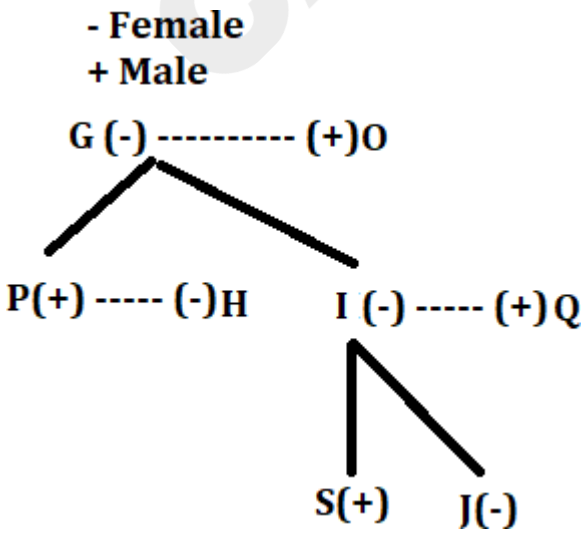
As I is two places away to the left of his/her daughter, I's daughter must be Q and I must be the spouse of G and not next to her. The positions of I and Q in the circular arrangement are not possible.

∴ H is not the spouse of P.

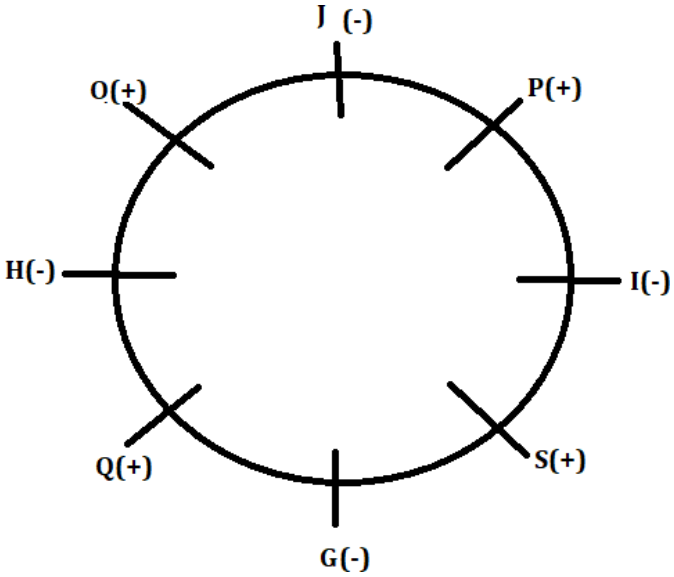
Case (ii): H must be the spouse of P. The hierarchical representation will be as follows.



Here I can be the spouse of either G or Q. If I is the spouse of G, Then I must be two places away to the left of H. The position of I and H in the circular arrangement cannot be represented.
∴ I must be the spouse of Q. As J is female and O is male. O must be the spouse of G and J must be the daughter of I.



Finally, the circular arrangement representation is as follows.



Ans 5: (A)

Ans 6: (A)

Ans 7: (B)

Ans 8: (D)

VARC (Verbal Ability & Reading Comprehension)

Reading comprehension

A. Every autumn, when recruitment of new graduates and school leavers begins, major cities in Japan are flooded with students hunting for a job. Wearing suits for the first time, they run from one interview to another. The season is crucial for many students, as their whole lives may be determined during this period.

B. In Japan, lifetime employment is commonly practised by large companies. While people working in small companies and those working for sub-contractors do not, in general, enjoy the advantages conferred by large companies, there is a general expectation that employees will, in fact, remain more or less permanently in the same job.

C. Unlike in many Western countries where companies employ people whose skills can be effective immediately, Japanese companies select applicants with potential who can be trained to become suitable employees. For this reason, recruiting employees is an important exercise for companies, as they invest a lot of time and money in training new staff. This is basically true both for factory workers and for professionals. Professionals who have studied subjects which are of immediate use in the workplace, such as industrial engineers, are very often placed in factories and transferred from one section to another. By gaining experience in several different areas and by working in close contact with workers, the engineers are believed, in the long run, to become more effective members of the company. Workers too feel more involved by working with professionals and by being allowed to voice their opinions. Loyalty is believed to be cultivated in this type of egalitarian working environment.

D. Because of this system of training employees to be all-rounders, mobility between companies is low. Wages are set according to educational background or initial field of employment, ordinary graduates being employed in administration, engineers in engineering and design departments and so on. Both promotions and wage increases tend to be tied to seniority, though some differences may arise later on as a result of ability and business performance. Wages are paid monthly, and the net sum, after the deduction of tax, is usually paid directly into a bank account. As well as salary, a bonus is usually paid twice a year. This is a custom that dates back to the time when employers gave special allowances so that employees could properly celebrate bon, a Buddhist festival held in mid-July in Tokyo, but on other dates in other regions. The festival is held to appease the souls of ancestors. The second bonus is distributed at New Year. Recently, bonuses have also been offered as a way of allowing workers a share in the profits that their hard work has gained. Many female graduates complain that they are not given equal training and equal opportunity in comparison to male graduates. Japanese companies generally believe that female employees will eventually leave to get married and have children. It is also true that, as well as the still-existing belief among women themselves that nothing

should stand in the way of child-rearing, the extended hours of work often do not allow women to continue their careers after marriage.

E. Disappointed career-minded female graduates often opt to work for foreign firms. Since most male graduates prefer to join Japanese firms with their guaranteed security, foreign firms are often keen to employ female graduates as their potential tends to be greater than that of male applicants

Q1- What difference has the author stated between western countries' hiring and Japanese hiring of professionals?

1. People in Japanese firms look for people who will work for more hours as compared to western firms where people are allotted a certain number of hours.
2. Western nations' firms hire people with instant abilities but Japanese employers look for persons with potential who can be trained to become suitable workers.
3. Employers of Japanese companies want people who have mentioned more extracurriculars in their resumes.
4. All of the above
5. None of the above

Q2- Why do female graduates in Japan forgo joining Japanese firms in favour of foreign firms?

1. Japanese culture believes that females bring in lesser results as compared to men.
2. Because their local firms' employers think that female employers would ultimately depart to marry and start a family.
3. Female graduates are keen to experience the work culture of foreign firms because of its novelty.
4. Both (a) and (c)
5. All of these

Q3- Large corporations frequently use_____in Japan.

1. Multiple interviews
2. Deduction of tax
3. Long hours and fewer wages
4. Lifetime employment
5. None of these

Q4- Among the following statements, which one is true about the Bon festival that is held in Japan?

1. The event is conducted to placate the spirits of those who have passed away.
2. Held in the middle of July in Tokyo but other regions have different dates.

3. This festival has inspired foreign firms in Japan to give bonuses twice a year.
4. Both (a) and (b)
5. None of these.

Q5- Select the synonym of crucial as highlighted in the passage.

1. Pivotal
2. Sedentary
3. Relegate
4. Aspire
5. None of these

Reading Comprehension

Most of these churches belonged to the catholic church, specifically the Syro-Malabar rite, forming a sizable chunk of the Christian population in the state. The ostensible reason for these large-scale demolitions was the space constraints in the age-old structures, but a more immediate reason was the kind of money coming in as donations and charity from the laity, growing prosperous on the back of a spike in prices of rubber among other cash crops. Towns with sizable Catholic populations in the Kottayam district such as Pala and Kanjirappally, would see a huge offtake of the newly launched cars back then. The era of prosperity, however, was short-lived as the association of southeast Asian nations (ASEAN) India free trade agreement and other factors caused the prices of rubber and other cash crops to nosedive.

With the community's collective bargaining power on the wane, its focus gradually shifted to the Muslim community's newfound affluence on the back of West Asian remittances. The seeds of mistrust threatening to rip apart the social fabric of Kerala today were sown about a decade ago. There were__to love Jihad from the clergy even then, but it remained confined to catechism classes or drawing room conversations. The assault, in 2010, on Professor T.J. Joseph, whose palms were chopped off by Popular Front of India (PFI) extremists proved to be a seminal event, despite the Church going on the defensive and even victimising the professor in its aftermath. The fallout of this incident was contained by the swift intervention of civil society; yet, in hindsight, this was probably the point when Islamophobia began to take root among Christians in Central Travancore. The assembly election in 2011 saw the congress-led United Democratic Front(UDF) coming back to power but it also saw the eclipsing of the Church-backed Kerala Congress by the Indian Union Muslim League (IUML)in the power structure contributing to the churning.

When the ruling party came to power in New Delhi in 2014, the Sangh Parivar saw an opportunity in closing ranks with the Christian community to reverse its electoral fortunes in Kerala. By 2016, as the Islamic State (IS) gained prominence, 21 Keralites- some Christian and Hindu converts among them- who had gone missing were traced to the terrorist outfit, sparking

further anxiety within the Church. A spate of anti-Muslim propaganda began to circulate within Christian family networks and social media groups around that period.

Q6- which of the following is/are the reason(s) for the destruction of Churches?

1. The conflicts on a religious basis caused the devastation of churches by non-Christian groups.
2. The old constructed Churches don't have enough space.
3. An increase in the price of cash crops including rubber rendered an increase in donations and charity.
4. Both (b) and (c)
5. Both (a) and (b)

Q7-which of the following is the reason behind the end of the affluence period?

1. There was high inflation caused by high rubber prices which made people out of pocket.
2. Price of cash crops declined sharply due to the government's agreement of free trade with ASEAN countries.
3. High taxes and tariffs on exports and imports made rubber costlier and eventually declined in demand.
4. The lack of a proper stable market for cash crops caused turmoil and a decline in prices
5. None of these

Q8- When did Islamophobia start to establish itself among Christians?

1. The root of the establishment was sown about a decade ago which later thrived.
2. Only in 2010, when the assault on the professor took place and people started intervening.
3. Islamophobia was confined to catechism classes and in some other parts of Kerala's outskirts.
4. After the assembly elections in 2011, after which Congress-led United Demographic Front came into power.
5. None of these

Q9- Which of the following is the reason for contempt of Muslims in Kerala?

1. Expansion of Islamic religion in Christian-led Kerala was a cause of concern.
2. Keralites were against the prominence of Sangh Parivar whose perspective was election-winning only.
3. Keralites converted to Muslims who was later tracked down by terrorist organisation
4. All of these
5. None of these

Q10- Which of the following is opposite in meaning to gradually as used in the passage?

1. Variations
2. Laud
3. Instantly
4. Malicious
5. None of these

ANSWER KEY

1 - 2, 2 - 2, 3 - 4, 4 - 4, 5 - 1, 6 - 4, 7 - 2, 8 - 2, 9 - 3, 10 - 3

SOLUTIONS

Ans 1: (2)

Explanation: this answer can be found in the second paragraph, “Unlike in many Western countries where companies employ people whose skills can be effective immediately, Japanese companies select applicants with potential who can be trained to become suitable employees.”

Ans 2: (2)

Explanation: D&E para mentions, “Disappointed career-minded female graduates often opt to work for foreign firms. Since most male graduates prefer to join Japanese firms with their guaranteed security, foreign firms are often keen to employ female graduates as their potential tends to be greater than that of male applicants.”

Ans 3: (4)

Explanation: in the first para, it is clearly mentioned, “In Japan, lifetime employment is commonly practised by large companies.”

Ans 4: (4)

Explanation: both statements (a) and (b) are correct about the Bon Festival.

For statement (a), look at para D, The festival is held to appease the souls of ancestors.

For statement (b) glance at the line just before the previous one, This is a custom that dates back to the time when employers gave special allowances so that employees could properly celebrate Bon, a Buddhist festival held in mid-July in Tokyo, but on other dates in other regions.

Ans 5: (1)

Ans 6: (4)

Explanation: refer to the first para, The ostensible reason for these large-scale demolitions was the space constraints in the age-old structures, but a more immediate reason was the kind of money coming in as donations and charity from the laity, growing prosperous on the back of a spike in prices of rubber among other cash crops.

Ans 7: (2)

Explanation: refer to the first para, The era of prosperity, however, was short-lived as the association of southeast Asian nations (ASEAN) India free trade agreement and other factors caused the prices of rubber and other cash crops to nosedive.

Ans 8: (2)

Explanation: refer to the second para, The assault, in 2010, on Professor T.J. Joseph, whose palms were chopped off by Popular Front of India (PFI) extremists proved to be a seminal event, despite the Church going on the defensive and even victimising the professor in its aftermath.
The fallout of this incident was contained by the swift intervention of civil society; yet, in hindsight, this was probably the point when Islamophobia began to take root among Christians in Central Travancore.

Ans 9: (3)

Explanation: option (c) is correct and is inferred from the last para, By 2016, as the Islamic State (IS) gained prominence, 21 Keralites- some Christian and Hindu converts among them- who had gone missing were traced to the terrorist outfit, sparking further anxiety within the Church. A spate of anti-Muslim propaganda began to circulate within Christian family networks and social media groups around that period.

Ans 10: (3)

TOPICS COVERED		
QA	**DILR**	**VARC**
Time and Work.	Miscellaneous	Strategy to solve the problems based on RC and PYQs
Time, Speed and Distance	Decision Making	Active and Passive Voice
Train, Boat and Stream	Decision Making problem solving questions	Direct and Indirect Speech

Directions: The questions are taken from the following topics:Time and Work, Time, Speed and Distance, Train, Boat and Stream, Miscellaneous, Decision Making, Decision Making problem solving questions, Strategy to solve the problems based on RC and PYQs , Active and Passive Voice and Direct and Indirect Speech

Quantitative Aptitude

Q1. Neeru and Bajwa can do a piece of work in 10 days and Neeru alone can do half of it in 6 days. In how many days can Bajwa do 25% of the work alone?

A. 60 days
B. 30 days
C. 15 days
D. 45 days

Q2. A, B and C can do some work in 36 days. A and B together do twice as much work as C alone and A and C together can do thrice as much work as B alone. If A got Rs 300 for his work. How much B will get?

A. Rs 72
B. Rs 180
C. Rs 90
D. Rs 120

Q3. A finishes 6/7th of the work in 3z hours, and B works thrice as fast and finishes the remaining work. For how long did B work?

A. z/6
B. 3z/6
C. z/7
D. Z

Q5. Lonavala and Khandala are two stations 556 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

Q7. After receiving two successive raises, Harish's salary became equal to 21/7 times 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%

Q6. Amit travels from A to B 1/3 of the distance by a car with a velocity of 10 km/h, the next 1/3 with a velocity of 25 km/h and the last 1/3 with a velocity of 40 km/h. In return journey, Amit travels with a velocity of 18 Km/Hr throughout. Which of the following is true?

A. Time taken in travelling distance from both sides is equal
B. Average Speed during A to B is less than Average speed from B to A.
C. Average Speed during A to B is 1% more than Average speed from B to A.
D. Average speed during B to A is 1% less than Average speed from A to B.

ANSWER KEY

1 - C, 2 - B, 3 - A, 4 - C, 5 - D, 6 - C, 7 - D

SOLUTION

1. Ans: (c)

Neeru can complete work alone in 12 days.

Neeru and Bajwa together can complete the work in 10 days.

Let the total work is 60 units (LCM of 10 and 12)

Neeru's 1-day work = 60/12 = 5

Neeru and Bajwa's 1-day work = 60/10 =6

Bajwa's 1-day work = 6 – 5 = 1

Bajwa can complete total work in 60/1 = 60 days

So, Bajwa can finish 25% work in 15 days.

2. Ans: (b)

Let the Total work is 36 units.

If C does 1 unit of work, A and B together will do 2 units of work.

So, work done by C = 1/3 (36) = 12 units

If B does 1 unit of work, A and C together will do 3 units of work.

So, work done by B = 1/4 (36) = 9 units

Amount of work done by A = 36- 12- 9 = 15 units

The ratio of wages of A, B and C

A: B: C = 15: 9: 12 = 5: 3: 4

Amount received by B = 300 x 3/5 = Rs 180

3. Solution: [A]

Since B is thrice as efficient as A. So, B will finish 6/7th work in z hrs.

Therefore, B finishes 1/7th of work (remaining work) in z/6 hrs.

4. Ans: (c)

Since distance is the same

SR/ SH = TH/ TR

⇒ TH/ TR = 7/13

⇒ TR - TH = 13x -7x = 3hrs

⇒ x = 0.5 hrs

Time taken by Rosy = 13 x 0.5 = 6.5 Hrs

Distance = 7 x 6.5 = 45.5 Kms

5. Ans: [d]

According to the question:

After 4 hours distance between the two trains = 556 – 27x 4= 448 Kms

Relative speed = 27 + 29 = 56 Km/ Hr

Time taken to cross each other after the train from Khandala left the station = 448/56 = 8 hrs.

Distance from Khandala at the time of crossing = 8 x 29 = 232 Kms

6. Ans: (c)

Let the total distance is 300 Km

Case 1: (A to B)

1/3rd of the distance (100) travelled with the speed of 10 km/hr; time taken = 100/10 = 10 hrs

1/3rd of the distance (100) travelled with the speed of 25 km/hr; time taken = 100/25 = 4 hrs

1/3rd of the distance (100) travelled with the speed of 40 km/hr; time taken = 100/40 = 2.5 hrs

Average Speed = 300/ (10+ 4+ 2.5) = 18.18 km/ hr

Case 2: In the return journey, average speed = 18 km/hr

7. Ans: (d)

Let the first raise in salary be x%

Then the second raise be 2x%

Net percentage change = [x + 2x + x(2x)/100] % (Using the formula of net percentage change in successive change)

Harish's salary became equal to 21/7 times his initial salary i.e. 3 times of initial salary which means there is a net increase of 200% in the salary.

Therefore,

$x + 2x + x(2x)/100 = 200$

$\Rightarrow 300x + 2x^2 = 20000$

$\Rightarrow x^2 + 150x - 10000 = 0$

On solving, x = 50%

Logical Reasoning and Data Interpretation

Comprehension:

A tour operator operates one tour package each in four different circuits. Each tour starts at 7 am from the office on a bus on the first day of the tour package and ends by dropping the tourists back at the office at 7 pm on the last day of the tour package. The four tour packages are

(i) Circuit A – Seven days duration which starts every Wednesday and Thursday

(ii) Circuit B – Three days duration which starts every Thursday and Friday

(iii) Circuit C – Four days duration which starts every Wednesday and Saturday, and

(iv) Circuit D – A daily tour of 12-hour duration.

Q1. If a person has started his tour with Circuit A, then what is the minimum number of days required for him to completely tour all the circuits?

A. 18 days
B. 17 days
C. 16 days
D. 15 days

Q2. To completely tour all four circuits in the shortest possible time, with which tour does a person shall start his touring?

A. Circuit C on Saturday
B. Circuit B on Friday
C. Circuit C on Wednesday
D. Circuit B on Thursday

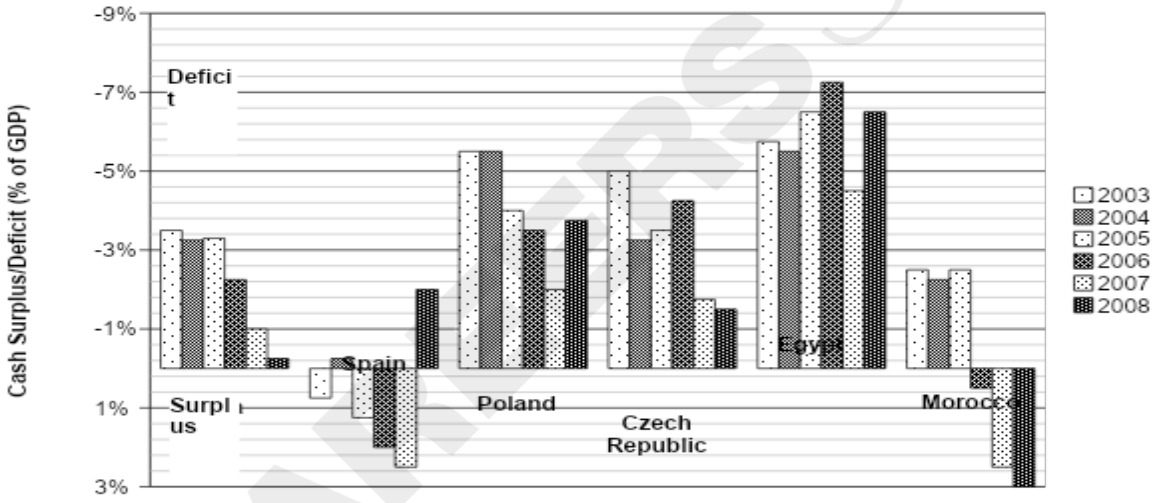
Q3. On which day of the week, will there be the least activity at the tour operator's office?

A. Sunday
B. Friday
C. Monday
D. Saturday

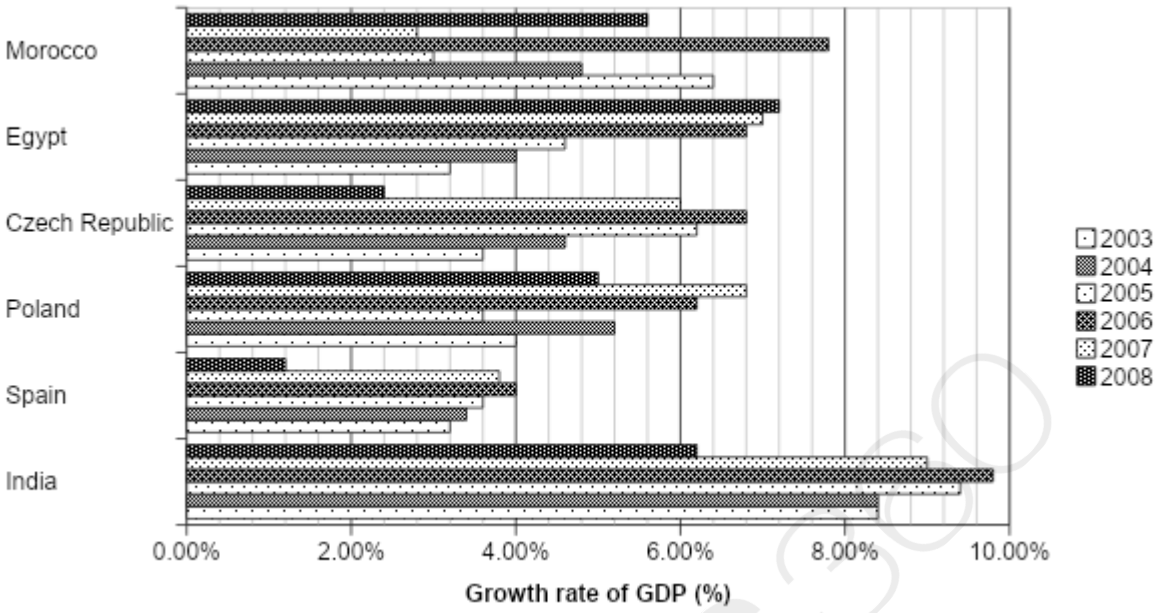
Q4. If a person wants to complete all the circuits in the shortest possible time but with one day rest between any two tour packages, what is the best day for a person to start touring?

A. Friday
B. Monday
C. Sunday
D. Wednesday

Cash Surplus is the excess of cash revenue over cash expenditure (deficit if this is negative). Rather than the absolute value of this surplus/deficit, it as a percentage of GDP is a more important measure. The following graph gives the cash surplus/deficit as a percentage of GDP for 6 countries for each year from 2003 to 2008. Deficits are shown above the X-axis and Surplus is below the X-axis.



The following graph gives the growth rate of the GDPs of the same countries for the same time interval.



Each of the questions below pertains to only the 6 countries for which data has been given in the above graphs.

Q5. Which country had the highest cash deficit in the year 2004?

A. Spain
B. Egypt
C. Poland
D. Cannot be determined

Q6. Which country's cash deficit increased by the greatest rate from the year 2004 to 2005?

A. India
B. Czech Republic
C. Egypt
D. Cannot be determined

Q7. Find the ratio of the cash surplus of Spain in the year 2005 to its cash surplus in the year 2007.

A. 1: 2
B. 1: 2.15
C. 1: 2.3
D. 1: 2.5

Q8. Find the ratio of the cash deficit of Poland and the Czech Republic in the year 2005.

A. 3: 4
B. 2: 3
C. 1: 2
D. Cannot be determined

ANSWER KEY

1 - B, 2 - A, 3 - C, 4 - D, 5 - D, 6 - C, 7 - B, 8 - D

SOLUTION

1. Ans: B

The given information can be tabulated as below:

[Note: The subscript under the circuit name (A, B and C) is to differentiate the two tours in the same circuit that start on different days of the week.]

Day	Tour package	
	First day	Last day
Sunday	D	D, B
Monday	D	D
Tuesday	D	D, A_m, C_q
Wednesday	D, A_m, C_p	D, A_n
Thursday	D, A_n, B_x	D
Friday	D, B_y	D
Saturday	D, C_q	D, B_x, C_p

The subscript under the circuit name differentiates the two tours in the same circuit that start on different days.

Circuit A starts on two days, hence two cases arise:

Case (a)		Case (b)
A (Wednesday to Tuesday) 7 days.	A (Wednesday to Tuesday (7 days)	A (Thursday to Wednesday) 7 days
D Wednesday. (1 day)	C (Wednesday to Saturday) 4 days	B (Thursday to Saturday) 3 days
B (Thursday to Saturday) 3 days	D (Sunday) 1 day	D (Sunday) 1 day
Wait 3 days	Wait 3 days	Wait 2 days
C (Wednesday to Saturday) 4 days	B (Thursday to Saturday) 3 days	C (Wednesday to Saturday) 3 days
18 days	18 days	17 days

Alternate solution: Starting with circuit A, it is clear that after taking two tours, one has to definitely wait (The waiting period is from Sunday to Tuesday). This wait can be minimized if the daily trip is planned for one of these three days. Further, the tour after the wait has to be A or C which starts on a Wednesday. Since we are starting with A, the last tour has to be C (for the minimum wait). Because A ends on Tuesday or Wednesday, D shall not be immediately after A, thus in the order A, B, D and C, with A starting on Thursday, the tour can be completed in 17 days. Choice (B)

2. Ans: A

If we observe the given information, out of all the tours that end and start on two consecutive days, all the tours are available between Tuesday and Thursday. C ends on Tuesday, A starts on Wednesday, which ends on Tuesday, D ends on Wednesday and B starts on Thursday. Hence, the tour shall start with C which starts on a Saturday.

Choice (A)

3. Ans: C

Only on a Monday, tourists of only one tour come to the office (either start or end the tour).

Choice (C)

4. Ans: (D)

A (Wednesday – Tuesday) + B (Thursday – Saturday) + D (Monday) + C (Wednesday – Saturday). The tour shall start on a Wednesday.

Choice (D)

5. Ans: (d)

Since we do not know the actual GDP values for any of the countries, we cannot have any idea of the value of the cash deficit.

6. Ans: (c)

The growth rate of the cash deficit is the net effect of the growth rate in 'deficit as a percentage of GDP' and the growth rate of the GDP [because Cash deficit = (Deficit as a % of GDP) × (GDP)]

Looking at the options …

India: Growth rate of GDP in 2005 is 9.4% and the growth rate in 'deficit as a percentage of GDP' is almost negligible (from 3.25 to 3.3 i.e. a percentage increase of 0.05/3.25 i.e. 5/325 i.e. 1/65 i.e. approx 1.5%). Thus, the growth rate in the deficit will be a little more than 9.4%

Czech Republic: The growth rate of GDP in 2005 is 6.2% and the growth rate in 'deficit as a percentage of GDP' (from 3.25 to 3.5) is 0.25/3.25 i.e. 1/13 i.e. 7.7%. Thus, the growth rate in deficit will be 6.2 + 7.7 + (6.2 × 7.7)/100 = 13.9 + 0.4 = 14.3%

Egypt: Growth rate of GDP in 2005 is 4.6% and the growth rate in 'deficit as a percentage of GDP' (from 5.5 to 6.5) is 1/5.5 i.e. approximately 18%. Thus, the growth rate in the deficit will be 4.6 + 18 + 0.8 = 23.4%

Thus, the largest growth rate in the deficit will be for Egypt.

7. Ans: (b)

If the GDP of Spain in 2005 is x, then the required ratio is

let's use a + b + ab/100 to find the net effect of a 4% increase and 3.8% increase. It will be 4 + 3.8 + 0.152 = 7.95%, say approx 8%.

Thus, the required ratio will be i.e. 1: 2.16. The closest option choice is (b)

8. Ans: (d)

Since the ratio of GDP's of Poland and Czech are not known for any of the years, the ratio cannot be determined

VARC (Verbal Ability & Reading Comprehension)

The hotline conversation between the Director Generals of Military Operations (DGMO) of India and Pakistan and their agreement –

"To undertake sincere measures to improve the existing situation ensuring peace and avoidance of hardships to the citizens"
"To fully implement the ceasefire understanding of 2003 in letter and spirit forthwith" is a long-awaited development.
The wording of the near-identical statements issued by India and Pakistan is the most promising heard from the bilateral front in the last two years, especially the recommitment to the 2003 ceasefire. It was the ceasefire that paved the way for the Vajpayee-Musharraf statement of 2004 and the dialogue that lasted until the Mumbai attacks.

What Tuesday's agreement may lead to is still uncertain. It is sufficient that the two sides have unequivocally said they will respect the ceasefire. Scores of civilians living along the LOC have perished in these incidents, which spiked after the 2016 attack on the URI garrison and the subsequent strike by India inside POK.

In the same period, India lost more soldiers in ceasefire violations than in any other period of peacetime. On the same day as the DGMOs spoke, the Kashmiri separatist leadership, responding to Union Minister Rajnath Singh's offer of talks, indicated it was open to dialogue with the Centre, without any mention of its usual preconditions.

If all this does not square with the Pakistan Army-created commotion over a book-length conversation between two long-retired spy bosses of India and Pakistan in which neither says anything that is not already in the public realm, it is because in India-Pakistan relations, trying to reconcile everything is near impossible. The Pakistan Army's decision to pull in its former DG ISI and put him on the "exit control list" for shooting the breeze with his friend, a former head of RAW, on Kargil among other things, should be seen as a piece with the power struggle in Pakistan.

A general election is due to be held in Pakistan in a couple of months, and a former chief justice has been appointed to head the caretaker government. The disqualified-for-life Nawaz Sharif has been addressing rallies and public meetings, alleging the Army was behind his removal, and indeed, behind all Pakistan's problems. His remarks that "non-state actors" had been allowed to cross Pakistan's borders and kill "common people" in Mumbai have not gone down well with the army. The Former DG ISI, not particularly known as a friend of Pakistan's civilian governments, broadly vindicates Sharif's position in the book co-authored with his Indian friend.
His former institution had to act quickly before the carefully built-up narrative against the "anti-national" Sharif started disintegrating. For the Pakistan Army, though, the real message is that narratives cannot be controlled beyond a point. That the entire drama unfolded at a time

when India and Pakistan have taken steps to reduce hostilities only makes the self-serving nature of nationalist narratives more obvious.

Q1- As per the passage, Nawaz Sharif was disqualified from his duties. Whom did he allege for his disqualification?

1. The DG, ISI
2. The Government
3. The Army
4. Civilians
5. None of these

Q2. Which of the following statements is/are correct in context to the passage?

1. Ceasefire paved the way for the Vajpayee-Musharraf statement of 2004.

2. The former DG ISI justifies Sharif's position in a book co-authored with his Indian friend.

3. A general election is due to be held in Pakistan in a couple of months, and a former chief justice has been appointed to head the caretaker government.

Q3. As per the passage, what were the postulates of the agreement that awaited development between India and Pakistan?

1. Improving the existing situation and ensuring peace to citizens.
2. Full implementation of the ceasefire understanding of 2003 in letter and spirit forthwith.
3. To successfully conduct general elections to be held in Pakistan.
4. Both (a) and (b)
5. All the correct

Q4- What is meant by the idiom "shooting the breeze" used in the passage?

1. Enjoying a pleasant weather.
2. Spend time thinking about good times.
3. To spend time talking about things that are not important.
4. To do something different and amazing.
5. None of these

Q5- Which of the following statements cannot be inferred from the following passage?

1. Scores of deaths of civilians along the LOC spiked after the 2016 attack on the URI garrison

2. India lost less soldiers in ceasefire violations than at any other period of peace time.

3. Restoring friendly relations between India and Pakistan is near to impossible.

A. Only 1
B. Only 2
C. Only 1 & 2
D. Only 3
E. All three

Q6: Choose the word which is Most similar to the word PERISH given in the passage.

A. Revive
B. Flourish
C. Succumb
D. Thrive
E. Subsist

Q7: Her mother told her often (a)/ that she spent too much money (b)/ but she never listened. (c)/ No error (d)

Q 8: If we had been one more good batsman in our team, we would have won the match.

A. Had had
B. Would have been
C. Would have
D. Would have had
E. No correction required

Question 9: He was so much (a)/ disappointed that he (b)/ hid himself in the room(c)./ No error(d)

Q10: Last month I went to mount Abu and enjoyed very much.

A. Enjoyed too much
B. Enjoyed myself very much
C. Enjoyed me very much
D. No improvement

ANSWER KEY

1 - 3, 2 - 4, 3 - 4, 4 - 3, 5 - 2, 6 - 3, 7 - A, 8 - A, 9 - C, 10 - B

SOLUTION

1. Explanation: Refer to 3rd paragraph 2nd line.

2. Ans: (4)

Explanation: Refer to 1st para 6th line, refer to 3rd para 6th line, Refer to 3rd para 1st

line 3. Ans: (4)

Explanation: Refer to 1st para 6th line, refer to 3rd para 6th line, Refer to 3rd para 1st

line 4. Ans: (3)

Explanation: Shooting the breeze- to spend time talking about things that are not important.

5. **Ans: (2)**

Explanation: Statement 2 is incorrect. Refer 1st para's last 4 lines.

6. **Ans: (3)**

Explanation: Perish: to cause to die

Succumb: fail to resist pressure, temptation, or some other negative force/ die from the effect of a disease or injury

7. Ans (a) her mother often told her in place of her mother told her often

Explanation: adverb of frequency always comes before the verb.

8. Ans (a) had had in place of had been

Explanation: this is also an example of an unfulfilled condition but in this sentence, we see the use of been is a conditional clause which is incorrect according to the grammar been is the form of be but here the meaning of the sentence is to have so we use had as the perfect form of have with the active verb had.

9. Ans-(c) Remove 'himself'

Explanation: we do not use reflexive with the verb hide.

10. Ans: (b)

Explanation: if there is no object given with Enjoy verb then we have to use reflexive.

TOPICS COVERED		
QA	**DILR**	**VARC**
Linear Races and Circular Races	Venn diagram	Verbal Analogies
Escalators	Venn diagram	Participles
PnC: Basics, Counting and Arrangements	Syllogism	Parallelism

Directions: The questions are taken from the following topics: Linear Races and Circular Races, Escalators, PnC: Basics, Counting and Arrangements, Venn diagram, Venn diagram, Syllogism, Verbal Analogies, Participles and Parallelism

Quantitative Aptitude

1. 1. The number of ways of arranging 8 persons in a row is (permutation and combination previous year questions)

(a) 8! (b) 7! (c) 8 (d) 4

2. How many 4-digit odd numbers can be formed using [0, 2, 3, 5] such that all digits to be used altogether?

(a) 256 (b) 12 (c) 8 (d) 32

3. How many three- digit numbers can be formed using digits {1, 2, 3, 4, 5, 6} such that each digit can be repeated any number of times.

(a) 36 (b) 125 (c) 216 (d) 300

4. Anshuman runs 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. [TITA]

5. Jack and Sam are running in opposite direction around a circular track of length 220π meters. Speed of Jack is 37.5% of the speed of Sam. Find distance between two meeting points. It is given that they start simultaneously from a common starting point.

(a) 50π (b) 75π (c) 100π (d) 25π

6. In a race of 270m, if A gives B a start of 30 metres, 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? (Time and Distance previous year questions pdf)

(a) 100 sec (b) 80 sec (c) 90 sec (d) 70 sec

7. 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

ANSWER KEY

1 - A, 2 - C, 3 - C, 4 - 125, 5 - D, 6 - C, 7 - B

SOLUTIONS

1. Ans: (a)

The number of ways of arranging n persons in a row is n!

2. Ans: (c)

Since all digits to be used together, repetition is not allowed.

For number to be odd; Unit place is either 3 or 5; So, number of ways of filling unit place is 2.

Left most place can not be 0, so number of ways to fill left most place is 2 (Since 1 digit is already used at unit place and 0 cannot be taken.)

Remaining two places can be filled in 2 x1 ways.

Therefore, total numbers to be formed = 2 x 2 x 2x 1= 8

3. Solution: [c]

Each can be filled in 6 different ways.

So, total numbers formed = 6 x 6 x 6 = 216

4.
Solution:

Let after time T, they will meet. Distance covered by Mukesh is 50 m less than that by Anshuman.

SA/ SM = DA/ DM

5/3 = DA/ DM

If DA = 5x, then DM = 3x.

So. 5x – 3x = 50

Therefore x = 25

Distance from starting point = Distance by Anshuman = 25 x 5 = 125 m.

5. Ans: [d]

Since speed of Jack: Speed of Sam = 3: 8.

Therefore, the no. of distinct meeting points is (3+8 = 11).

Therefore, total length of the track is divided in 11 equal parts.
So, distance between two meeting points = 220π/11 = 20π

6. Ans: [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.

7. Ans: [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.

=> 5 – x = 3 + x
=> 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.

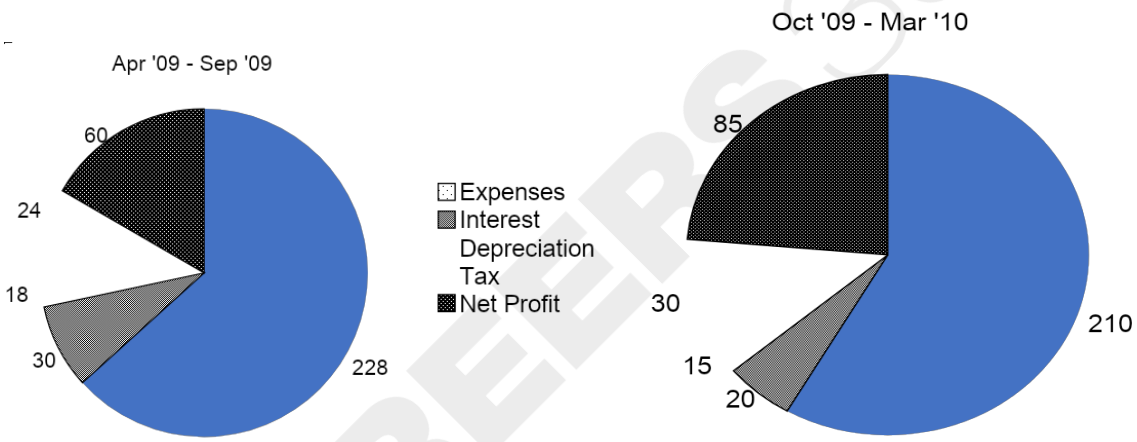
Part-B (LRDI)

Part-B (LRDI)

Direction (Q1-Q5):

Comprehension:

The two pie charts show the break-up of Income across various heads for DISKI Ltd in the financial year Apr '09 to Mar '10. To analyse the performance of the company in the first half of the financial year vis-à-vis the second half of the financial year, the pie charts are prepared separately for the two half years. First half of a financial year is Apr to Sep and second half is Oct to Mar.



NOTE: The numbers given besides the sectors are the angle the sector makes at the center of the circle.

1. If the company pays equal amount of tax in the two half years, find the ratio of the income of the company in the first half year to that in the second half year.

a. 1: 1
b. 4: 5
c. 5: 4
d. Cannot be determined

2. If expenses in the first half year is 60% of the total expenses of the year, which of the following ratios most closely represent the ratio of the Interest paid by the company in the two half years.

a. 1: 1
b. 3: 2
c. 2: 1
d. 3: 1

3. If Depreciation accounts for 4.66% of the total Income of the company over the entire financial year Apr '09 to Mar '10, Taxes account for what percent of the total Income of the company over the entire financial year

a. 7%
b. 7.33%
c. 7.66%
d. 8%

Additional directions for questions 4 to 5:

Income of the company in the first half year i.e. Apr '09 – Sep '09 is Rs. 120 cr and the income in the second half year i.e. Oct '09 to Mar '10 is Rs. 144 cr.

4. If profit percentage is Net Profit as a percentage of Expenses, find the profit percentage of for the entire year Apr '09 – Mar '10.

a. 25%
b. 27.5%
c. 32.5%
d. 33.75%

5. By what percentage is the Interest paid in the first half of the year more/less than the Interest paid in the second half of the year?

a. 25% more
b. 20% more
c. 20% less
d. 25% less

The numbers given are degree that the sector makes at the center. Since 360 degrees = 100%, to change degrees to percentages, we will have to divide by 3.6. One need not do this calculation unless absolutely must. Read through the explanation to see how one can avoid this.

Assume the income in first half year as 360x and in second half year as 360y.

Direction for Q6-Q10

A company conducted a survey among 75 households to know how many households own the electronic devices laptop, smart phones and tablets during the years 2015 and 2016.

- In 2015 it was found that the number of households owning exactly one device, exactly two devices and exactly three devices are in the ratio 3 : 2 : 1
- The households that own both laptop and tablet also own a smart phone.
- In 2015, ten households owned both laptop and tablet.
- In 2015 the number of households owning only laptop is the same as the number of households owing only smart phones, which is one less than the number of households owning all the three.
- The number of households owning all the three devices in 2016 is three times of those that were owning all three devices in 2015.
- The number of households owning exactly two devices is decreased by five and the number of households owning exactly one device remained the same.
- In all it was found that none discarded any of the products already owned by them and no one purchased more than one new electronic device mentioned.
- In 2016, the total number of households owning tablets increased by 50% and that owning laptop increased by 60% as compared to 2015.
- Each household owning only smart phone in 2015 purchased tablets.

6. What was the number of households owning laptops or tablets in 2015?

A. 48 B. 50 C. 51 D. 54

7. What is the increase/decrease in the number of households owning smart phone, from 2015 to 2016?

A. 18 B. 10 C. 11 D. 17

8. What is the increase in the number of households owning only smart phones?

A. 1 B. 2 C. 3 D. 7

9. In which year was the difference in the number of households owning only laptop and smart phones, and the number of households owning tablet and smart phone higher? [TITA]

10. What is the number of households that purchased smart phone in 2016, as their second device?

A. 4 B. 8 C. 11 D. 6

ANSWER KEY

1 - C, 2 - C, 3 - B, 4 - D, 5 - A, 6 - C, 7 - D, 8 - B, 9 - 2016, 10 - D

SOLUTIONS

1. **c**

24x = 30y i.e.

$\frac{x}{y} = \frac{5}{4}$. This will be the ratio of the income in the two half years.

2. **c**

The ratio of the expenses in the two half years will be 60 : 40 i.e. 3 : 2. Thus,

$$\frac{228x}{210y} = \frac{3}{2} \Rightarrow \frac{x}{y} = \frac{105}{76}$$

The closest option is 2 : 1

3. **b**

Once could use (18x + 15y) = 4.66% (360x + 360y) to find the ratio of x and y and then proceed to find the ratio (24x + 30y)/(360x + 360y).
An easier way is to realise use Alligation to find the ratio x/y.

4.66% is

$$4\frac{2}{3}$$

i.e. 14/3%.
This in degree terms is

$$\frac{14}{3} \times 3.6$$

= 16.8 degrees.

Thus, the weighted average of 18 and 15 is 16.8. Hence the weights are in the ratio 1.8 : 1.2 i.e. 3 : 2

Now we want to find the weighted average of 24 degrees and 30 degrees with weights being 3 : 2. The average is thus (72 + 60)/5 i.e. 132/5 degrees i.e. 26.4 degrees. In percentage terms this will be 264/36 i.e. 22/3 = 7.33%

For questions 4 & 5:

360x = 120 i.e. x = 1/3 and 360y = 144 i.e. y = 2/5.

4. **d**

Expense in first half = 228/3 = 76, Net profit in first half = 60/3 = 20

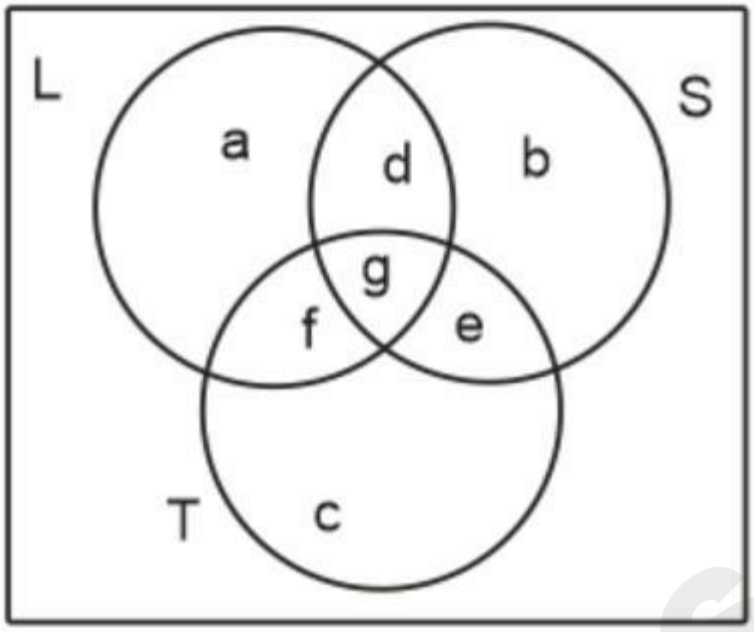
Expense in second half = 210 × 2/5 = 84, Net profit in second half = 85 × 2/5 = 34.

Thus, total profit = 54 and total expenses = 160. Thus, required percentage = 54/160 i.e. 33.75%

5. **a**

Interest paid in first half = 30/3 = 10. Interest paid in second half = 20 × 2/5 = 8.

Thus, required percentage 25% more.



from (2) and (3), there is no one who owned laptop and tablet only and ten households own all the three. (∴ g = 10)

From (1), exactly one (a + b + c) = 30 and exactly two (d + e + f) = 20. Hence, n = 15.

From (4), a = b = (g – 1) = 9.

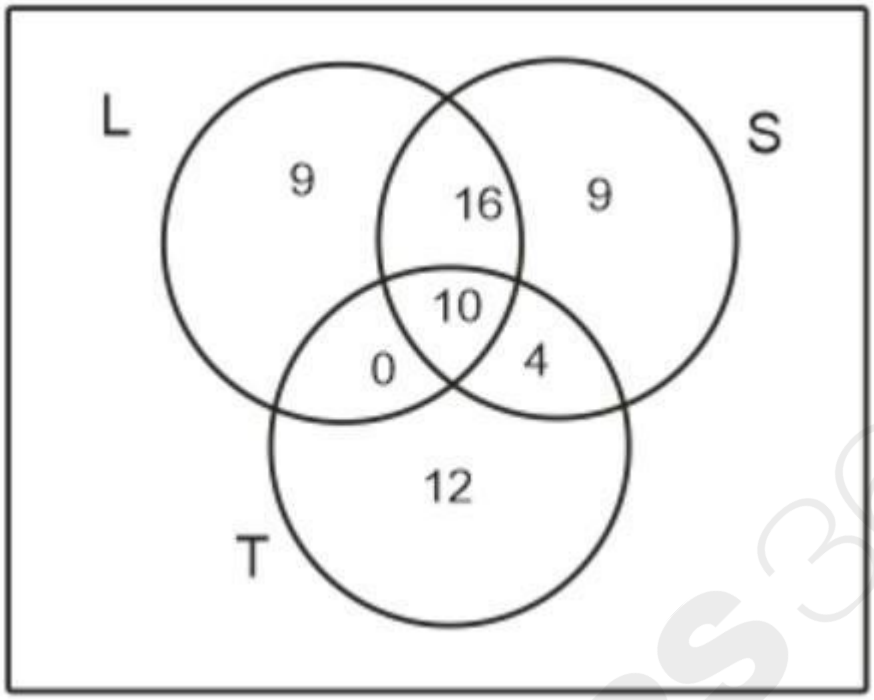
Hence, c = 12 Since f = 0, d + e = 20.

If e = k, then d = 20 – k

From (8), the number of households owning tablet must be an even number since f = 0, c = 12 and g = 10, e should also be even.

Let us say e = 2k, then d = 20 – 2k [from (8)], the number of households owning laptops increased by 60%. Hence it should be a multiple of 5 in 2015.

Thus, the conditions that the number of households that own laptop should be a multiple of 5 and the number of households owning tablets is an even number is possible only when k 2 or 7. If k = 2, the value for 2015 would be as follows.

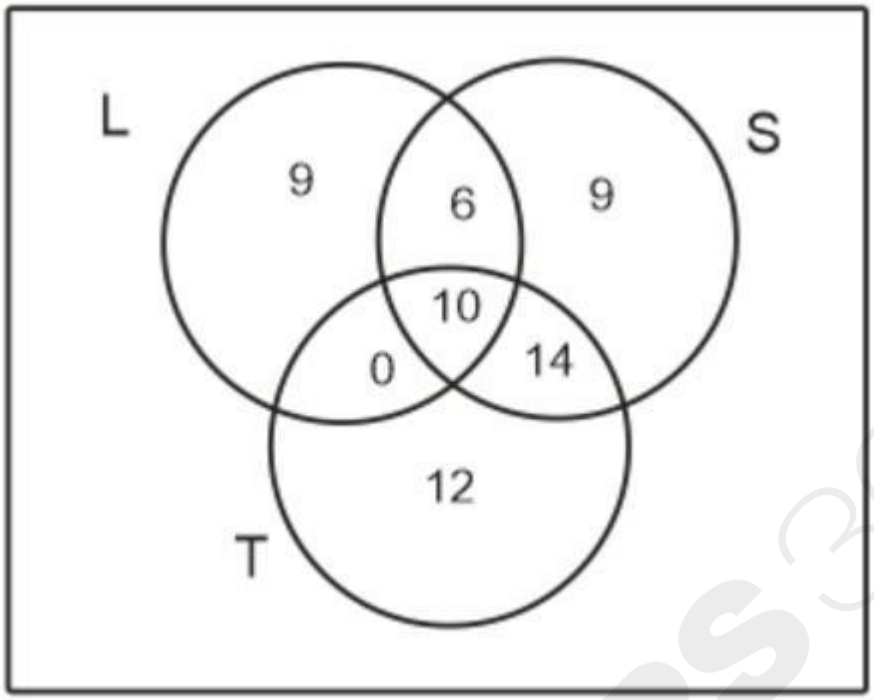


Families without any device will be 15, so total of tablet will be 26

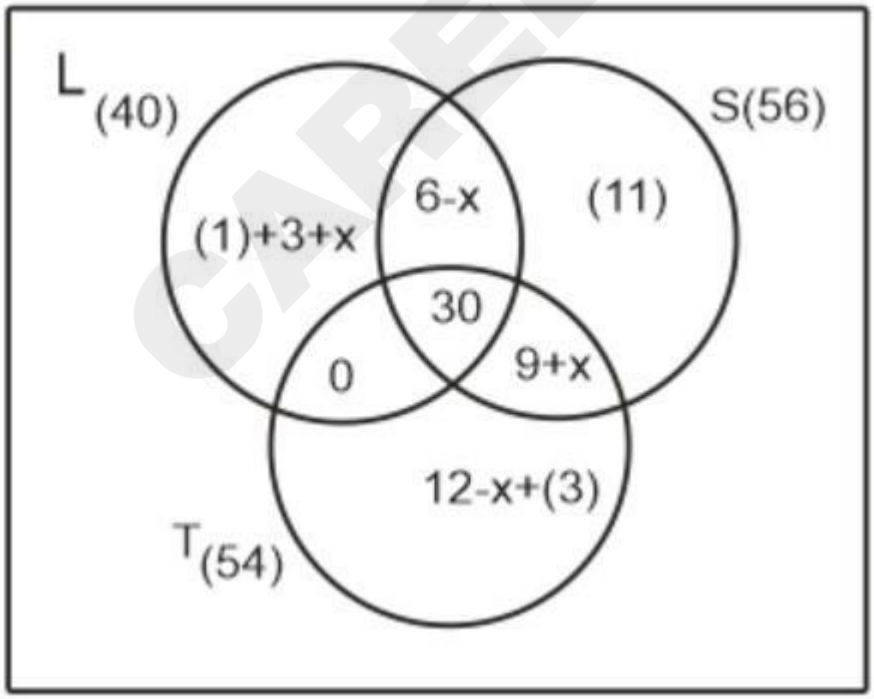
From (5), (6) and (7) for 2016 g = 30, exactly one (a + b + c) = 30 and exactly two (d + e + f) = 15.

Hence, n = 0.

It is given that no one purchased more than one device. Hence, the entire 20 i.e., exactly two of 2015 shifted to g in 2016. From (a), all those who owned only smart phone (9) of 2015 purchased tablets. Hence, ‘e’ for 2016 is atleast 9. Hence ‘d’ for 2016 should be atleast 6, comes from a of 2015. But the number of households owning laptop should be 160% of 35 i.e., 56. It means 17 should be added from a, which is not possible. Thus k cannot be 2. k must be 7.



Families without any device will be 15, so total of tablet will be 36



2016

Arrow indicates movements of devices towards house hold

The maximum value x can take is 6 (because 6-x cannot be negative)

Ans 6. The number of people owning laptops or tablets = 75 – (9 + 15) = 51.

Ans 7. The increase/decrease in the number of smart phone owners is 17.

Ans 8. The increase in the households that own only smart phones is 2.

Ans 9. Only laptop and smart phone ~ tablet and smart phone in 2015 = 24 – 6 = 18 In 2016 = 39 + x – 6 + x = 33 + 2x. ⇒ minimum = 33 maximum = 45 it is definitely higher in 2016. Ans: (2016)

Ans 10. From the venn diagram, 6 – x + x = 6 ∴ 6 households.

Part-C (VARC)

Reading comprehension

Some people shy away from travelling alone, a few embrace it. So, what is it that makes it an attractive option? What are the advantages of going it alone? Well first things first, travelling solo can be very liberating. The itinerary you set and all the decisions you make are yours and yours alone. You don't need to worry about any other person or group. In other words, there's no need to compromise, there are no arguments, and no need to second-guess what other people want or need. Actually, you can be completely selfish. Travelling alone is also a great confidence builder. Yes, at times it can feel a bit lonely, but that is just one of many problems you will have to solve yourself, along with making your own arrangements, and setting your own goals.

Have you noticed that when you're on your own, people are more willing to start a conversation with you? You're more likely to take the initiative as well, and before you know it, up pops an invitation for a meal, a side trip, a stay at someone's home. For some odd reason people keep a slight distance from couples and groups, probably because they seem so self-contained and exclusive. Whereas the lone traveler looks ready to connect with their fellow human beings, and more likely to engage in pleasant conversation and simple exchanges about their travels. Putting it simply, lone travelers look interesting.

Here are two more exciting reasons why you should consider travelling solo: You will find you learn language faster when you don't have someone else talking to you in your own language all the time. It's funny, but we interact, are forced to interact much more frequently when we travel alone in a country that doesn't speak our native tongue. If that doesn't convince you, there is the chance for adventure and even romance. When you're on your own you're free to meet someone who might turn out to be very important in your life. The most important factor to consider in your decision to make a trip alone is your own sense of independence. If you find that you have little tolerance for the idiosyncrasies of others, or you don't get how group dynamics work, you might be happier travelling alone. Of course, there may be things holding you back: Fear of the unknown, or maybe you have a spouse, relative, or friend who may be upset by your decision to take off by yourself, you will have to convince them of the value of travelling alone and allay any fears they might have, but with the technology at our fingertips, you can include them in the adventure.

1: According to the passage, what kind of people likes to travel alone?

A. who is not well versed in communicating with others.
B. who cannot adjust with the behavior and thoughts of other people.
C. who is introvert.
D. who doesn't like to share their things with others.
E. All of the above

2: What is/are the demerits of travelling alone?

A. We need to solve the problems with ourselves.
B. We need to be dependent on unknown people for various things
C. Sometimes we can feel lonely.
D. Both (b) and (c)
E. All of the above

3: What are the things that restrict us to travel alone?

I. Relatives or spouse not allowing to travel alone.
II. The fear of unknown people might restrict us.
III. Not finding a reason to travel alone.

A. Only (i)
B. Only (ii)
C. Both (i) and (ii)
D. Both (ii) and (iii)
E. All are correct

4: What is/are the exhilarating reasons of travelling alone?

A. You need not to be dependent on others for any sort of work.
B. You will get to learn the others language.
C. By travelling alone we are free to know a person that might become a special part of our life.
D. You are free to do anything at any time while travelling alone.
E. Both (c) and (d)

5: What are the advantages of travelling alone?

I. Make our connections strong with other people the journey.
II. We can selfishly make our own decisions.
III. Great confidence builder.

A. Only (i)
B. Only (ii)
C. Both (i) and (ii)
D. Both (ii) and (iii)
E. All are correct

6: Choose the most appropriate title of the passage.

A. Merits and demerits of travelling alone.
B. Travelling alone
C. Is travelling alone right?
D. Travelling alone brings independence

E. Technology at our finger tips

7: Parliament made it clear that (a)/ Delhi was an UT and there was no doubt about it (b)/ and the city government was empowered to (c)/ take care of daily utilities of the capital. (d)/ No error (e)

8: Delhi government cannot have (a)/ "exclusive" executive powers as it would be (b)/ against national interests, (c) / the Centre told the Supreme Court. (d) / No error (e)

9: A gang of burglars allegedly (a)/ made away with a luxury vehicle, (b)/ a licensed revolver and Rs. 10 lakh from a car showroom (c)/ in west delhi's Kirti Nagar (d)/ No error (e)

10: From a careful examination of the witness (a)/ and documentary evidence, it is evident that (b)/ the accident had been occurred (c)/ due to rash and negligent driving of the offending vehicle. (d)/ No error (e)

ANSWER KEY

1 - B, 2 - C, 3 - C, 4 - E, 5 - D, 6 - B, 7 - B, 8 - A, 9 - E, 10 - C

SOLUTIONS

1. Ans: (b)

Explanation- Refer the 3rd paragraph

2. Ans: (c)

Explanation- refer the last lines of first para of the passage.

3. Ans: (c)

Explanation- Refer the last para of the passage

4. Ans: (e)

Explanation- Refer the first few lines of 3rd para.

5. Ans: (d)

Explanation- both sentences (ii) and (iii) are correct. Refer the first para.

6. Ans: (b)

Explanation- “Travelling alone” is the appropriate title of the passage as the whole passage revolves around this theme.

7. **Ans. (b):** Replace ‘an’ with ‘a’

8. **Ans.(a)** Use Article THE before Delhi.

9. **Ans.(e)** No error

10. **Ans. (c)** Delete ‘been’

Error Detection

7: Parliament made it clear that (a)/ Delhi was an UT and there was no doubt about it (b)/ and the city government was empowered to (c)/ take care of daily utilities of the capital. (d)/ No error (e)

8: Delhi government cannot have (a)/ "exclusive" executive powers as it would be (b)/ against national interests, (c) / the Centre told the Supreme Court. (d) / No error (e)

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TOPICS COVERED		
QA	**DILR**	**VARC**
PnC: Selections and Groupings, Distributions	Syllogism Important PYQs	Comparison
PnC: Ranking and Derrangements	Logical Deduction	One word substitution
Probability	Data sufficiency in LR	Synonyms and Discussion on PYQs

Directions: The questions are taken from the following topics: PnC: Selections and Groupings, Distributions, PnC: Ranking and Derrangements, Probability, Syllogism Important PYQs, Logical Deduction, Data sufficiency in LR, Comparison, One word substitution and Synonyms and Discussion on PYQs

Quant Questions

. **1:In how many ways 10 letters be sent to 8 addresses?**

A. 8! X 10!
B. 8x 10
C. 8^{10}
D. 10^{8}

2. Find the number of Selections that can be made by taking four letters from the word CHITRANSHI.

A. 256
B. 12
C. 113
D. 32

3:In how many different ways can 7 persons sit in a row of 11 chairs?

A. $^{12}C_4$
B. $^{12}C_5$
C. $^{12}P_5$
D. $^{12}P_7$

4:In which regular polygon are the diagonals triple the number of sides?

A. Quadrilateral
B. Hexagon
C. Decagon

D. Nonagon

5:The number of positive integral solutions of the equation a+ b+ c+ d = 25:

A. $^{25}C_3$
B. $^{25}C_4$
C. $^{29}C_3$
D. $^{25}C_4$

6:Which of the following can not be the probability of an event?

A. 4/3
B. 2/3
C. 90%
D. 0.7

7:One day is picked from the month of February 2012. If it turns out to be a Monday, what is the probability that it is 8th of February?

A. 1/5
B. 1/4
C. 1/31
D. 0

8: The probability of drawing a white and a yellow in succession in that order from a bag containing 7 white and 5 yellow balls, when the ball that is drawn first is not replaced.

A. 35/132
B. 35/144
C. 49/114
D. 7/22

ANSWER KEY

1 - B, 2 - C, 3 - D, 4 - D, 5 - A, 6 - A, 7 - A, 8 - A

SOLUTIONS

1. Ans: (B)

Each letter can be sent in 8 different ways.
So, 10 letters can be sent in 8^{10} different ways.

2. Ans: (C)

CHITRANSHI contains 10 letters (out of which H and I come 2 times)

Case1: No alphabet is repeated

C H I T R A N S

4 selected out of 8 = ${}^{8}C_{4}$ ways = 70 ways.

Case 2: 2 H should be there.

Remaining 2 letters should be taken from C I T R A N S = ${}^{7}C_{2}$ ways = 21 ways

Case 3: 2 I should be there.

Remaining 2 letters should be taken from C H T R A N S = ${}^{7}C_{2}$ ways = 21 ways

Case 4: 2 H and 2 I should be there: only 1 way of selection.

Total = 70+ 21+ 21+ 1= 113 ways.

3. Ans: [D]

Number of ways of arranging r persons at n places = ${}^{n}P_{r}$

4. Ans: (D)

Number of diagonals in regular polygon of side n = n(n-3)/2

So, n(n-3)/2 = 3n,

On solving, we get n =9.

5. Ans: [A]

a+ b+ c+ d = 25

Number of positive integral solutions = ${}^{n}C_{r-1}$; where r? number of variables i.e. 4, n =25.

So, answer will be ${}^{25}C_{3}$

6. Ans: [A]

Probability of an event cannot be greater than 1.

7. Ans: [A]

In February 2012, Monday will fall on 1, 8, 15, 22 and on the 29th of the month.

So, the probability = 1/5.

8. Ans: [A]

Probability of getting first ball white and second ball yellow when the first ball is not replaced.

P(WY) = 7/12 x 5/11 = 35/132.

LRDI

Comprehension:

Each of five friends A, B, C, D and E received some amount of money. D received `20 more than B. Each of them bought at least one book. The cost of any book purchased by them is the same. The number of books bought by E is the maximum. The amount left with D is half of the amount left with B. B is left with an amount which is equal to the cost of exactly one book. The number of books bought by A is equal to the number of books bought by B and C. All of them together bought 9 books. The amount received by and the amounts left with each of them are integral values.

Logical reasoning question 1:
What is the cost of a book (in Rs)?

A. 60
B. 40
C. 30
D. 20

Logical reasoning question 2:
What is the amount received by D (in Rs)?

A. 100
B. 140
C. 80
D. 120

Logical reasoning question 3:
What is the number of books bought by E?

A. 3
B. 4
C. 2
D. Either (A) or (B)

Direction for Q4-Q7

Each of the seven students – G to M – studies exactly one subject among – mathematics, physics and chemistry and plays exactly one game among – cricket, hockey and tennis. At least two students study each subject and play each game. No two students who study the same subject play the same game. The following information is known about them.

Either H or M studies physics but neither of them plays tennis. J plays either cricket or hockey but does not study chemistry. Neither G nor K studies mathematics and neither of them play cricket. J and K study the same subject. M and I study the same subject. L plays either tennis or hockey but not the same game which K plays. Neither M nor H plays cricket.

Logical reasoning question 4:
Who among the following studies chemistry?

A. J
B. G
C. M
D. N

Logical reasoning question 5:
Which subject does M study?

A. Mathematics
B. Chemistry
C. Physics
D. Either physics or chemistry

Which of the given 'person – subject – game' combinations is true?

A. H – physics – cricket
B. G – chemistry – hockey
C. I – mathematics – cricket
D. L – physics – tennis

Logical reasoning question 7:

Four of the following five are alike in a certain way and hence form a group. Find the one which does not belong to that group.

A. H – hockey
B. J – physics
C. M – hockey
D. L – mathematics

ANSWER KEY

1 - B, 2 - A, 3 - A, 4 - B, 5 - A, 6 - C, 7 - D

SOLUTIONS

1. Ans: [B]
2. Ans: [A] 3. Ans: [A]

Solution:

The given data can be tabulated as shown below:

Names	A	B	C	D	E
Amount got		B1		B1 +20	
No. of books bought	2	1	1	2 0r 1	3 or 4
Amount left		B2		B2/2	

Given that, the amount left with D is half of the amount left with B, hence the number of books bought by D is 2 and hence E bought 3 books. Since the amount left with D is less than the amount left with B

Let the amount left with B = B2 and the cost of a book = x.

Then B2 = x (Amount left with D = x/2)

As B bought one book, the amount received by B = x + x = 2x.

Given, D = 2x + x/2 , D = B + 20 $\Rightarrow$ 5x/2 = 2x + 20 $\Rightarrow$ x = 40

($\therefore$ Price of a book = 40). 4. Cost of a book is `40. Choice (B)

5. Amount received by D is `100. Choice (A)

6. E bought 3 books. Choice (A)

4. Ans: [B]

5. Ans: [A]

6. Ans: [C]

7. Ans: [D]

Solution:

It is given that at least two students study each subject and play each game. No two students who study the same subject do not play the same game. Either H or M studies physics but neither of them plays tennis. J plays either cricket or hockey but does not study chemistry. Neither G nor K studies mathematics and plays cricket. J and K study the same subject. Hence both J and K study physics. K has to play either hockey or tennis. If K plays hockey either H or M has to play tennis. Hence, K plays tennis. G plays either mathematics or chemistry. But G does not study mathematics hence G studies chemistry. It can be represented as follows.

Person	Subject	Game
G	CHEMISTRY	
H		
I		
J	PHYSICS	
K	PHYSICS	Tennis
L		
M		

One among H and M studies mathematics and the other studies physics. As M and I study the same subject, M and I study mathematics and H studies physics. L studies chemistry. L plays

either tennis or hockey but not the same game which K plays. Hence, L plays hockey. Neither M nor H plays cricket. Hence, both play hockey. J and I play cricket.

Person	Subject	Game
G	CHEMISTRY	Tennis
H	Physics	Hockey
I	Maths	Cricket
J	PHYSICS	Cricket
K	PHYSICS	Tennis
L	Chemistry	Hockey
M	Maths	Hockey

VARC

Direction (Q1-Q2): Find the best-suited phrase for the underlined part.
Verbal ability question 1:
The art studio is spacious, pleasantly cluttered, and has good lighting.

A. And has good lighting
B. And being well-lit
C. And is lit well
D. And well- lit
E. And the lighting is good

Verbal ability question 2:
Some of the many renovations set for Memorial field in the coming years include building additional seating and the construction of a new varsity athletics centre.

A. And the construction of a new varsity athletics centre.
B. And constructing a new varsity athletics centre.
C. And, the construction of a new varsity athletics centre.
D. And a new varsity athletics centre.
E. And a new varsity athletics centre is under construction.

Direction (Q3-Q4): In the following question, some parts of the sentence may have errors. Find out which part of the sentence has an error and select the appropriate option. If the sentence is free from error, select 'No Error

Verbal ability question 3:
The United Nations General Assembly unanimously declared 2nd April as (a)/ World Autism Awareness Day to highlight the need to (b)/ help improve the quality of life of those with autism so that they can lead (c)/ meaningful lives as an integral part of the society. (d)/ No error (e)

A. (a)
B. (b)
C. (c)
D. (d)
E. (e)

Verbal ability question 4:
Meditation is the highest spiritual (a)/ technique that needs to be practised (b)/ diligently and devotedly (c)/ by qualified practitioners. (d)/ No Error (e)

A. (a)
B. (b)
C. (c)
D. (d)
E. (e)

Direction [Q5-Q6]: Give a suitable word for the given phrase in the question.
Verbal ability question 5:
The violent storm made it difficult for them to reach the shore.

A. Weather
B. Rains
C. Breeze
D. Tempest

Verbal ability question 6:
A person who dishonestly pretends to be somebody else.

A. Imperialist
B. Impressionist
C. Implorer
D. Imposter

In the next 2 questions, there is a blank space. Below each such sentence, there are five options with one word each. Fill up the blank with the word that makes the sentence grammatically and contextually correct.

Verbal ability question 7:
Jason won the lottery and then watched all of his money_____after marrying a gold digger who only cared about shopping.

A. Contravene
B. Dissipate
C. Defunct
D. Both (a) and (b)
E. Evince

Verbal ability question 8:
Our National debt places a____on our economy's ability to grow.

A. Restrict
B. Liberal
C. Allowing
D. Constraint
E. Both (a) and (b)

Verbal ability question 9:
RUSE

A. The security guard knew the girls were going to try and use a distractive ruse in order to shoplift.
B. When I could no longer ruse my blaring alarm clock, I drug myself out of the bed.
C. Emma tried to think of a ruse to get Paul out of the house.
D. Only I
E. Only II
F. Only III
G. Both (I) and (III)
H. Both (II) and (III)

ANSWER KEY

1 - D, 2 - B, 3 - C, 4 - B, 5 - D, 6 - D, 7 - B, 8 - D, 9 - D

SOLUTIONS

1. Ans: [D]

Explanation: spacious, pleasantly cluttered are adjectives. Hence, we use an adjective with the sentence. Option a, b, c is a verb phrase and option e is a clause hence option D is correct.

2. Ans: [B]

Explanation: it should be in _ing form to make sentences parallel correct. Hence option B is correct.

3. Ans: [C]

Explanation: 'help' will be used in place of helping as it will take the first form of the verb with itself. Hence error is in part C.

4. Ans: [B]

Explanation: use needs as technique is singular.

5. Ans: [D]

Explanation: Tempest refers to violent windstorms in the form of rain, hail, and snow. Hence option D is correct.

6. Ans: [D]

Explanation: imposter refers to a person who deceives with fake character, identity. Hence option D is correct.

7. Ans: [B]

Explanation: dissipate- disappear or cause to disappear.

8. Ans: [D]

Explanation: a limitation or restriction.

9. Ans: [D]

Explanation: Only (ii) is incorrect. RUSE means an action intended to deceive someone, a trick.

10. Ans: [D]

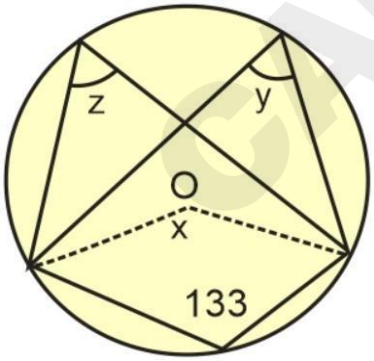
Explanation: only III is incorrect. ESCHEW means deliberately avoiding using; abstain form.

TOPICS COVERED		
QA	**DILR**	**VARC**
Geometry - Triangles	Data sufficiency in LR	Strategies for Synonyms and related PYQs
Geometry - Quadrilaterals and Polygons	Games and Tournaments-	Antonyms and Discussion on PYQs
Geometry - Circles	Games and Tournaments-	Strategies for Antonyms and related PYQs

Directions: The questions are taken from the following topics: Geometry - Triangles, Geometry - Quadrilaterals and Polygons, Geometry - Circles, Data sufficiency in LR, Games and Tournaments, Strategies for Synonyms and related PYQs, Antonyms and Discussion on PYQs, Strategies for Antonyms and related PYQs

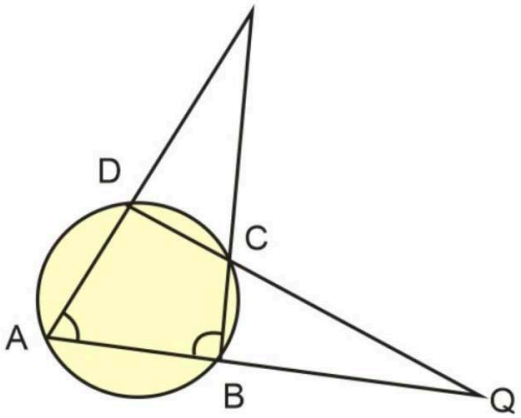
Quantitative Aptitude

Q1. If O is the centre of the circle, find the value of x- (y+ z)



A. 35°
B. 47°
C. 39°
D. 0°

Q2. In the adjoining figure ∠A = 72° and ∠ABC = 88°, ∠BQC



A. 16°
B. 8°
C. 20°
D. 32°

Q3. If ABC is a quarter circle of radius 1 cm and a circle is inscribed in it, find the radius of the smaller circle inscribed.

A. $-1+2\sqrt{2}$
B. 1/2
C. $-1+\sqrt{2}$
D. $1-\sqrt{2}$

Q4. How many isosceles triangles (having integral length) are possible if the sum of two of its sides is 10?

A. 11
B. 14
C. 15
D. 23

Q5. An equilateral triangle of side 6 cm, has its corners cut away to form a hexagon with all sides equal. Then the length of each side of the hexagon, in cms, is

A. $2\sqrt{2}$
B. 1/2
C. 2
D. $\sqrt{2}$

Q6. D, E, and F are the mid-points of the sides BC, CA and AB respectively of an equilateral triangle ABC. Determine the ratio of the perimeter and area of triangle DEF.

A. 1: 4
B. 1: 2
C. 2: 3
D. $4\sqrt{3}$: 1

Q7. One card is picked from the deck of cards which turned out to be red. What is the probability of it being a face card?

A. 3/13
B. 3/26
C. 1/13
D. 2/13

ANSWER KEY

1 - D, 2 - A, 3 - D, 4 - B, 5 - C, 6 - D, 7 - A

SOLUTIONS

1. Ans: (d)

y = z (Angle made by the same arc on the same side of the circle are equal)

x = 2y (Angle made by an arc at centre is double of the angle made by the same arc on the same side of the circle)

So,

x- (y+ z) = 0

2. Ans: (a)

$\angle ADC = 180 - \angle ABC$ (ABCD is a cyclic quadrilateral)

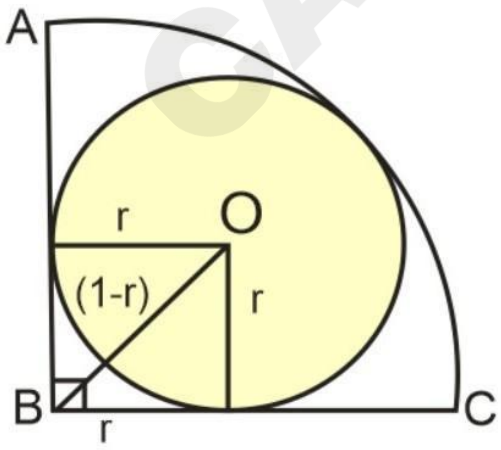
$\angle ADC = 180 - \angle ABC = 180 - 88 = 920$

$\angle BQC = 180 - \angle ADC - \angle A$ (sum of all angles of a triangle is 1800)

$\angle BQC = 180 - 92 - 72 = 160$

3. Ans: [D]

OB = 1 – radius of inscribed circle



Dimensions will be as shown in the 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

4. Ans: (B)

Case 1: Sum of two equal sides = 10

Sides of the triangle should be 5, 5, a

Also, a < (5+ 5)

⇒ 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 and a < 10

3a > 10

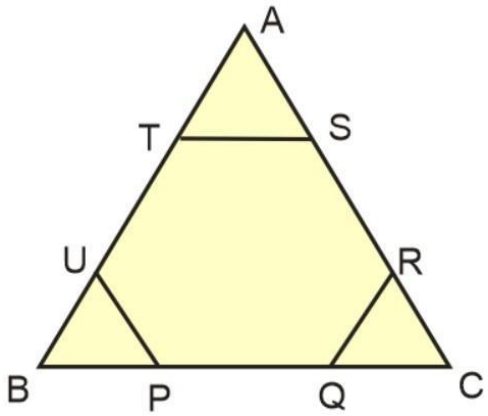
a > 10/3 but less than 10; So, a can be 4, 5, 6, 7, 8, 9

If a =5 then other sides will also be 5 and 5. This case is already taken in Case1.

Here, five such triangles are possible.

Therefore, the answer is 9+ 5 = 14.

5. Ans: [c]



A regular Hexagon PQRSTUV is formed as shown in the figure.

Interior angle of a regular hexagon = 1200

So, $\angle ATS = \angle AST = 180 - 120 = 60^0$

This makes triangle ATS an equilateral triangle

$\Rightarrow AT = TS = AS$

Also, TS = TU = UP

From this we can say, sides of Triangle ABC is cut in such a way that

Side of regular Hexagon = Side of triangle /3 = 6/3 = 2 cm.

6. Ans: [D]

Let the side of triangle ABC = 2 cm.

Then, side of triangle DEF = 1 cm; Area = 34 cm2; Perimeter = 1x 3 = 3 cm.

Perimeter(DEF)Area (DEF)= 3 3/4 = 4√3: 1

7. Ans: [a]

Total Outcome = 26 (Red Cards)
Possible outcomes = 6 (face cards of red colour)

Probability = 6/26 = 3/13

LRDI

Data Sufficiency (Q1-Q3):

Direction:

A. **Statement I alone is sufficient to answer this question but statement II is not sufficient to answer this question.**
B. **Statement II alone is sufficient to answer this question but statement I is not sufficient to answer this question.**
C. **None is sufficient to answer this question.**
D. **Both statements together are sufficient to answer this**

question Q1. On which day Sumit goes to Delhi?

Statement I: According to Sumit's sister Sumit goes to Delhi after Tuesday and before Sunday but he did not go to Delhi on Thursday.

Statement II: According to Sumit's father Sumit goes to Delhi after Monday and before Saturday.

Q2. How is Sonal definitely related to Pramila?

Q3. Five persons – Arun, Bimal, Chaman, Deepak and Eshan, each earn a different amount of money. Who among these persons earns the second highest?

Direction: (Q4- Q6)

India, Pakistan, Malaysia, South Korea, Japan and China are to take part in the Asian Hockey Championship. In the first round, each team plays each of the other teams exactly once. At this stage, two points are awarded for a win, one point for a draw and zero points for a loss. After all the matches are played, the top two teams, in terms of the points scored, advance to the finals. In case two or more teams end up with the same number of points, the team with a better goal difference is placed higher.

Q4. The total number of matches in the tournament is

A. 21
B. 22
C. 15
D. 16

Q5. What is the minimum number of points with which a team can advance to the finals?

A. 6
B. 5
C. 4
D. 3

Q6. What is the maximum number of points that can be scored by a team, which failed to advance to the finals?

A. 8
B. 9
C. 6
D. 7

Direction: (Q7- Q9)

128 players take part in a Grand Slam tennis tournament. The tournament is scheduled to be held in seven rounds and in each round, in a match between two players, the winner advances to the next round and the loser is eliminated. There are no draws or byes in the tournament. The players who take part in the tournament are seeded from 1 to 128, with seed 1 being the top seed, seed 2 next and so on. The matches are scheduled in such a way that in any round, assuming there are no upsets, the highest-seeded player plays against the lowest-seeded player at that point, the next highest-seeded player always plays against the next lowest-seeded player and so on. An upset is said to happen when a lower-seeded player beats a higher-seeded player. The schedule of matches in the next round remains unchanged in case of an upset in a round, with the only difference being that the player who caused the upset advances to the next round and takes the designated place of the player he upset.

Q7. In case of no upsets in the tournament, in which round would the player seeded 10 faces a player seeded higher than him?

A. 2nd round
B. 3rd round
C. 4th round
D. 5th round

Q8. How many players in the tournament won exactly one match?

Q9. Assuming no upsets, which player beat seed No.25?

ANSWER KEY

1 - C, 2 - C, 3 - A, 4 - D, 5 - C, 6 - A, 7 - C, 8 - D, 9 - A

SOLUTIONS

1. Ans: [C]

Statement I:

Using the given information we can say that Sumit goes on to trip on one of the days Wednesday, Friday or Saturday. Hence, data in statement I alone is not sufficient.

Statement II:

Using the given information we can say that Sumit can go on to trip on any of the days among Tuesday, Wednesday, Thursday and Friday.
Hence, data in statement II alone is also not sufficient.

Combining statements I and II:

From Statement I, we figured out that Sumit goes on to trip on one of the days Wednesday, Friday and Saturday.

From Statement II, we figured out that Sumit can go on to trip on any of the days among Tuesday, Wednesday, Thursday and Friday.

After, compiling the above information we can say that Sumit goes to Delhi on either Wednesday or Friday.

Hence, data in statements I and II together are not sufficient.

2. Ans: [C]

Statement I: Sonal's mother is the sister of Pramila's father.

Here, we can observe that a direct relationship between Sonal and Pramila can't be established as Sonal's gender is not known. Clearly, Statement I alone is not sufficient to answer the question.

Statement II: Pramila is the daughter of Sonal's grandfather's only son.

Here, a direct relationship between Sonal and Pramila can't be established as it's not given as Sonal's paternal or maternal grandfather is being referred to here. Because of this, the statement stays ambiguous.

Clearly, Statement II alone is not sufficient to answer the question.

Combining Statements, I and II:

Statement I: Sonal's mother is the sister of Pramila's father.

Statement II: Pramila is the daughter of Sonal's grandfather's only son.

Even if we combine the two statements above, we do not get the gender of Sonal and therefore statements I and II together are not sufficient to reach the answer.

3. Ans: [A]

Statement I: Only Chaman earns more than Bimal.
After using the above references, we have

Order of Earnings:

Chaman > Bimal >_____>_____> _____

Here, we can say that Bimal earns the second highest.
Clearly, Statement I alone is sufficient to answer the question.

Statement II: Deepak and Eshan earn less than Arun.
After using the above references, we have

Order of Earnings:
Arun > Deepak/Eshan
Here, we have no sure information about the earnings of any of these persons.
Clearly, Statement II alone is not sufficient to answer the question.
Here, the data in Statement I alone is sufficient to answer the question.
Hence, the correct answer is option A.

4. Ans: [D]

The total number of matches in the tournament = 5 + 4 + 3 + 2 + 1 + 1 (finals) = 16

5. Ans: [C]

The minimum number of points would be required when one of the teams scores the maximum points and the remaining teams equally share all the remaining points. Total points available = 15 × 2 = 30; Maximum points for a team = 5 × 2 = 10. The remaining 20 points can be shared by all five teams, and one of those teams with four points would advance to the finals on the basis of the goal difference.

6. Ans: [A]

The worst-case scenario for a team happens when three teams score the highest points and one of those teams is eliminated. Points scored by the last three teams (points only among themselves) = 6; remaining points = 24. These points can be shared by the teams, and one of the teams with 8 points could be eliminated on the basis of goal difference.

7. Ans: [C]

A player seeded 10, assuming no upsets is expected to reach the last 16 stages, i.e., the fourth round. In this round, he would face the player seeded 7 and would be eliminated.

8. Ans: [D]

The players who won exactly one match are those who won the first round but lost in the second round, i.e., 64 – 32 = 32 players.

9. Ans: [A]

The player seeded 25 would have lost to the player seeded 8.

VARC (Verbal Ability & Reading Comprehension)

Q1: But they could strived harder (a)/ to upheld democratic rights (b)/ and constitutional principles at home (c)/. That is critical in promote sustainable development. (d)/ none correct (e)

A. (a)
B. (b)
C. (c)
D. (d)
E. (e)

Q2: The agreement with Mehta was towards (a)/ partial assignment of the rights to made records (b)/ in gramophone and in talkies and no other (c)/ sound produced broadcast device' for a lump sum of Rs 450 and a royalty of one anna per record sold (d)/ none correct(e).

A. (a)
B. (b)
C. (c)
D. (d)
E. (e)

Q3: The past shaped the way we are (a)/ today not only the world we grow out (b)/ in, where we struggled with (c)/ conflicts the seeds of whom were sown long ago. (d)/ none correct (e)

A. (a)
B. (b)
C. (c)
D. (d)
E. (e)

Direction (Q4-Q6): One part contains an error. You must choose the grammatically incorrect part as your answer.

Q4: Meanwhile, in an effort to keep (a)/ its flock together, the part herd (b)/ its elected partymen and two (c)/ independent legislators to a resort on the outskirts of the city. (d)/ no error (e)

A. (a)
B. (b)
C. (c)
D. (d)
E. (e)

Q5: It was a long wait for the tribals (a)/ from the morning for their near and dear (b)/. They even refused to take (c)/ breakfast and water as all of them were stricken of grief (d)/ no error (e)

A. (a)
B. (b)
C. (c)
D. (d)
E. (e)

Q6: You deferred the case many a (a)/ times for the Centre. If that (b)/ had not happened, we (c)/ would not had been in this situation (d)/ No error (e)

A. (a)
B. (b)
C. (c)
D. (d)
E. (e)

Q7: Pulling away the boat is not difficult (a)/ if the latest equipment is with (b)/us and if the boat (c)/ has not overturned. (d)/ No error (e)

A. (a)
B. (b)
C. (c)
D. (d)
E. (e)

Direction (Q8- Q10): Choose the correct option and complete the given sentences.

Q8. The tunnel____for extracting smoke and stale air and for infusing fresh air. It will have state-of-the-art monitoring and control systems for security.

A. Will be checked
B. Will be blocked
C. Will have forced ventilation
D. Will have a corridor
E. Will soon make to prepare

Q9. When India's largest political party pursues such a strategy and finds it electorally rewarding, it____by other political parties.

A. May be rejected
B. May be emulated
C. May be ignored
D. May be protested
E. May be gone through

Q10. The argument for a uniform civil code (UCC)_____in a modern nation-state as long as it is rational, non-discriminatory and promotes social equality and gender justice.

A. Is invoking
B. Is provoking
C. Is rescind
D. Is void
E. Is irrefutable

ANSWER KEY

1 - C, 2 - A, 3 - A, 4 - B, 5 - D, 6 - D, 7 - A, 8 - C, 9 - B, 10 - E

SOLUTIONS

1. Ans: [C]

Explanation: they could strive harder to uphold democratic rights and constitutional principles at home. That is critical to promote sustainable development.

Part (a): strive will replace strived

Part (b): uphold will replace upheld

Part (d): to will replace in

Thus, option c is the correct option.

2. Ans: [A]

Explanation: The agreement with Mehta was towards 'partial assignment of the rights to make records in gramophone and in talkies and my other sound-producing broadcast device' for a lump sum of Rs 450 and a royalty of one anna per record sold.

Part (b) : made will replace make.

Part (c) : any will replace no

Part (d) : producing will replace produced

Thus, option B is the correct option

3. Ans: [A]

Explanation: the past shaped the way we are today- not only the world we grow up in, where we struggle with conflicts the seeds of which were sown long ago.

Part (b): up will replace out

Part (c): struggle will replace struggled

Part (d): which will replace whom

Thus, option B is the correct option

4. Ans: [B]

Explanation: part (b) has an error as herd will get replaced by herded.

5. Ans: [D]

Explanation: part (d) has an error as ‘stricken of’ will get replaced by ‘stricken with’.

6. Ans: [D]

Explanation: part (d) has an error as have will replace had.

7. Ans: [A]

Explanation: part (a) has an error as ‘pulling away’ will get replaced by ‘pulling out’.

8. Ans. Option C

Explanation: will have forced ventilation as the tunnel which has been mentioned in the statement will have ventilation that will force smoke and stale air out of it. The word “infusing” makes it easy to choose.

9. Ans. Option B

Explanation: may be emulated as the political strategy which is electorally rewarding has been talked about in the context of the statement, it is obvious that it may be emulated/ copied by the other parties.

10. Ans. Option E

Explanation: This is irrefutable as the Uniform Civil Code can’t be disapproved.

Quantitative Aptitude

TOPICS COVERED		
QA	**DILR**	**VARC**
Introduction to Mensuration	Binary Logic	Parajumbles Proficiency
Mensuration - Pyramids	PYQs for Binary Logical Reasoning	Parajumbles - Problem Solving Strategies
Mensuration - Spheres	Logical Connectives	Some Important PYQs of Parajumbles

Directions: The questions are taken from the following topics:Introduction to Mensuration Mensuration - Pyramids, Mensuration - Spheres, Binary Logic, PYQs for Binary Logical Reasoning, Logical Connectives, Parajumbles Proficiency, Parajumbles - Problem Solving Strategies and Some Important PYQs of Parajumbles

Q1. The inner circumference of a circular track is 220 m. The track is 7 cm wide. Find the diameter of the outer circle of the track.

A. 84 m
B. 42 m
C. 36 m
D. 154 m

Q2. A swimming pool 8 metres long, 3 metres wide and 1.5 metres deep is there in a resort. Find the volume of soil removed in cubic metres to make that swimming pool.

A. 32 m^3
B. 36 m^3
C. 50 m^3
D. 67.5 m^3

Q3. The volume of a right circular cone is 25π cm3 and its height is 12 cm. Find its curved surface area.

A. $(\pi\sqrt{6})/2$ cm^2
B. $150\pi/2$ cm^2
C. $25\pi/2$ cm^2

D. $(25\pi\sqrt{6})/2$ cm^2

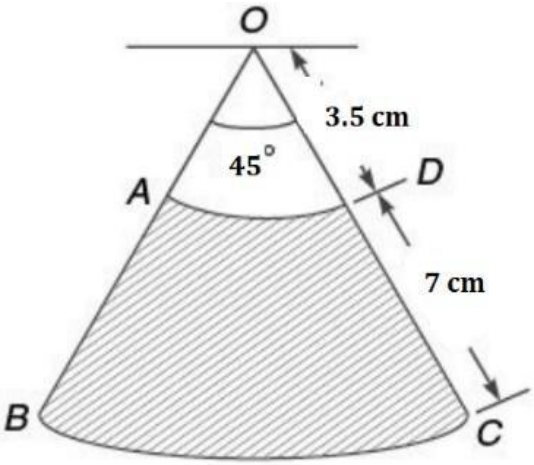
Q4. The outer and inner diameters of a spherical hemispherical bowl are 10 cm and 9 cm respectively. Find the cost of painting the bowl @Rs 10 cm^2. (Use $\pi = 3.14$)

A. Rs 1900
B. Rs 2991
C. Rs 2839
D. Rs 2396

Q5. Two cones have their heights in the ratio of 2: 1 and the diameters of their bases are in the ratio of $2\sqrt{3}$:1. What will be the ratio of their volumes?

A. 1: 24
B. 2: 1
C. 24: 1
D. 1: 1

Q6. 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

Q7. If the curved surface area of a cone is twice that of another cone and the slant height of the second cone is three times 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

Q8. A solid cuboid of dimension (31 cm x 4 cm x 1 cm) is melted into a hollow cube from the inside of thickness 2 cm. Find the difference between the inner and outer dimensions of the cube.

A. 2 cm
B. 3 cm
C. 1 cm
D. 4 cm

ANSWER KEY

1 - A, 2 - B, 3 - D, 4 - B, 5 - C, 6 - C, 7 - C, 8 - D

SOLUTIONS

1. Ans: (A)

If the radius of the inner circle is r m, then the outer radius is (r+ 7) m

$2\pi r = 220$

$\Rightarrow r = 35$ m

Radius of outer circle = 35+ 7 = 42 m

Diameter of outer circle = 84 m

2. Ans: (B)

Volume of soil removed = Volume of cuboid pool

= 8x 3x 1.5

= 36 m^3

3. Ans: [D]

Volume of right Circular cone = $\pi r^2 h/3$

$\pi r^2 12/3 = 25\pi$

$\Rightarrow r = 5/2$

Slant height, $l = [12^2+(5/2)^2] = (\sqrt{601})/2 = 5\sqrt{6}$ (Approx)

Curved Surface Area = $\pi rl = \pi(5/2)\ 5\sqrt{6} = (25\ \pi\sqrt{6})/2\ cm^2$

4. Ans: (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 the radius of the outer sphere and r is the radius of the inner sphere.

$\Rightarrow$ Total Surface area of the bowl = $3\pi R^2 + \pi r^2 = \pi(3R^2 + r^2) = \pi(3R^2 + r^2) = 3.14(300/4 + 81/4)$ {since outer radius is 10/2 cm and inner radius is 9/2 cm}

⇒ Total Surface area of the bowl = 3.14(300 + 81)/4 = 1196.34/4 cm^2

Cost of painting = Rs 10 x 1196.34/4 = Rs 2990.85

5. Ans: [C]

Volume of cone1/Volume of cone 2=R^2/r^2 X H/h; R is the radius of cone1, r is the radius of cone 2, H is the height of cone 1, h is the height of cone 2

Volume of cone1/Volume of cone2 =$(23)^2/1^2$ X 2/1 = 24/1

6. Ans: [C]

Area of shaded region = 45π/360 ($7^2 – 3.5^2$) = 231/16 cm^2 = 14.437 cm^2

(Use the formula for area of sector)

7. Ans: (C)

Let radius and slant height of 1st coin be r and l respectively.

The radius of the second cone be R and the slant height will be 3l.

According to question

πrl = 2πR(3l)

⇒ r/R = 6/1

Therefore,

$πr^2/πR^2$ = 36/1

8. Ans: [D]

Let the inner dimension of the cube be x, then the outer dimension will be (x+ 4) since the thickness is 2 cm.

Volume of cuboid = Volume of hollow cube

31 x 4 x 1 = $(x+4)^3 – x^3$ = (x+ 4- x) ($(x+4)^2 + x^2 + x(x+4)$)

On simplification, we get

$31 = 3x^2 + 12x + 16$

$\Rightarrow 3x^2 + 12x - 15 = 0$

So, x = 1 cm

Outer dimension = 1+ 4 = 5 cm

Difference = 5cm – 1cm = 4cm.

LRDI (Logical Reasoning and Data Interpretation)

The twelve teams that took part in the World Hockey Championship were divided into two pools of six teams each. In each pool, each team plays exactly one match against each of the other teams in its pool. Two points are awarded for a win, one point for a draw and zero points for a loss. At the end of the pool stage the top two teams from each pool, in terms of the points scored, would advance to the semi-finals and the winner of the semi-finals play the finals, while the losers of the semi-finals play for the third place.

Teams which finished third and fourth respectively in a pool would play with the teams ranked fourth and third respectively in the other pool. The winners of these matches would play to determine the fifth and sixth ranks, while the losers of these matches would play to determine the seventh and eighth ranks.

Similarly, teams that ranked fifth and sixth in each pool would play to determine the ranks from nine to twelve. In case two teams end up with the same number of points at the end of the pool stage, their rankings in the pool stage are determined by their net goal difference.

Note: Net goal difference = goals scored – goals conceded

Directions for Q1-Q2: Type in your answer in the input box provided below the question.

Q1. What is the minimum number of points a team should aim for, at the start of the tournament, to guarantee itself a place in the semi-finals?

Q2. What is the minimum number of points with which a team can reach the semi-finals?

Q3. The total number of matches played in the tournament is.

Q4. If there are no draws in the championship after the pool stage, the total number of matches won by the team that won the tournament is at least

Passage: Among the four members of a family - K, L, M and N, there is one couple, their son and their daughter. When asked about their relationships, the following were their replies.

K: N is my husband; M is my daughter.
L: K is my mother; M is my son.
M: K and L are of the same gender; L is my sister.
N: L is of the same gender as I; M is my son.

It was also known that only one of them always speaks the truth.

Q5. Among the four, who cannot be the truth-teller?

A. K
B. L
C. M
D. Cannot be determined

Q6. Among them, if there are two persons who always tell lies, then who always speaks the truth?

A. K
B. M
C. N
D. Cannot be determined

Q7. Among them, if there are two persons who always alternate between the truth and lies, then who speaks the truth always?

A. K
B. L
C. M
D. Cannot be determined

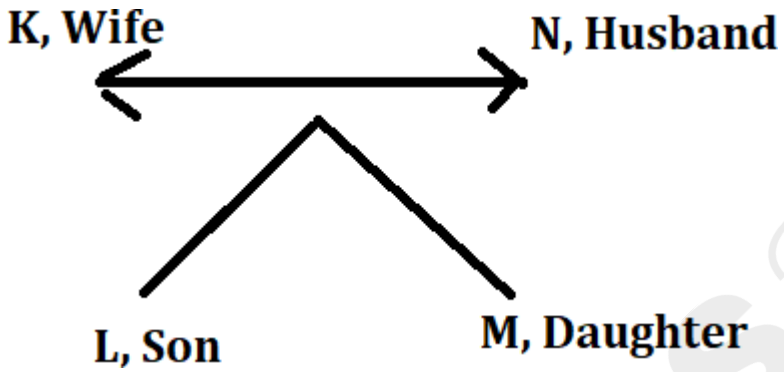
ANSWER KEY

1 - 9, 2 - 4, 3 - 42, 4 - 2, 5 - B, 6 - C, 7 - A

SOLUTIONS

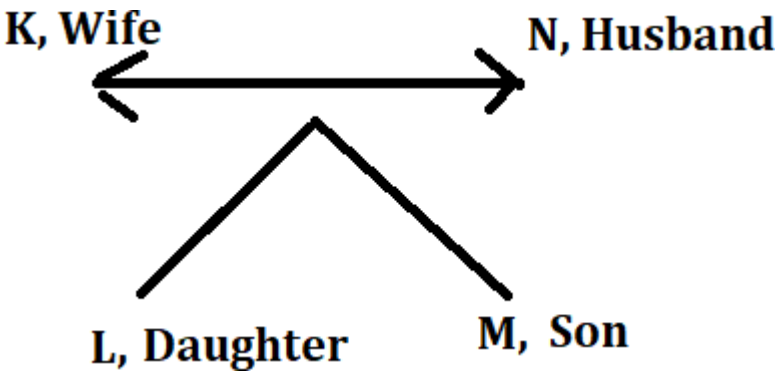
Among the four members, there is one couple, their son and their daughter. The statements given by L are false because according to his statements there are three generations. So, L cannot be the truth-teller.

CASE 1: Let us assume that K is the truth-teller, then



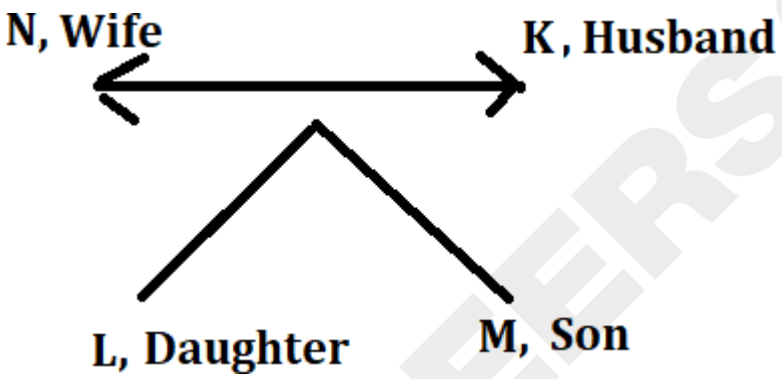
	I	II	
K	T	T	Truth-teller
L	T	F	Alternator
M	F	F	Liar
N	T	F	Alternator

Case (ii): Let us assume that M is the truth-teller, then the arrangement is as follows



	I	II	
K	T	F	Alternator
L	T	F	Alternator
M	T	T	Truth-teller
N	F	T	Alternator

Case (iii): Let us assume that N is the truth-teller.



	I	II	
K	F	F	Liar
L	F	F	Liar
M	F	T	Alternator
N	T	T	Truth-teller

Answers:-

Q5. L can never be the truth-teller. Choice (B)

Q6. In case (iii), N is the truth-teller, and K and L are the liars. Choice (C)

Q7. In case (ii), N and L are the alternators and K is the truth teller. Choice (A)

VARC

Direction (Q1-Q3): You must find the part that contains an error and then choose the sequence of correct parts (excluding the part that is grammatically and contextually incorrect). That sequence will be your answer.

Q1- It is perplexing and exasperating (A)/ that just at the moment when (B)/ you need your memory (C)/ and a nicely sense of discrimination, (D)/ these faculties take to themselves wings and fly away. (E)

A. ABCD
B. BCDE
C. ACDE
D. ABCE
E. None of these

Q2- Now he is hoping other people (A)/ will also take delight with (B)/ seeing historic photographs (C)/ of buildings which are long gone (D)/ but they have heard of or remember seeing. (E)

A. ABCD
B. ACDE
C. ABCE
D. ABDE
E. None of these

Q3- Could your MPs joined the protest (A)/ and submitted their resignations to the Speaker, (B)/ the Central government (C)/ would have given in to the (D)/ State's demand for SCS by now? (E)

A. ABCD
B. ACDE
C. ABCE
D. ABDE
E. None of these

Direction (Q4-Q5): The error, if any, will be in one part of the sentence. The number of that part is the answer.

Q4- Important Congress dissident source (A)/ said at one (B)/ stage that Raman Rao and Chandra Shekhar had even asked the (C)/ dissident group to suggest suitable names. (D)/ No Error (E)

A. A

B. B
C. C
D. D
E. E

Q5- Being that he (A)/ is interested in getting himself examined (B)/ by a head specialist (C)/ we must try our best to take him to a reputed doctor. (D)/ No Error (E)

A. A
B. B
C. C
D. D
E. E

Q6- Rearrange the following five sentences.

A. Time is not a continuous container of events. Rather it is like a train wreck on a child's play table.
B. The nature of this synthesis, the breaking and the joining, as an effective state seems to determine his position with the past and the present
C. Where the containers may be rejoined with little respect for chronology and set on their way again
D. Not to know modern history is to enter the exhibition at your own peril
E. What we see is episodes of fragments lifted out of their historic contexts and imbricated, embedded, or rendered in another time

A. ABCDE
B. DEACB
C. DAECB
D. DEABC
E. ABCED

Direction (Q7-Q8) Choose the correct combination that can most suitably complete the sentence without altering the meaning of the statement.

Q7- the Athenians on the whole, were peaceful and prosperous; they had____to sit at home and think about the universe and dispute with Socrates, or to travel abroad and _____the world.

A. Leisure, explore
B. Time, ignore
C. Ability, suffer
D. Temerity, understand
E. Courage, see

Q8- Physicians may soon have____to help paralyzed people move their limbs by bypassing the_____nerves that once controlled their muscles.

A. Instruments, detrimental
B. Ways, damaged
C. Reason, involuntary
D. Impediments, complex
E. Preventions, static

Q9: The comedian told one flat joke after another, and when the audience started booing, he___spat back at them, ”hey, you think this is easy-why don’t you buffoons give it shot?”

I. Miraculously
II. Pugnaciously
III. Antagonistically
IV. Ardently

Q10-_____by his parents to find a job, the 30-year-old loafer instead joined a gang of itinerant musicians.

I. Pestered
II. Mustered
III. Badgered
IV. Nurtured

A. I.-II.
B. II.-III.
C. I.-III.
D. I.- IV.
E. III.-IV.

ANSWER KEY

1 - D, 2 - B, 3 - E, 4 - A, 5 - A, 6 - B, 7 - A, 8 - B, 9 - B, 10 - C

SOLUTIONS

1. Ans. Option D

Explanation: the error lies in part (D) of the sentence. To make the sentence grammatically correct replace “nice” with “nicely”. Since the word required here is an adjective to describe the quality of “sense of discrimination”, therefore option (D) becomes the most suitable.

2. Ans. Option B

Explanation: the error lies in part (B) of the sentence. To make the sentence grammatically correct replace, “with” by “in” as the phrase “takes delight” always takes the preposition “in” to form a meaningful sentence. Since all the other parts of the sentence are grammatically correct, option (B) becomes the most suitable.

3. Ans. Option E

Explanation: The error lies in part (A) of the sentence. To make the sentence grammatically correct replace “could” with “had” as the correct grammatical syntax of the conditional clause “had…would” is “had+subject+V3” while in the main clause it is “Subject+would+have+V3”. Since all the other parts are grammatically correct, option (E) becomes the most suitable.

4. Ans. Option A

Explanation: ‘An’ is used before ‘important’ as ‘source’ is a single countable noun and “a/an” is used before a single countable noun.

5. Ans. Option A

Explanation: Instead of ‘being that’, ‘because/ since/As’ will be used.

6. Ans. Option B

Explanation: not to know modern history is to enter the exhibition at your own peril. What we see are episodes of fragments lifted out of their historic contexts and imbricated, embedded or rendered in another time. Time is not a continuous container of events. Rather it is like a train wreck on a child’s play table, where the containers may be rejoined with little respect for chronology and set on their way again. The nature of this synthesis, the breaking and the joining, as an affective state seems to determine his position with the past and the present.

7. Ans. Option A

8. Ans. Option B

9. Ans. Option B

Explanation: pugnaciously- eager to fight or argue, antagonistically is the synonym of the pugnaciously

Booing- showing disapproval of a speaker or performer

Here the sentence conveys the argumentative tone so the correct combination of words to be used in the blank II.-III.. Hence, option B is correct.

10. Ans. Option C

Explanation: badgered, Pestered- repeatedly and annoyingly ask(someone) to do something.

Mustered- assemble (troops), especially for inspection or in preparation for battle.

The correct combination of words to be used in the sentence is I.-III.. Hence option C is correct.

TOPICS COVERED		
QA	**DILR**	**VARC**
Coordinate Geometry	Inequalities	Idioms and Phrases
Set Theory	Mathematical Grid	Idioms and Phrases - PYQs
Sequence and Series	Picking up of Coins	Critical Reasoning

Directions: The questions are taken from the following topics: Coordinate Geometry, Set Theory, Sequence and Series, Inequalities, Mathematical Grid, Picking up of Coins, Idioms and Phrases, Idioms and Phrases - PYQs and Critical Reasoning

Quantitative Aptitude

Q1. Set A = {1, 4, 8, 9, 11, 13}, Set B = {p, q, r, s}. How many onto functions can be defined from Set A to Set B?

1. 20
2. 60
3. 120
4. None of the above

Q2. 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?

1. 120
2. 40
3. 123
4. 159

Q3. Region R is defined as 5x - 8y < 40. Given that a point P with coordinates (a, b) lies within the region R, what is the probability that a > 4?

A. ¼
B. 1/3
C. 1/5
D. 1/2

Q4. The area of the region satisfying the inequalities $2|x| - y \leq 2$, $y \geq 1$, and $y \leq 2$ is [TITA]

Q5. PQRS is a rhombus with the diagonals PR and QS intersecting at the origin on the x-y plane. The equation of the straight-line PS is $x + y = 2$. What is the equation of QR?

A. $x + y = -1$
B. $x - y = -2$
C. $x + y = -2$
D. None of these

Q6. The Sum of the first 20 terms of an AP is equal to the sum of the first 28 terms in the same AP. If all terms in the series are integers, which of the following can be its common difference?

A. 9
B. -9
C. 4
D. 3

Q7. If Sn = $n^3 - n^2 + n - 1$, where S_n denotes the sum of the first n terms of a series and T_x = 70, then x is equal to?

1. 4
2. 6
3. 1
4. 14

Q8. If (3n-1) + (3n - 3) + (3n - 5) + ... + (3n - 47) = 2880, then what is the value of 1+2+3+ ... +n? [TITA]

ANSWER KEY

1 - 3, 2 - 3, 3 - A, 4 - 3.5, 5 - C, 6 - C, 7 - 3, 8 - 1176

SOLUTIONS

1. **Ans: [3]**

Number of onto function from Set A to Set B:

There are 4 elements in set B, all these elements need to be mapped to some element in set A.

For a function to exist every element of the domain has a unique value.

p of Set B can be mapped to any of the 6 elements of Set A

q of Set B can be mapped to any of the other 5 elements in Set A and

r of Set B can be mapped to any of the other 4 elements in Set A

So, Number of onto functions from set A to set B = 6x 5x 4 = 120.

2. **Ans: [3]**

Using formula

$n(A \cup B) = n(A) + n(B) - n(A \cap B)$

Here, $n(A) = 74$; $n(B) = 67$; $n(A \cap B) = 18$

So, $n(A) = 74 + 67 - 18 = 123$.

3. Ans: [A]

$5x - 8y = 40$ is a straight-line intersecting x-axis at x= 8 and y-axis at y= -5.

So, $5x - 8y < 40$ is a region inside the right triangle with the sides 5, 8, square root (5^2+8^2) i.e. 5, 8 and square root (89)

Area of this triangle = 5x 8/2 = 20 sq unit.

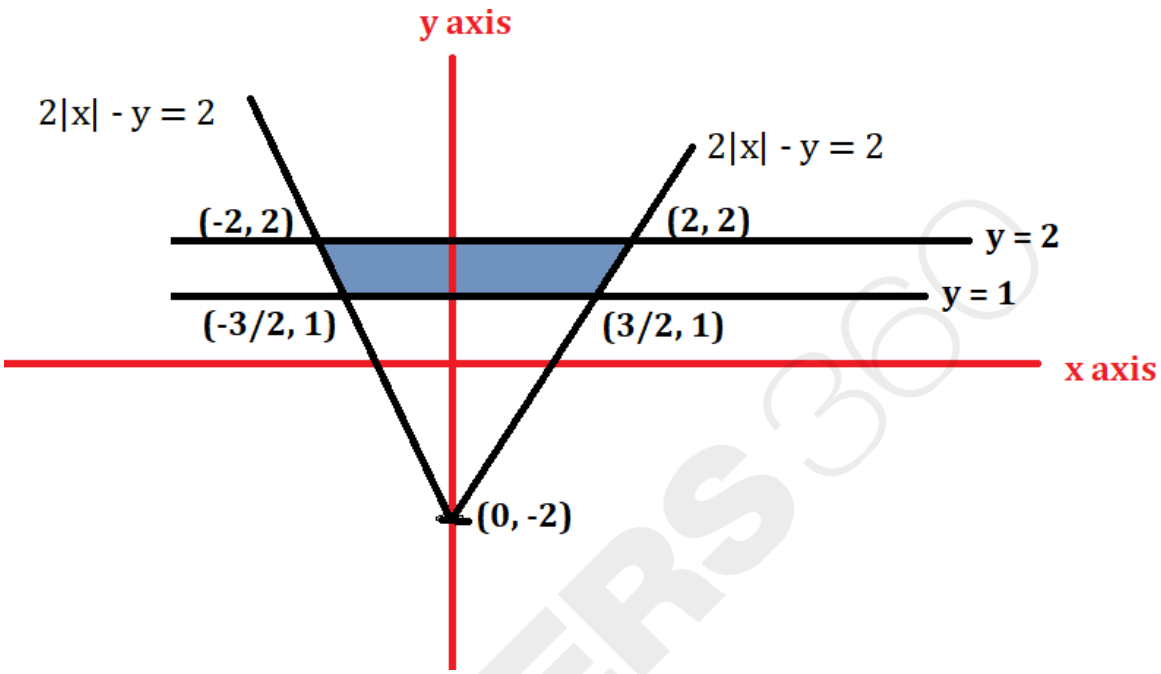
Line x = 4 and $5x - 8y = 40$ intersect at (4, -2.5) which is also a right triangle with a base and height are 4 and 2.5 respectively.

The area of this triangle will be 5 sq units.

Probability of point lying inside the region = 5/20 = 1/4

4. Ans:

Plot the graph as shown

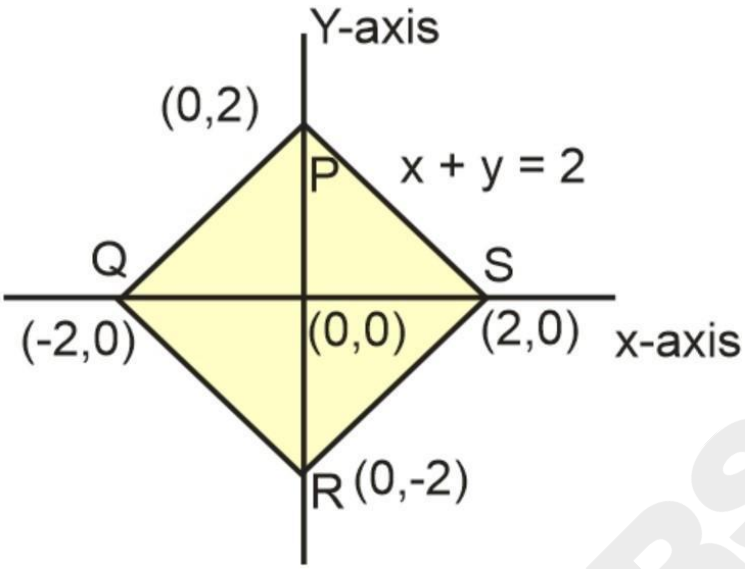


The shaded region is the required area (Trapezium of height 1 and parallel sides being 3 and 4)

Area = Area of Trapezium = ½ [3+ 4]x 1 = 3.5 sq unit.

5. Ans: [C]

Since PQRS is a rhombus and using the given information, the coordinates of vertices are as shown in figure



So, equation of QR

{y-0}/{x-(-2)}=(-2-0)/(0+2)

⇒2y = -2x -4

⇒ y + x = -2

6. Ans: [C]

S_{20} = 10[2a + 19d]

S_{28} = 14[2a + 27d]

⇒10[2a + 19d] = 14[2a + 27d]

⇒20a + 190d = 28a + 378d

⇒ -8a = 188d

⇒ -2a = 47d

⇒ a = - (47/2) d

Clearly, from options, we can observe that the correct can be 4 because all terms are integers.

hence option d is correct.

7. **Ans: [3]**

$S_x = x^3 - x^2 + x - 1$

$S_{x-1} = (x-1)^3 – (x-1)^2 + (x -1) – 1$

$T_x = Sx – S_{x-1} = x^3 - x^2 + x – 1 – [(x-1)^3 – (x-1)^2 + (x -1) – 1]$

$T_x = [x^3 - (x-1)^3]- [x^2 – (x-1)^2] + x - (x -1) – 1 +1$

$T_x = [(x – x +1) (x^2 + (x-1)^2+ x(x-1)]- [(x – x +1)(x +x +1)]+ x^2 - x$

$T_x = [x^2 + x^2 +1 – 2x+ x^{-2}-x]- [2x +1]+ x^2 – x$

$T_x = 3x^2 +1 – 3x- 2x -1+ x^2 – x$

$Tx = 4x^2 – 6x$

$\Rightarrow 4x^2 – 6x = 70$

On solving, $4x^2 – 6x – 70 = 0$

So, $4x^2 – 20x + 14x – 70 = 0$

$\Rightarrow 4x (x- 5) +14 (x – 5) = 0$

So, x = 5.

8. Let the number of terms in AP be x

therefore 3n-47 = (3n-1) + (x-1)(-2) as common difference is -2

form here we get value of x is 24 = Number of terms = 24

So, $S_{24} = 24/2 [2(3n – 1) + (24-1) (-2)] = 12 [6n- 2 – 46] = 2880$

n= 48

So, 1+2+3+ ... +48 = 48 x 49/2 = 1176

Online Free Practice Test Part B: LRDI

Passage: (Q1-Q3)

The top three rankers of the class, Pranav, Qureshi, and Raja, not necessarily in the same order, made the following statements about their ranks.

Pranav:

I am not the top ranker.
Qureshi is not the second ranker.
Raja is the third ranker.

Qureshi:

Pranav's first statement is false.
I am the third ranker.
I made two false statements.

Raja:

Pranav is the first rank.
Qureshi is not the second ranker.
I am the second rank.
It is known that each of Pranav and Raja made only one false statement. Qureshi made only one true statement.

Q1. Who is the first ranker?

A. Pranav
B. Qureshi
C. Raja
D. Cannot be determined

Q2. Which of the following represents the correct order of truth and false statements made by Raja?

A. True, False, True
B. True, True, False
C. False, True, True
D. Cannot be determined

Q3. Who is the third ranker?

A. Pranav
B. Qureshi
C. Raja
D. Cannot be determined

Passage: (Q4- Q7)

A logician is telling his wife about four pieces of jewellery he has just seen in an exhibition. “I have seen a watch, a ring, a necklace and a brooch. The heavier of the necklace and the brooch is the costliest, while the costlier of the watch and ring is the lightest. The cheaper of the ring and the brooch is the heaviest, while the heavier of the necklace and the ring is the cheapest. Also, if the brooch is costlier than the necklace, then it is lighter than the watch.” His intelligent wife immediately ranks them in terms of their cost and weight and says, “We cannot determine the ranks of two of the pieces in one of the comparisons.”

Q4. Which of the following pairs is the wife of the logician talking about?

A. Necklace and Brooch
B. Brooch and Watch
C. Watch and Ring
D. Ring and Necklace

Q5. The logician then gave his wife an additional statement which was sufficient to determine the complete rank list in both comparisons. Which one of the following statements did the logician give his wife?

A. If the Ring is lighter than the Necklace, then the Necklace is costlier than the Brooch.
B. If the Necklace is lighter than the Brooch, then the Brooch is costlier than the Watch.
C. If the Watch is cheaper than the Ring, then the Ring is heavier than the Watch.
D. If the Ring is not lighter than the Watch, then the Watch is costlier than the Brooch.

Q6. Which of the following is the costliest?

A. Necklace
B. Brooch
C. Watch
D. Either (A) or (B)

Q7. Which of the following is the lightest?

A. Ring
B. Watch
C. Necklace
D. Either (B) or (C)

Passage:

Six football teams – Maharashtra, Tamil Nadu, West Bengal, Delhi, Karnataka and Andhra Pradesh participated in a tournament. After the first two rounds, it is known that every team played with two different teams, one in each round and won one of the matches and lost the other.

Each team scored a different number of goals among – 2, 3, 4, 5, 6 and 7 in the first round of the tournament and each team scored a different number of goals among 1, 3, 4, 5, 6 and 8 in their second round of the tournament. We know the following information about their scores.

West Bengal scored nine goals in total, but it scored less number of goals in the match they won with respect than in the match they lost.
The number of goals scored by Tamilnadu in the first round is the same as that conceded by it in the second round.
The number of goals conceded by Karnataka is the same in both rounds and in both matches, the difference in goals between the winner and the loser is two.
The total number of goals scored in each of the two matches of Maharashtra is 10 but the total number of goals scored by Maharashtra is not 10.
Delhi is the only team that scored the same number of goals in both matches. But in total, it scored less number of goals than any of the other teams.

Q8. What is the maximum number of goals scored in any match?

A. 14
B. 11
C. 12
D. 13

Q9. Which team scored the least number of goals in a match?

A. Delhi
B. Karnataka
C. Andhra Pradesh
D. West Bengal

Q10. Which team scored the maximum number of goals in both matches together?

A. West Bengal
B. Tamil Nadu
C. Karnataka
D. Maharashtra

Q11. Against which team did Delhi win the match in the first two rounds?

A. West Bengal
B. Maharashtra
C. Tamil Nadu
D. Andhra Pradesh

ANSWER KEY

1 - B, 2 - C, 3 - A, 4 - B, 5 - D, 6 - A, 7 - B, 8 - D, 9 - C, 10 - B, 11 - D

SOLUTIONS

Solution:

It is given that Qureshi made only one true statement. It implies that he made two false statements.

⇒ Qureshi's third statement is true and the other two are false.

⇒ Pranav's first statement is true. (From Qureshi's first statement) i.e. Pranav is not the top ranker.

⇒ Raja's first statement is false and the other two are true.

⇒ Raja is the second ranker and Qureshi is not the second ranker. As Pranav is not the first ranker, Qureshi is the first ranker and Pranav is the third ranker.

⇒ Pranav's second statement is true and the third one is false.

1. Qureshi is the first ranker. **Choice (B)**

2. Raja's statements are in the order false, true and true. **Choice (C)**

3. Pranav is the third ranker. **Choice (A)**

Statement I: Costlier of the watch and ring is the lightest. Let us assume that the ring is the lightest.

Statement II: Heavier of the necklace and ring is the cheapest.

Statement III: Heavier of the necklace and brooch are the costliest.

Statement IV: Cheaper of the ring and brooch is the heaviest. If the ring is the lightest, it cannot be the heaviest. ⇒ Brooch is the heaviest [statement IV]

⇒ Brooch is the costliest [statement III].

⇒ Necklace is the cheapest [statement II]. But the brooch is the heaviest.

⇒ Brooch is heavier than the ring. ⇒ Brooch is cheaper than ring [statement IV]. "Brooch is the costliest"; and "Brooch is cheaper than ring" are contradicting each other. Hence, our assumption is wrong.

⇒ Ring is not the lightest.

⇒ Watch is the lightest.

Statement V: If a brooch is costlier than a necklace, then it is lighter than a watch. But we know that watch is the lightest.

⇒ Necklace is not lighter than a watch.

⇒ Brooch is not costlier than a necklace.

⇒ Necklace is costlier than brooch.

⇒ Necklace is the costliest [statement III].

⇒ Necklace is heavier than brooch.

⇒ Brooch is not the heaviest. ⇒ Ring is the heaviest [statement IV].

⇒ Ring is the cheapest [statement II].

RANK	COST	WEIGHT
1	NECKLACE	RING
2	BROOCH Or WATCH	NECKLACE
3	BROOCH Or WATCH	BROOCH
4	RING	WATCH

In the above table, 1st rank represents the costliest or the heaviest as the case may be.
Observation: We do not know the rank of the brooch and watch in terms of cost.

4. The logician's wife is talking about Brooch and Watch. **Choice (B)**

5. If we know the comparison between brooch and watch in terms of cost, we can determine the rank list in both comparisons. **Choice (D)**

6. The necklace is the costliest. **Choice (A)**

7. Watch is the lightest. **Choice (B)**

Solution:

From the given information. I round scores – 2, 3, 4, 5, 6, 7 II round scores – 1, 3, 4, 5, 6, 8.

From (5), if Delhi scored 4 goals in each round, then the team which scored one goal in II round can never score more goals than Delhi, which contradicts (5).

∴ Delhi scored 3 goals in each of the first two rounds.

From (4), the only possibility of getting 10 goals in a match is 6 and 4 in II round. Now, as the total number of goals of Maharashtra is not 10, in the first match the number of goals scored must be 7 and the number of goals conceded must be 3. [∵ 3 goals scored by Delhi is known to us]

∴ In the first round, Delhi and Maharashtra played and Maharashtra won.

∴ Delhi won in the second round. ∴ It must have conceded 1 goal in the second round.

∴ In the second round, as the total number of goals scored is 10 in the match that Maharashtra played, Maharashtra loses it by scoring 4 goals and conceding 6 goals.

From (3) and the above results, Maharashtra conceded 6 goals in the second round; Karnataka cannot concede 6 goals each in the first two rounds. If Karnataka conceded 5 goals each in the first two matches, then in the first match it scored either 5 + 2 or 5 – 2 goals i.e., either 7 or 3 goals, which is not possible as Maharashtra and Delhi scored 7 and 3 goals respectively in the first round matches. For the same reason as above, it cannot concede 3 goals each in the first two matches.

∴ Karnataka conceded 4 goals each in the first two matches.

∴ It scored one of (4 + 2) and (4 – 2) are the number of goals in the first round and in the second round. In the second round, no team scored 2 goals.

∴ Karnataka scored 2 goals in the first round and 6 goals in the second round.

From (1) and the above results, as West Bengal scored a total of 9 goals, It must have scored 4 and 5 goals in the first two matches [∵ It cannot score 6 and 3 goals as Delhi scored 3 goals in each. of the first two rounds]. In the second round Maharashtra scored 4 goals, and West Bengal scored 4 goals and 5 goals in the first and the second rounds respectively. As Karnataka conceded 4 goals in the first round, it played against West Bengal in the first round.

As West Bengal won in the first round, it should lose in the second round.

∴It should concede 8 goals in the second round.

From (2) and the above results, Tamilnadu cannot score 6 goals in the first round, if so it has to concede 6 goals in the second round, which is not possible as Maharashtra conceded 6 goals in the second round. ∴ Tamilnadu must have scored 5 goals in the first round and conceded 5 goals in the second round.

∴ It scored 8 goals in the second round. (West Bengal scored 5 goals and conceded 8 goals in the second round) ∴ Tamil Nadu has to lose in the first round. So, it must have conceded 6 goals in the second round.

∴ AP scored 6 goals and Tamilnadu conceded 6 goals in the first round and Andhra Pradesh scored 1 goal and conceded 3 goals in the second round.

∴ The final table for I round will be as follows:

(1) AP - Tamilnadu

6 5

(2) West Bengal – Karnataka

4 2

(3) Delhi – Maharashtra

3 7

II round

(1) AP - Delhi

1 3

(2) Karnataka - Maharashtra

6 4

(3) West Bengal - Tamil Nadu

5 8

8. The Maximum number of goals scored in any match is 5 + 8 = 13. **Choice (D)**

9. Andhra Pradesh scored the least number of goals (1) in the second-round match. **Choice (C)**

10. Tamilnadu scored 5 + 8 = 13 goals in the first two rounds, which is the maximum. **Choice (B)**

11. Against Andhra Pradesh, Delhi won the match in the first two rounds. **Choice (D)**

VARC

Direction (Q1-Q4): You must find the part that contains an error and then choose accordingly the sequence of correct parts (excluding the part that is grammatically and contextually incorrect). That sequence will be your answer.

Q1- I bade him (A)/ to submit all the important documents (B)/ before he left (C) / for the meeting (D)/ No error (E)

A. A
B. B
C. C
D. D
E. E

Q2- when we reached (A)/ the station we found (B)/ that there was (C)/ no place to stand. (D)/ no error(E)

A. A
B. B
C. C
D. D
E. E

Q3- All the pupils (A)/ stood up respectively (B)/ as soon as the (C)/ guru entered the room. (D)/ No error (E)

A. A
B. B
C. C
D. D
E. E

Q4- The youth (A)/ is the time (B)/ when the seeds of (C)/ wisdom are sown. (D)/ No error (E)

A. A
B. B
C. C
D. D
E. E

Direction (Q5-Q7): Replace the word/ phrase printed in bold in the sentence to make it grammatically correct.

Q5- the space- crunched city throws up several stories of struggle that schools have had to put up with to win playgrounds for their students.

A. Have had to put up
B. Had put up to
C. Have had to put up with
D. Had to put up to
E. No correction required

Q6- Emotions were high as both families were taken to the police station last night.

A. Emotions went higher
B. Emotions become high
C. Emotionally high
D. Emotions ran high
E. No correction required

Q7- Work at all the court complexes was paralysed as lawyers went on a day-long strike as a mark of protest.

A. For a one-day strike
B. For a strike
C. On a day's long strike
D. On a day-long striking
E. No correction required

Q8- Rearrange para jumbles

A. It was the height of the cold war.
B. On the morning of 26 September 1983, alarms went off at Serpukhov-15, the secret command centre of the Soviet Air Defence Forces.
C. Russia had just a few minutes to respond before the missiles—which are no doubt aimed at its own strike capabilities—destroyed the country's ability to retaliate.
D. Both the Soviet Union and the US were bristling with nuclear weapons and relations between the two global superpowers were at an all-time low.
E. Soviet satellites that comprised Russia's early warning system were reporting that five Minuteman intercontinental ballistic missiles (ICBMs) had just been launched from an American base and were headed for the Soviet Union.

ANSWER KEY

1 - B, 2 - D, 3 - B, 4 - A, 5 - D, 6 - D, 7 - E, 8 - A

SOLUTIONS

1. Ans. Option B

Explanation- bade takes ‘plain infinitive’(V1) after it and not ‘infinitive’ (to + infinitive). So, change ‘to submit’ into ‘submit’.

2. Ans- option D

Explanation- use ‘no room’ in place of ‘no place’. Room means ‘enough empty space for people or things to be fitted in’.

3. Ans- option B

Explanation- change respectively and respectfully

Respectively- in the order already mentioned

Respectfully- marked by respect

4. Ans- option A

Explanation- the given sentence talks about ‘youth’ (the stage of life) in a general way. Hence, ‘the’ cannot be used before ‘youth’. However, if we talk about the youth in a particular way, we will have to use ‘the’ For eg. The youth of India is very hardworking.

5. Ans. Option D

Explanation- ‘had to put up to’ fits the sentence appropriately as it makes the sentence structure grammatically correct.

6. Ans- option D

Explanation- ‘emotions run high’ fits the sentence appropriately and it is an idiom which means to be in a state of excitement or anger.

7. Ans- option E

Explanation-no correction required

8. Ans- option A

Explanation- introductory sentence can be sentence-B. sentence E follows sentence B. Russia's early warning is mentioned in sentence E and then sentence C seems to be an event after

sentence E. then statement A. and the conclusion is in statement D. both sentences A and D can be ending sentences but sentence D is more appropriate.

TOPICS COVERED		
QA	**DILR**	**VARC**
Statistics	Clocks	Verbal ability on Critical Reasoning
Complex Numbers	Calendars	PYQs on Critical Reasoning
Sequences	Data Sufficiency	Strategies for Critical Reasoning

Directions: The questions are taken from the following topics: Statistics, Complex Numbers, Sequences, Clocks, Calendars, Data Sufficiency, Verbal ability on Critical Reasoning, PYQs on Critical Reasoning and Strategies for Critical Reasoning

Quantitative Aptitude

Q1. If the mean and mode of distribution are 7 and 9 respectively, then the median is?

1. 7
2. 8.33
3. 7.66
4. None of the above

Q2. The quartile deviation of 2, 7, 11, 14, 12, 13, 9 is

1. 2
2. 13
3. 3
4. 6.5

Q3. The median of the first 16 prime numbers is

1. 17
2. 23
3. 19
4. 21

Q4. The geometric mean of $\sqrt{8}$, $\sqrt{27}$, 2,and $\sqrt{3}$ is

1. $\sqrt{6}$
2. 6
3. 36

4. 9

Q5. Express the following expression in the form of a + bi

$i^{13} + i^{23}$

Options:

1. 0
2. i
3. -i
4. -1

Q6. The least value for n, in the expression {(1 - i) / (1 + i)}n for which the expression has a positive integer value. where n is a real number [TITA]

Direction Q7- Q8:

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. BOTH 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.

Q7. Joshan lent one part of the amount of money at a 12% rate of simple interest and the remaining at an 18% rate of simple interest, both for one year. At what rate was the larger part lent?

I. The total amount lent was $3600.
II. The average rate of simple interest he received on the total amount was 16%.

Q8. 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?

I. Last month Andrew's total salary was 120% of his basic pay.
II. Last month Andrew donated his commission which was 25% more than that of the previous month.

ANSWER KEY

1 - 3, 2 - 3, 3 - 4, 4 - 1, 5 - 1, 6 - 2, 7 - B, 8 - A

SOLUTIONS

1. **Ans: [3]**

As we know

2 Mean + Mode = 3 Median

So, 2 x 7 + 9 = 3 x Median

Median = 23/3 = 7.66.

2. **Ans: [3]**

Write the data in ascending order

2, 7, 9, 11, 12, 13, 14

Q1= 7

Q2= 11

Q3= 13

Quartile deviation = (Q3 – Q1)/2 = (13- 7)/2 = 3.

3. **Ans: [4]**

Median of 1st 16 terms will be the average of the 8th and 9th terms.

So, 8th prime number = 19

And 9th prime number = 23

So median = (19+ 23)/2 = 21

4. **Ans: [1]**

GM = $[\sqrt{8} \times 27 \times 2 \times \sqrt{3}]^{1/4}$

GM = $[36]^{1/4}$

GM = $\sqrt{6}$

5. **Ans: [1]**

$i = -1; i^2 = -1; i^3 = -i; i^4 = 1$

$i_{13} = i_{12+1} = i$

$i^{23} = i^{20+3} = i^3 = -i$

So, $i^{13} + i^{23} = i - i = 0$.

6. $(1 - i) / (1 + i) = (1 - i)^2 / [(1 + i) (1 - i)]$

$= [1 + i^2 - 2i]/[1 - i^2]$

$= [-2i]/2 = -i$

So, $\{(1 - i) / (1 + i)\}n = (-i)^n$

For an expression to be a positive integer, the least value of n must be 2.

7. Ans: [B]

Statement 1:

It is not sufficient. No information is there.

Statement 2:

Let Rs x be lent at the rate of 12% per annum and Rs y at the rate of 18% per annum.

So, as per question

16% (x+ y) = 12% of x + 18% of y

⇒ 4% of x = 2% of y

⇒ x/y = ½

⇒ y> x

So, the larger part of rent at 18% per annum.

Statement 2 alone is sufficient to answer the question.

8. Ans: [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 sales = basic pay

Statement 1 alone is sufficient.

Statement 2:

As no information is given about the previous month's sales, the current month's sales cannot be calculated.

Statement 2 alone is not sufficient.

LRDI

Passage: (Q1-Q4)

Ten teams that were to take part in the Champions Challenge were divided into two pools – Pool A and Pool B. Each team in a pool was to play every other team in that pool. Two points are awarded for a win and zero points for a loss with there being no draws or ties. The top three teams in each pool would advance to the next stage called the super six stage and they would carry forward all points they scored in matches against the other two teams which advanced to the super six stages from its pool. In the super six stages, all teams that advance from pool A are to be in group 1 and all teams that advance from pool B are to be in group 2. Each team in group 1 plays against every team in group 2, with points awarded as in the pool stage. At the end of the super six stages the top two teams in each group, according to their total points (super six points + carry forward points) advance to the semi-finals with the top team in group 1 playing the second team from group 2 and vice versa. The winners of the semi-finals advance to the finals. If two or more teams end up with the same number of points at the end of the pool or the super six stage, the tie is resolved using tiebreak rules.

Q1. The total number of matches in the tournament are

A. 24
B. 18
C. 32
D. 64

Q2. The number of points scored by a team which advanced to the super six stages is at least

A. 2
B. 3
C. 5
D. 4

Q3. The total points (super six points + carry forward points) of a team that advanced to the semi-finals is at least

A. 2
B. 3
C. 5
D. 4

Q4. The maximum number of wins by a team that failed to advance to the semi-finals is

A. 2
B. 3
C. 5
D. 6

Passage: (Q5- Q8)

Geeta and Neeta are playing a game which involves picking up coins kept on a table. The players take turns alternately and each player in her turn has to pick at least two and at most five coins except when there is only one coin left on the table and the player has to pick that coin in her turn. Both players are equally intelligent and play to the best of their abilities to win the game.

Additional data for questions 5 and 6: Assume that the player who picks up the last coin loses the game.

Q5. During a game, when it was Geeta's turn to play, there were 32 coins left on the table. Which of the following can be the number of coins Geeta should pick up so as to win the game, no matter how Neeta plays?

A. 1
B. 2
C. 4
D. 5

Q6. During Neeta's turn if she removed four coins from the table which made sure that she won the game, then which of the following could have been the number of coins on the table before she removed the four coins?

A. 45
B. 52
C. 76
D. None of these

Q7. During a game when it was Neeta's turn to play, there were 28 coins left on the table. Which of the following is the number of coins she should pick up so as to ensure her win?

A. 1
B. 2
C. 4
D. Neeta cannot win

Q8. If during her turn Neeta had to remove two coins so as to ensure her win, then which of the following could have been the number of coins on the table before she removed the coins?

A. 25
B. 30
C. 50
D. More than one of the above

ANSWER KEY

1 - C, 2 - A, 3 - A, 4 - D, 5 - B, 6 - C, 7 - D, 8 - D

SOLUTIONS

Solution:

In the pool stage, as each team plays every other team once, the total matches in each pool is 10. In the super six stages, the total number of matches is 9. ∴ The total matches = 20 + 9 + 2 + 1 = 32. In the pool stage, the total number of points available in each pool is 10 × 2 = 20. As there are five teams, each team can end with four points and two of the teams can be eliminated (or) One team can win all matches and get 8 points, another team 6 points and the three other teams 2 points each and one of them can advance to the super six.

Ans 1: The total number of matches in the tournament is 32. **Choice (C)**

Ans 2: The number of points scored by a team which advanced to the super six stages is at least 2. **Choice (A)**

Ans 3: Among the top three teams advancing to the super six stages from each group either all of them would carry forward 2 points each (or) one team would carry forward 4 points, the second team 2 points and the third team zero points. Even if all three teams lose all their super six matches, two teams would advance from this group and so a team with a total of 2 points can advance to the semi-finals. **Choice (A)**

Ans 4: Three teams can end up with 6 points each at the end of the pool stage, i.e., three wins each. Now, these teams can win all their matches in the super six stages, but one of these teams would be eliminated. ∴a team with 3(in the pool stage) + 3(in the super six stage) wins can be eliminated. **Choice (D)**

5. Ans: [B]

To ensure her win Geeta has to make sure that there are one or two coins left when it is Neeta's turn to play. In each round, Geeta can make sure that seven coins (2 + 5) leave the table.

∴ The number of coins left on the table before Neeta's turn must be of the form 7n + 1 or 7n + 2 where n is an integer. As there are 32 coins left on the table, she must remove two or three coins, so that the coins left over are of the form 7n + 1 or 7n + 2

6. Ans: [C]

The number of coins left after Neeta's turn must be of the form 7n + 1 or 7n + 2. As she removed four coins, the number of coins would here be of the form 7n + 5 or 7n + 6. Only choice (C) satisfies this condition. Choice (C)

Additional data for questions 7 and 8: Assume that the player who picks up the last coin wins the game.

7. Ans: [D]

When the person who picks up the last coin wins the game, one has to make sure that when it is the other person's turn to play there are six or seven coins left on the table so that whatever the other person plays, one can pick the last coin in his/her turn.

$\therefore$ The number of coins left on the table before Geeta's turn has to be of the form 7n or 7n – 1. As there as 28 coins left on the table, which is of the form 7n, whatever Neeta plays, the number of coins left will not be of the form '7n or 7n – 1' before Geeta's turn ie Neeta cannot win no matter what she does.

8. Ans: [D]

As Neeta removed 2 coins, the number of coins was of the form 7n + 2 or 7n + 1. Choices (B) and (C) satisfy this. Choice (D)

VARC

Q1. Statement: Should religion be included in the curriculum of graduation courses?

Arguments:

I. No, we live in a secular state
II. Yes, teaching religion helps in developing moral values among students.
III. No, how can one dream of such a step when we want our young generation to fulfil their roles in this century?

A. All are strong
B. None is strong
C. Only I is strong
D. Only II is strong
E. Only I and III are strong

Q2. Statement: The government decided to include the income generated out of agricultural activities in Tax. Should it have happened?

Arguments:

I. No, Natural calamities are making Farmers suffer a lot.
II. Yes, around 70% of the population is earning from agriculture and hence their income should be taxed.
III. Yes, many farmers are earning much more than most services men and they should be taxed to remove unfairness.

A. All are strong
B. None is strong
C. Only I is strong
D. Only II is strong
E. Only II and III are strong

Q3. Statement: I cannot connect you on zoom meeting at the Himalayas.

Assumptions:

I. Internet facility is not available there.
II. Nowadays, it is difficult to connect to the internet.

A. Only I is implicit
B. Only II is implicit
C. Either I or II is implicit
D. Neither I nor II is implicit
E. Both implicit

Q4. Statement: 'Triple your money in 6 months'- An advertisement in a newspaper.

Assumptions:

I. Advertisement is not genuine.
II. Everyone wants to multiply their money.

A. Only I is implicit
B. Only II is implicit
C. Either I or II is implicit
D. Neither I nor II is implicit
E. Both implicit

Q5. Statement: Until economic equality is achieved, the political freedom and democracy of any country are meaningless.

Conclusions:

I. Political freedom and democracy pass from generation to generation.
II. Economic equality brings real democracy.

A. Only I is followed
B. Only II is followed
C. Either I or II is followed
D. Neither I nor II is followed
E. Both followed

Q6. Statement: Nowadays, parents are prepared to pay any cost for good education for their children.

Conclusions:

I. All parents are very rich.
II. Parents are passionate about the development of their children through good education.

A. Only I is followed
B. Only II is followed
C. Either I or II is followed
D. Neither I nor II is followed
E. Both followed

Q7. Write the correct phrase in place of underlined phrase.
Whoever is chosen as the new chief, it is likely to take all the decisions for upcoming assembly elections.

A. Who is chosen as the new chief, she is
B. Whomever is chosen as the new chief, he is
C. Whoever is chosen as the new chief is
D. No correction required

Q8. Write the correct phrase in place of underlined phrase.
Indian Cricket star Virat Kohli has credited his former coach for having a positive effect on his game.

A. to have had a positive effect on his game.
B. with having had a positive effect on his game.
C. as having a dramatic effect on his game.
D. for having had a positive impact on his game.

ANSWER KEY

1 - D, 2 - E, 3 - A, 4 - B, 5 - B, 6 - B, 7 - C, 8 - B

SOLUTIONS

1. Ans: [D]

Argument I: Being a secular state does not mean that religion or religious values should be eradicated. Weak argument.

Argument II: Yes, it helps to develop moral values. So, it is a strong argument.

Argument III: does not relate to religion. Weak argument.

2. Ans: [E]

Argument I: If due to natural calamity, they earn less than they will not come under taxpayers as per Income tax act. This is a weak argument.

Argument II: Yes, if more people pay taxes, the economy of our country will be strong. Strong argument.

Argument III: If they are earning more, they should pay taxes. Strong argument.

3. Ans: [A]

Clearly, the assumption I is implicit. If there is no internet facility then it is impossible to connect for online meetings. So, I is implicit.

Connecting to the internet is difficult but not impossible. So, II is not implicit.

4. Ans: [B]

Trueness of a statement cannot be judged. So, I is not implicit.

Advertisement is given after assuming that everyone wants to grow their money. So, II is implicit.

5. Ans: [B]

I. There is no relation between political freedom and economical equality is given. So, will not follow.
II. Directly follows from the statement.

6. Ans: [B]

I. Irrelevant. Not follows.
II. Directly follows from the statement.

7. Ans: [C]

Use of ‘who’ is incorrect.
‘Whomever’ is the wrong word in this context.
It is correct.

8. Ans: [B]

Credit for- used to ascribe an achievement to someone.

Credit with- To give/get credit for something.

Credit to- normally used in the context of payment.

So, option B seems correct.

THANK YOU

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