

CAREERS 360
PREPARATION Series

CAT 2025

**Mastering DILR
Questions and
Expert Solutions**

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A Note for the **STUDENTS**

Dear CAT Aspirant,

Congratulations on taking the first step towards your dream of pursuing a career in management! The CAT and other top management exams are a gateway to some of India's most prestigious B-schools, and one of the crucial sections in this challenging test is Data Interpretation and Logical Reasoning (DILR). In this note, I will highlight the importance of the DILR section in CAT and other management entrance exams and provide you with essential tips to tackle its various question types effectively.

The Significance of DILR in CAT and Other Management Entrance Exams:

- 1. Scoring Potential:** DILR carries a significant weightage in the CAT exam and is equally vital in other management entrance exams such as XAT, SNAP, NMAT, IIFT, TISSNET, and CMAT. Scoring well in DILR can significantly boost your overall percentile.
- 2. Real-world Skills:** DILR is not just about academic knowledge; it tests your ability to analyse data, make informed decisions, and solve complex problems—skills that are highly valued in the business world. These skills are universally important across all management exams.
- 3. Balancing Act:** Excelling in DILR can offset any weaker sections in Quantitative Aptitude and Verbal Ability, improving your chances of securing a seat in a top B-school in CAT and excelling in other management exams.

How to Tackle Different Types of DILR Questions:

1. Bar Graphs and Line Charts:

- Start by understanding the data provided in the graphs.
- Look for trends, outliers, and patterns.
- Practise mental calculations to make quick comparisons.
- Remember, practice is key. Solve a variety of graphs to improve your speed.

2. Tables and Caselets:

- Break down the information into smaller parts.
- Identify the relationships and dependencies among data points.
- Create a clear structure for your answers.
- Focus on accuracy, as errors can lead to wrong conclusions.

3. Logical Reasoning:

- Read the statements carefully and make a mental map of the information.
- Use the process of elimination to solve puzzles and reach logical conclusions.
- Practise solving puzzles from various sources to sharpen your logical thinking.

4. Data Sufficiency:

- Understand the question thoroughly.
- Evaluate each statement independently.
- Combine the statements if necessary to arrive at a definitive answer.
- Brush up on your quantitative skills as they are often required.

5. Practice, Practice, Practice:

- Solve previous years' CAT and other management exam papers and mock tests regularly.
- Time yourself to improve your speed and accuracy.
- Review your mistakes to learn from them.

Final Words of Wisdom:

DILR may seem challenging, but remember that consistent practice and a clear strategy can help you conquer it. Stay calm during the exam, manage your time wisely, and don't get stuck on any one question. If a problem seems too tough initially, move on to the next and return later if time permits.

Believe in yourself, stay focused, and never give up. With dedication and smart preparation, you can master the DILR section and increase your chances of achieving that coveted 100 percentile in CAT and excel in other management entrance exams as well.

Wishing you the best of luck on your journey to success in management entrance exams!

**Warm regards,
Team Careers360**

ABOUT

Are you ready to embark on a thrilling journey towards mastering Data Interpretation and Logical Reasoning (DILR)? Look no further! Our new eBook, “Mastering DLLR Questions and Expert Solutions,” is here to guide you through 100 thoughtfully curated questions, designed to challenge and elevate your skills. Let’s dive into what makes this eBook your ultimate companion for achieving top marks in CAT and other management exams.

Why “Mastering DLLR Questions and Expert Solutions” is Your Must-Have Resource:

- 1. A Comprehensive DILR Experience:** Our eBook covers a wide spectrum of DILR topics, ensuring you’re well-prepared for any question that might appear in CAT or other management exams.
- 2. 20 Sets, 100 Questions:** With 20 sets of questions, each set containing 5 questions, you have an abundance of practice opportunities. These sets are strategically categorised into Data Interpretation and Logical Reasoning, mirroring the exam format.
- 3. CAT-Level Difficulty:** Our questions match the difficulty level of CAT and other top management exams in India. By tackling these challenges head-on, you’ll be more than prepared for the actual exam.
- 4. Detailed Expert Solutions:** We don’t just leave you with questions! Every query is followed by a detailed, step-by-step solution crafted by expert teachers, ensuring you grasp the concept thoroughly.
- 5. Answer Key:** Check your responses against the answer key provided for each set to gauge your performance instantly.

Unlock the Secrets to Solving DILR Questions with Soul:

- 1. Embrace the Challenge:** Approach each question as an opportunity to grow. Every challenge you overcome brings you closer to your goal.
- 2. Learn, Don’t Memorise:** DILR questions test your ability to think critically, not your ability to memorise formulas. Understand the underlying principles to tackle any variation of a question.
- 3. Time Management:** Practice is essential, but time management is equally crucial. Develop strategies to solve questions efficiently within the given time frame.
- 4. Step-by-Step Approach:** Break down complex problems into manageable steps. Our expert solutions demonstrate how to approach questions systematically.
- 5. Mistakes are Stepping Stones:** Don’t fear mistakes; embrace them as valuable learning opportunities. Review your errors to avoid repeating them.
- 6. Consistent Practice:** Regular practice is the key to success. Dedicate time daily to hone your DILR skills.
- 7. Stay Positive:** Maintain a positive mindset. Believe in your ability to conquer DILR, and you will.

QUESTIONS

Directions for questions from 1 to 5 :

In the 1970s, Paramount Bakers was a newly established, small bakery at Durgapur owned by Mr Sk. Anisuddin Kamal, who even though was barely literate, really knew how to bake, and quickly gained fame for baking the softest and fluffiest fruit-cakes of one pound weight. It's only retail outlet was adjacent to his bakery at Benachity Bazaar. Both the bakery and the outlet were open on all days of the week except Sunday.

The very neat and clean retail outlet had three showcases (A, B and C), and a large vat (V). Every evening, after baking got completed, Mr Kamal first transferred all the cakes in showcase C to the vat V. Secondly, he transferred all the cakes in showcase B to the then empty showcase C and thirdly, all the cakes in showcase A to the then empty showcase B. He then filled the showcase A with freshly baked cakes of the day. After that Mr Kamal took the inventory of the cakes in each showcase separately and the vat, and jotted them down in his small notebook. Then he used to open the shutter of his outlet and start the sales.

The cost of baking each pound of fruit-cake was thirty rupees, and Mr Kamal priced them at fifty rupees a pound. If a customer chose a cake from showcase A, there was no discount provided. However if a customer chose a cake from showcase B or showcase C, a discount of 10% and 20% respectively was provided. The cakes in the vat V were not for sale. Every Sunday Mr Kamal used to distribute free of cost all the cakes (till Saturday end) of the vat V amongst the residents of the only orphanage in Durgapur, where he himself grew up till his teens.

The following table shows the inventory of the pound fruit-cakes in showcase A, B, C and vat V from the first Monday of December 1970 to the next Monday (Sunday was closed as usual), as taken from the small notebook of Mr Kamal :

Paramount Bakers	Inventory			
	Showcase A	Showcase B	Showcase C	Vat V
Monday	190	30	36	17
Tuesday	285	43	9	45
Wednesday	310	45	28	53
Thursday	327	37	25	68
Friday	270	46	16	87
Saturday	210	17	23	96
Monday	203	19	13	13

Q 1)

What was the total units of one pound fruit-cake baked and sold by Mr Sk. Anisuddin Kamal from the first Monday of December 1970 to the next Saturday at the Benachity Bazaar outlet of Paramount Bakers ?

- A) 1534
- B) 1430
- C) 1340
- D) 1289

Q 2)

What was the total units of one pound fruit-cake baked and sold by Mr Sk. Anisuddin Kamal from the first Tuesday of December 1970 to the next Saturday from showcase B at the Benachity Bazaar outlet of Paramount Bakers ?

- A) 45
- B) 83
- C) 104
- D) 1385

Q 3)

What was the total profit (in rupees) made by Mr Sk. Anisuddin Kamal by baking and selling the one pound fruit-cakes from the first Monday of December 1970 to the next Saturday at the Benachity Bazaar outlet of Paramount Bakers ?

- A) 24680
- B) 25840
- C) 27970
- D) 29490

Q 4)

On how many days from the first Monday of December 1970 to the next Saturday, did Mr Sk. Anisuddin Kamal sell more than 285 units of one pound fruit-cakes at the Benachity Bazaar outlet of Paramount Bakers ?

Q 5)

If on Tuesday Mr Kamal had to give a special discount of five percent to fifty percent of the customers who purchased the one pound fruit-cake from showcase A, what was the profit percentage (rounded to the nearest integer) made by Mr Sk. Anisuddin Kamal by baking and selling the one pound fruit-cakes on Tuesday at the Benachity Bazaar outlet of Paramount Bakers, assuming that one customer purchased only one unit of the one pound fruit cake from showcase A ?

- A) 39%
- B) 41%
- C) 43%
- D) 45%

Directions for questions from 6 to 10 :

Table A shows the number of Grand Slams won in the Mixed-Doubles category by the men's five top-seeded tennis players from 1991 to 1995. Table B shows their Mixed-Doubles partner

in each of these wins. The data of their partners within the women's top four seeds are given separately, while the rest are clubbed together.

<i>Table A</i>	Number of Mixed-Doubles Grand Slam wins				
Male Players	1991	1992	1993	1994	1995
Connors	2	0	4	2	2
Borg	2	4	0	0	2
McEnroe	0	0	2	2	0
Edberg	0	2	2	0	2
Agassi	2	0	2	0	2

<i>Table B</i>	Number of Mixed-Doubles Grand Slam wins				
Female Players	1991	1992	1993	1994	1995
Graf	4	0	2	0	2
Navratilova	2	2	0	2	0
Sabatini	0	2	2	2	0
Chris Evert	0	2	0	0	2
Others	0	0	6	0	4

It was also known that :

- Agassi and Graf never played together due to their reasons.
- Sabatini did not have the opportunity to play with Borg in those five years.
- McEnroe being a left-hander, only teamed up with the left-handed Navratilova among the top four women seeded players.
- Connors had paired up with only two women players in all the five years.
- Borg teamed up with women players only within the top four seed.

Q 6)

In 1993, the four Mixed-doubles Grand-Slam wins of Connors were with

- Graf and Sabatini
- Graf and Others
- Sabatini and Others
- Navratilova only

Q 7)

Chris Evert's four wins in the five years had been with ?

- A) Borg and Agassi
- B) Borg only
- C) Borg and Connors
- D) Borg and Edberg

Q 8)

Edberg's wins had been with ?

- A) Graf and Navratilova
- B) Navratilova and Sabatini
- C) Sabatini and Others
- D) Graf & Chris Evert

Q 9)

Both the wins of McEnroe in 1993 had been with ?

- A) Graf and Sabatini
- B) Sabatini and Others
- C) Graf and Others
- D) Others only

Q 10)

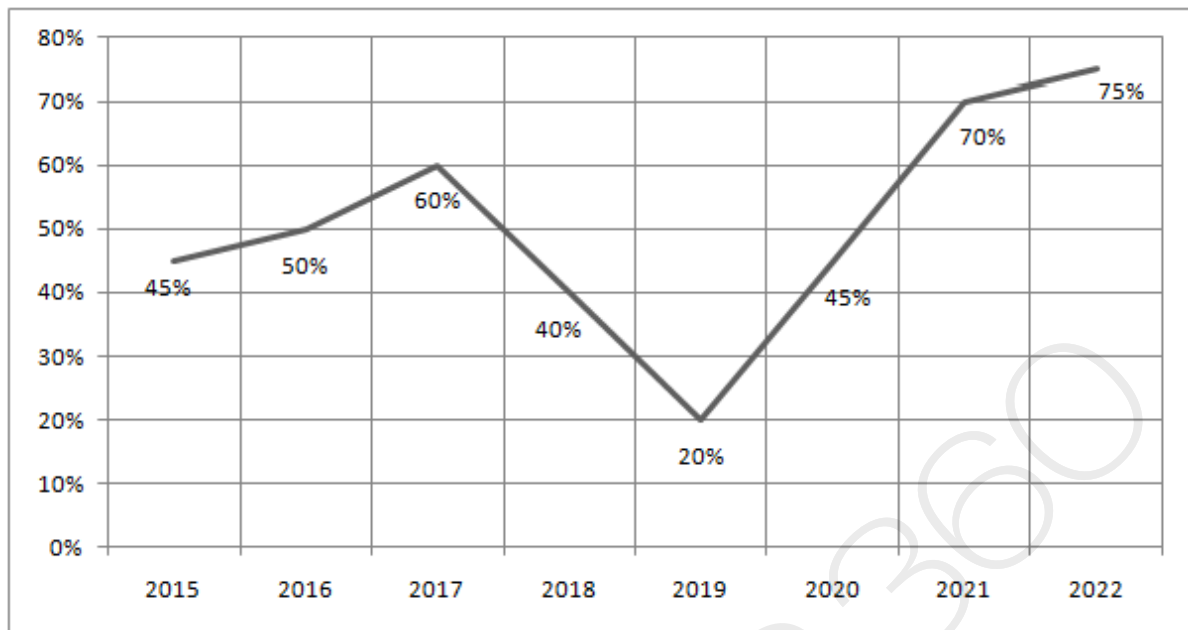
Which pair had won the maximum Mixed-Doubles Grand Slams in the five years (1991 to 1995) taken together ?

- A) Borg and Chris Evert
- B) Connors and Sabatini
- C) Agassi and Others
- D) Connors and Graf

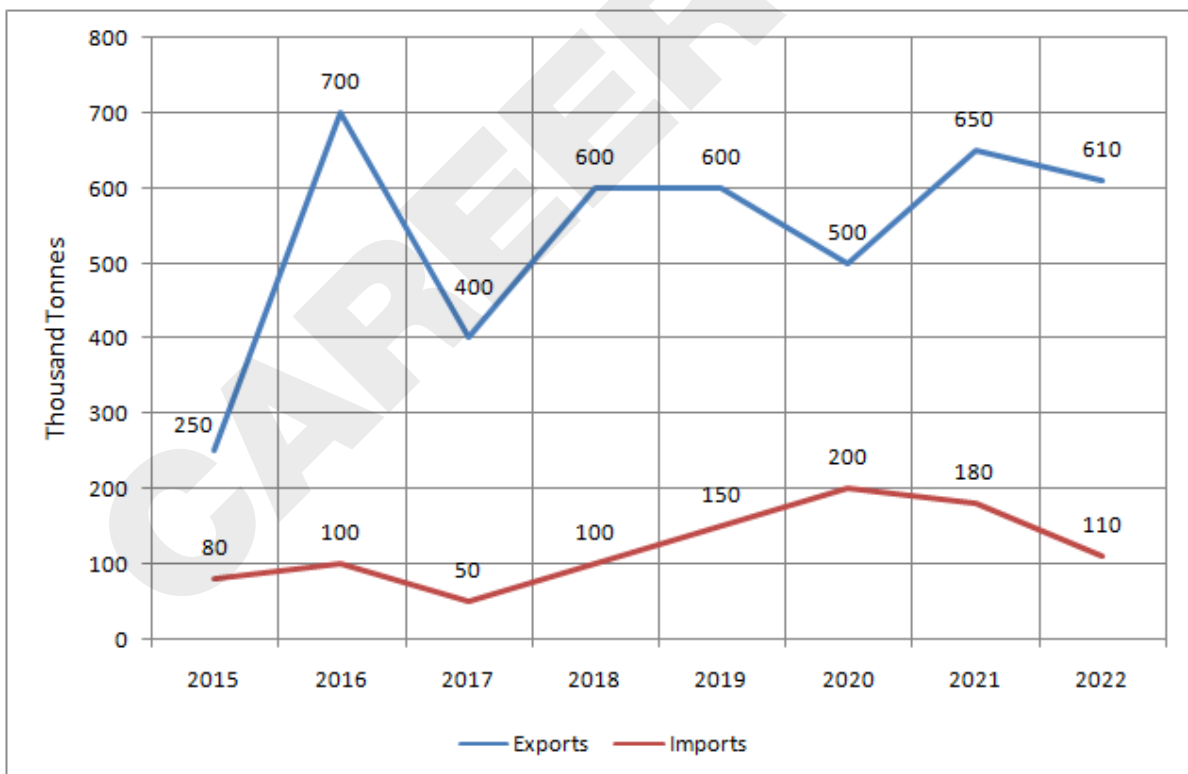
Directions for questions from 11 to 15 :

The following three line graphs show the various statistics of the production, exports, and import from other steel plants (to meet the deficit of a production order) of extra hardened steel ingots at the Durgapur Steel Plant, located at Durgapur, West Bengal, from 2015 to 2022.

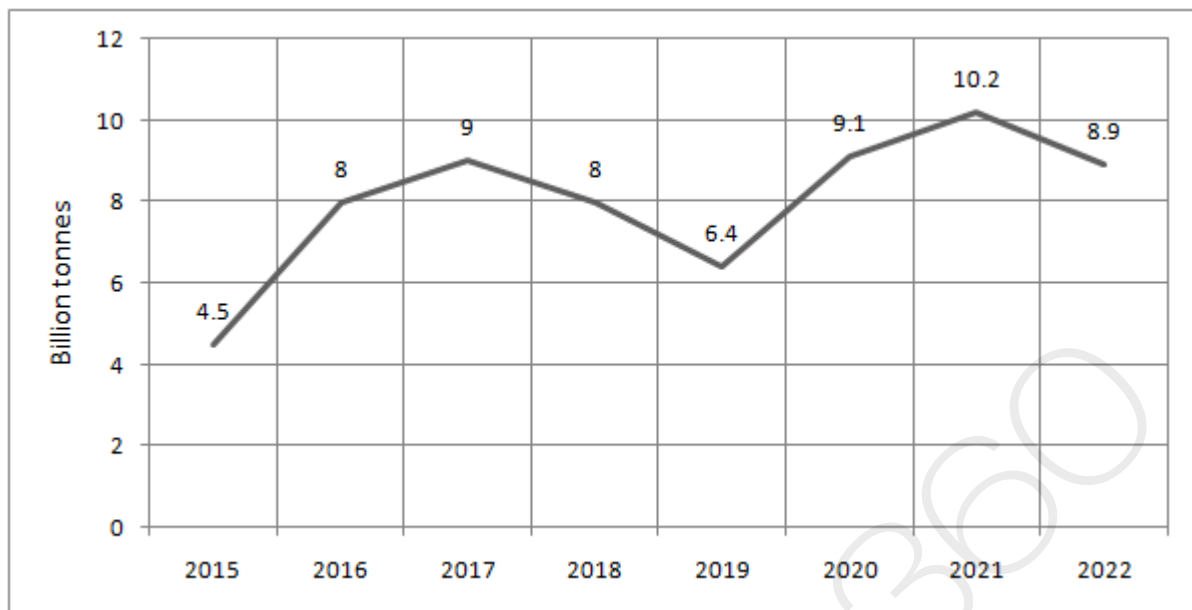
Graph A : Percentage utilization of the capacity of extra hardened steel ingot production at Durgapur Steel Plant



Graph B : Extra hardened steel ingot exports and imports at Durgapur Steel Plant (in thousand tonnes)



Graph C : Extra hardened steel ingot production at Durgapur Steel Plant (in billion tonnes)



Q 11)

What was the total capacity of extra hardened steel ingot production at Durgapur Steel Plant in 2020 (in billion tonnes) ?

Q 12)

In which year was the total capacity of extra hardened steel ingot production at Durgapur Steel Plant the highest ?

Q 13)

Which of the following statements is/are true :

I) A decrease in the utilization of the capacity of extra hardened steel ingot production at Durgapur Steel Plant was accompanied by a proportionate decrease in the production of extra hardened steel ingot between 2017 to 2019

II) The total capacity of extra hardened steel ingot production at Durgapur Steel Plant increased within 2017 to 2019

III) Production of extra hardened steel ingot at Durgapur Steel Plant was highest when the utilization of the capacity of extra hardened steel ingot production at Durgapur Steel Plant was the highest

A) I, II and III

B) I and II

C) Only II

D) II and III

Q 14)

Within 2015 to 2022, how many times was an increase in the imports accompanied by a decrease in the exports of extra hardened steel ingots at Durgapur Steel Plant ?

A) 4

B) 3

- C) 2
D) 1

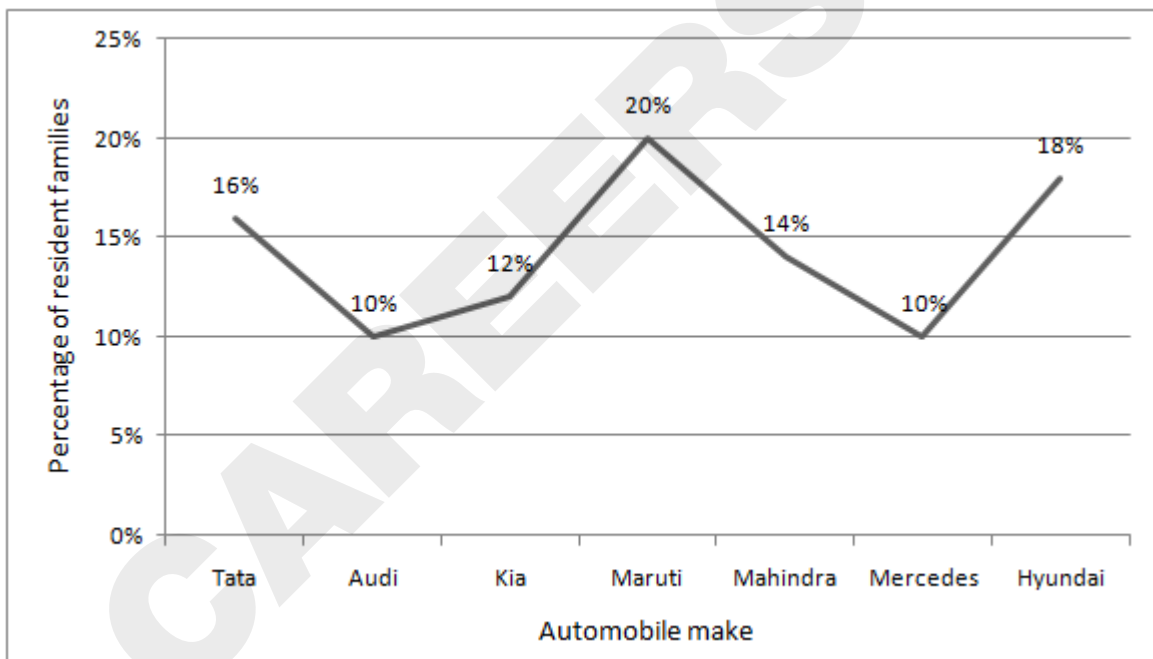
Q 15)

The average annual percentage increase of the total capacity of extra hardened steel ingot production at Durgapur Steel Plant from 2015 to 2022 was _____ ?

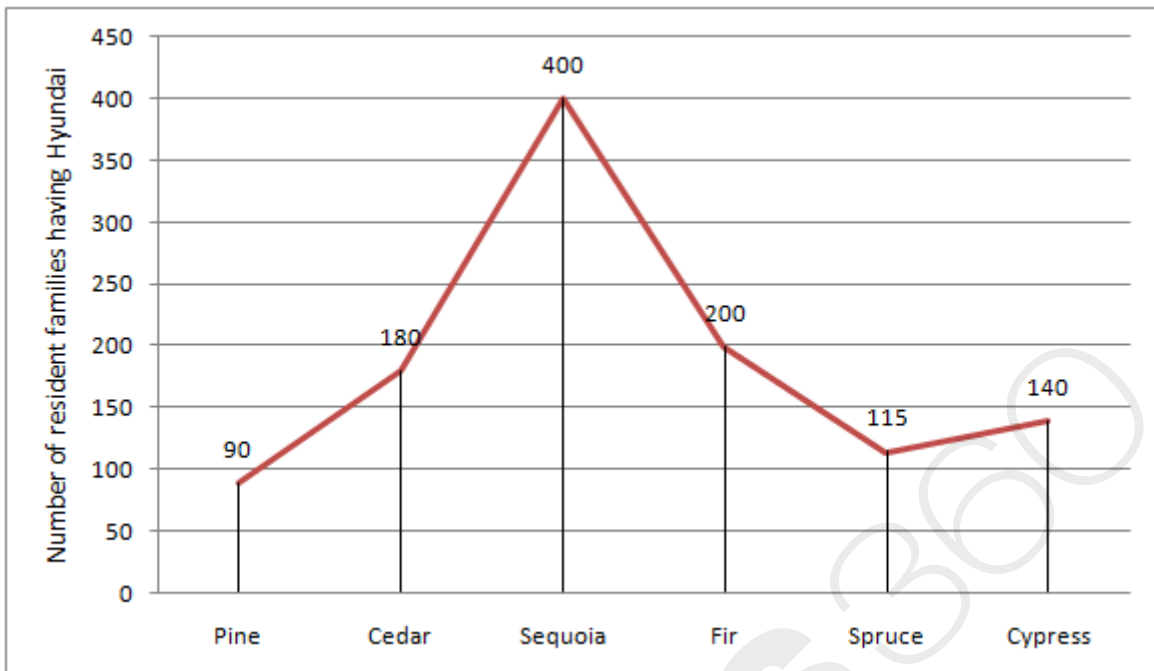
- A) 4.2%
B) 3.7%
C) 3.2%
D) 2.7%

Directions for questions from 16 to 20:

In the South-City Condominium of South Kolkata, one of the most elite addresses of the city, a survey was being made of the makers of automobiles being used by the residents. The result of the percentage of resident families using a particular make of automobile is given in the form of the below line graph :



There are six thirty-five storey towers in the residential complex with the names of Pine, Cedar, Sequoia, Fir, Spruce and Cypress. The distribution of Hyundai automobiles among the resident families of the different towers are provided by the line-graph below :



Each resident family has only one automobile.

Q 16)

How many resident families possess a Mahindra ?

Q 17)

If the proportion of Hyundai owning resident families who are from tower Pine is the same as the proportion of Maruti owning resident families from tower Pine, then how many Maruti owning resident families are from tower Pine ?

- A) 90
- B) 100
- C) 110
- D) 120

Q 18)

12% of all resident families are from tower Fir. What is the largest possible percentage of resident families owning a Kia that can be from tower Fir, rounded to the nearest integer ?

- A) 69%
- B) 71%
- C) 73%
- D) 75%

Q 19)

If the proportion of Tata owning resident families who are from tower Cedar is 0.5 times the proportion of Hyundai owning resident families and two-third the Kia owning resident families who are from tower Cedar, then how many Kia owning resident families are from tower Cedar?

- A) 120
- B) 110

- C) 100
D) 90

Q 20)

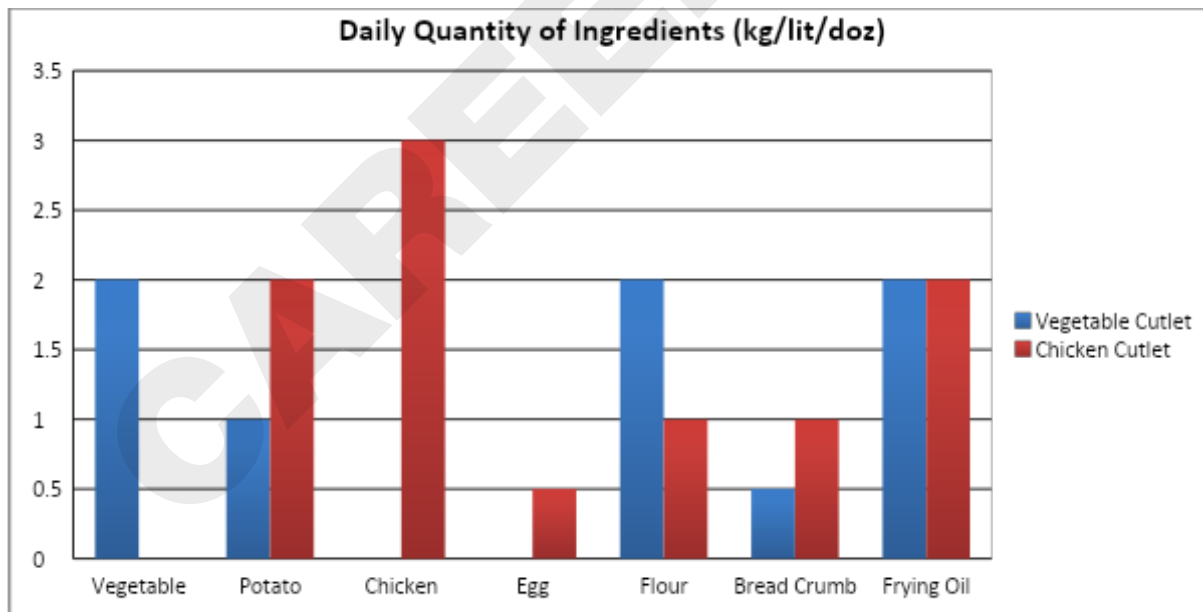
If the number of resident families in tower Sequoia is one-fifth of the total resident families of South-City Condominium and the number of resident families owning a Mercedes in tower Sequoia of the South-City Condominium is one-fifth of the number of Hyundai owning families from tower Spruce and tower Cypress together, then how many resident families in tower Sequoia own an automobile other than a Hyundai or a Mercedes ?

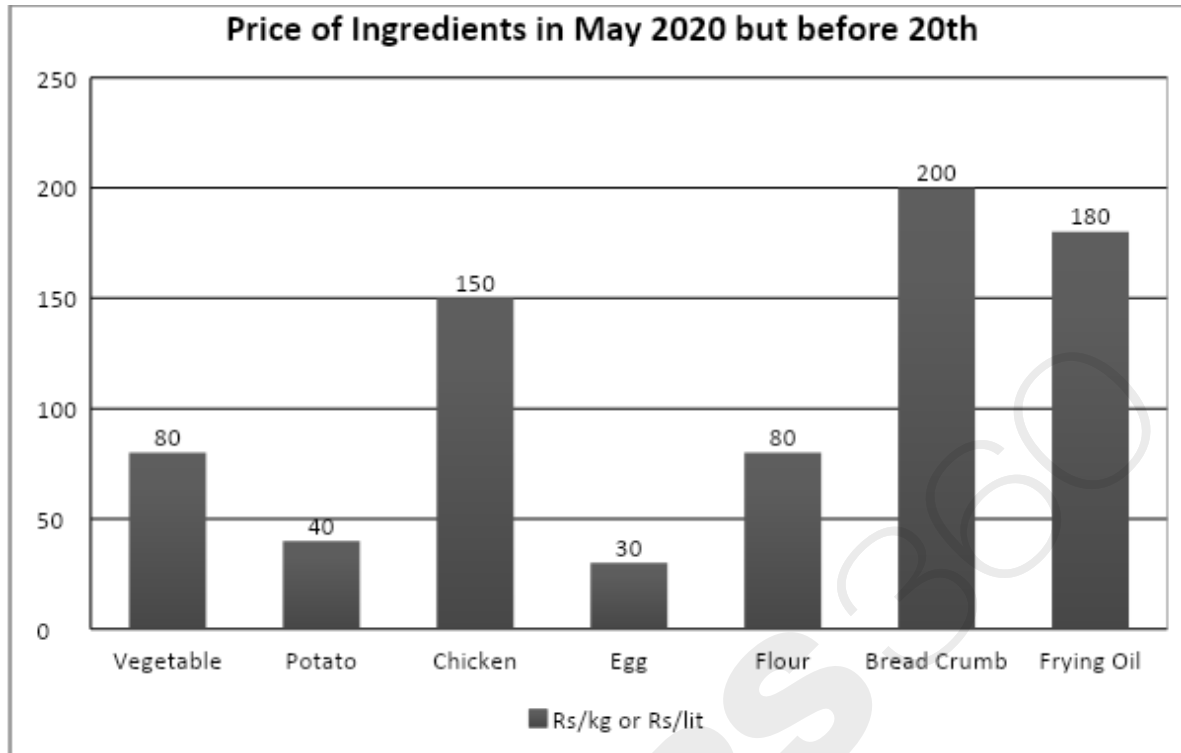
- A) 740
B) 864
C) 944
D) 1024

Directions for questions from 21 to 26 :

A snack bar owner is in the business of making and selling Vegetable Cutlets and Chicken Cutlets on the outskirts of Kolkata. His selling price per unit of Vegetable Cutlet and Chicken Cutlet is Rs 25.00 and Rs 45.00 respectively. Daily he makes and sells 50 units of each.

He purchases daily all the ingredients required for the next day. He disposes off the remaining amount of Frying Oil for the day after the frying is complete. The daily normal quantity required and normal expense as in May 2020 of ingredients used to manufacture both the items are as given below in the graphs :





However, on the 20th May 2020 there was a super-cyclone leading to a lot of destruction, due to which the cost of raw materials had a major fluctuation. The price of Vegetables shot up by 100%, Potatoes by 50%, Chicken by 150%, Flour by 30% and Bread Crumbs were out of supply. He however had a huge and sufficient stock for a month of Frying Oil and Eggs which he had purchased on 17th May. In spite of the obvious increase in the cost of making the items, due to public request, he could not increase the selling price of the two items. Nor could he reduce the size or weight of each item unit. He also had to run the snack bar daily in order to sustain himself.

Additional Information : a) 0.5 dozen Eggs weigh 1 kg b) Frying Oil has no influence over weight of cutlets

Q 21)

What was his profit percent in selling Chicken Cutlets in May 2020, but before the 20th ?

- A) 87.50%
- B) 75%
- C) 52.35%
- D) 37.37%

Q 22)

What was his profit percent in selling Vegetable Cutlets in May 2020, but before the 20th ?

- A) 60%
- B) 52.44%
- C) 45%
- D) 37.68%

Q 23)

Had he sold only 33 Vegetable Cutlets and 66 Chicken Cutlets on a day in May 2022 before 20th, what would have been his overall profit percent on that day ?

- A) 52.50%
- B) 65.65%
- C) 75.81%
- D) 78.37%

Q 24)

If the snack bar owner prepared Vegetable Cutlets by the only other possible ratio of 1:1:1:1 of Vegetable, Potato, Flour and Frying Oil as the only ingredients, what was his profit percent (% up to two decimal places) per Vegetable Cutlet of equal weight as before, on 22nd May 2020?

Q 25)

Supposing that the snack bar owner was using ingredients (excepting Bread Crumb which was out of stock) in their normal ratio of quantity and making Vegetable Cutlets of the same size and weight per unit as before, what would be his profit percent per Vegetable Cutlet on 23rd May 2020 ?

- A) 17.54%
- B) 24.13%
- C) 37.65%
- D) 52.44%

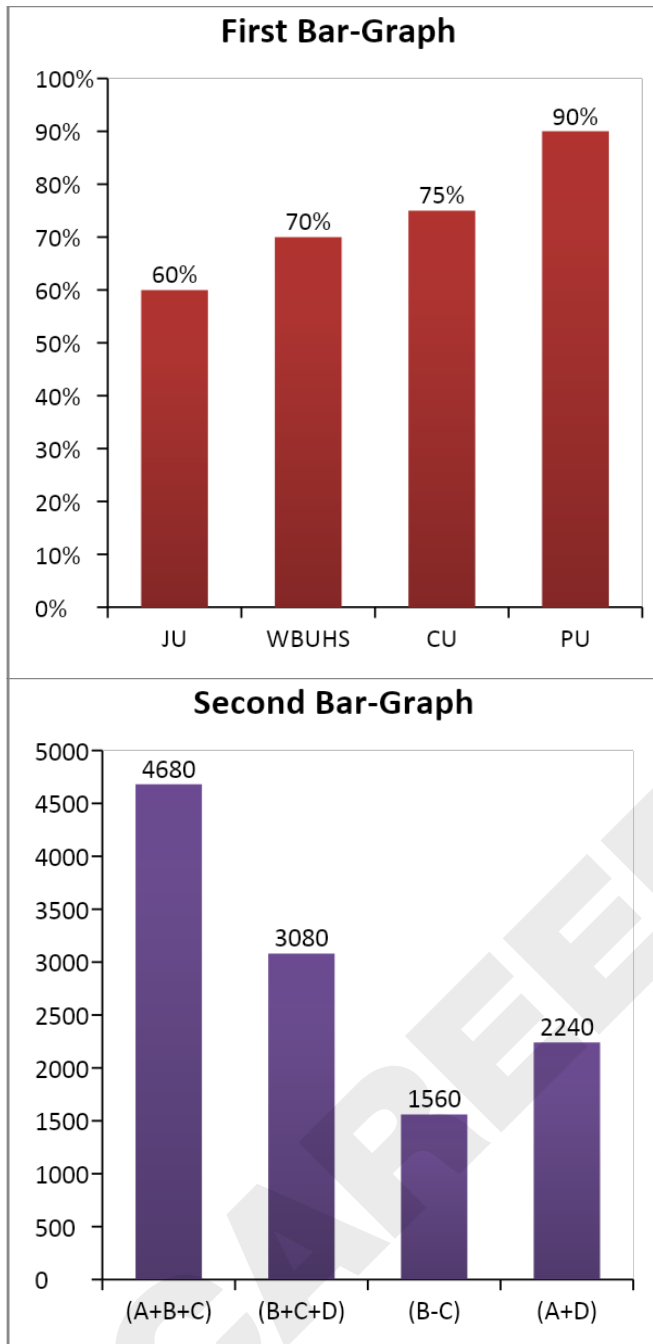
Q 26)

If the snack bar owner's making capacity was limited to only 100 items per day, and supposing that he was using ingredients (excepting Bread Crumb which was out of stock) in their normal ratio of quantity and would be able to make only one item of the same size and weight per unit as before, what would be his maximum profit (in Rs) on 23rd May 2020 ?

Directions for questions from 27 to 30:

The first bar-graph gives the percentage of male students enrolled in Jadavpur University (JU), West Bengal University of Health Sciences (WBUHS), Calcutta University (CU) and Presidency University (PU), in the year 2022.

If the number of female students enrolled in the above four universities in order, in 2022, are represented by A, B, C and D, the second bar-graph provides the data which is self-explanatory.



Q 27)

How many female students are enrolled in Presidency University (PU) in the year 2022 ?

Q 28)

How many students are enrolled in West Bengal University of Health Sciences (WBUHS) in 2022 ?

- A) 8100
- B) 7200
- C) 5400

D) 4200

Q 29)

If 2000 students migrated in the middle of 2022 from other universities to the above mentioned four universities of JU, WBUHS, CU and PU respectively in the ratio of 2 : 3 : 4 : 1, and the number of female students in CU after the migration is equal to the total number of female students who have migrated, then the total number of male students that have migrated cannot be less than _____. Fill in the blank.

- A) 500
B) 550
C) 600
D) 650

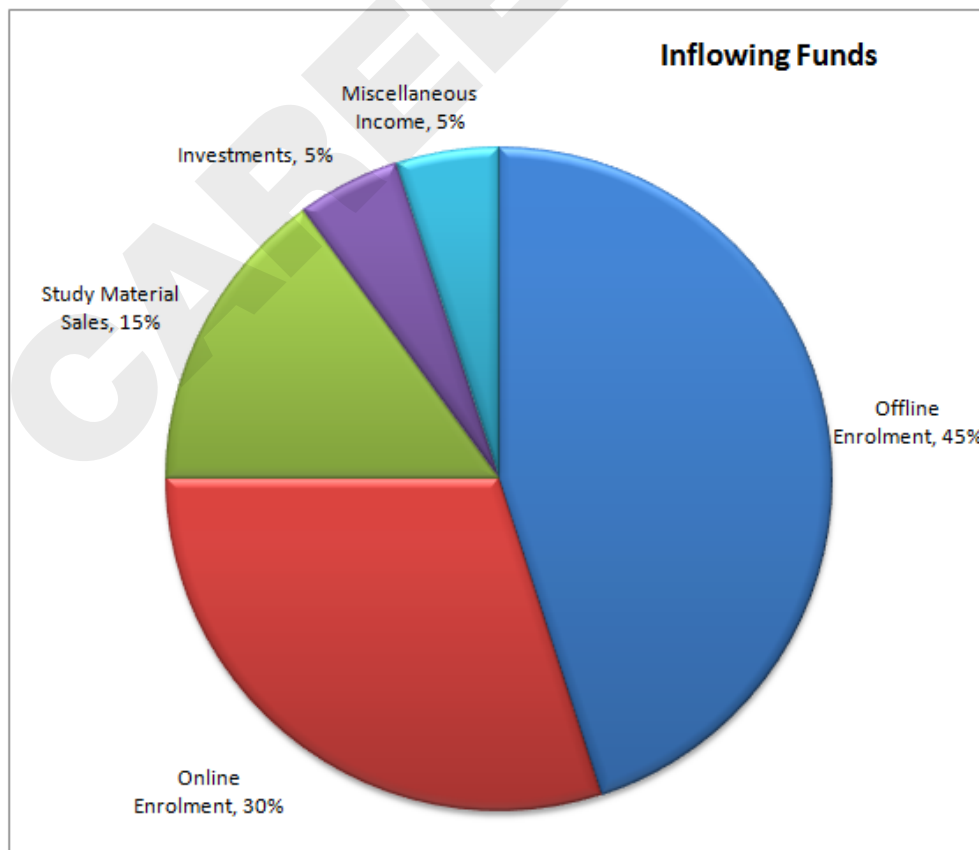
Q 30)

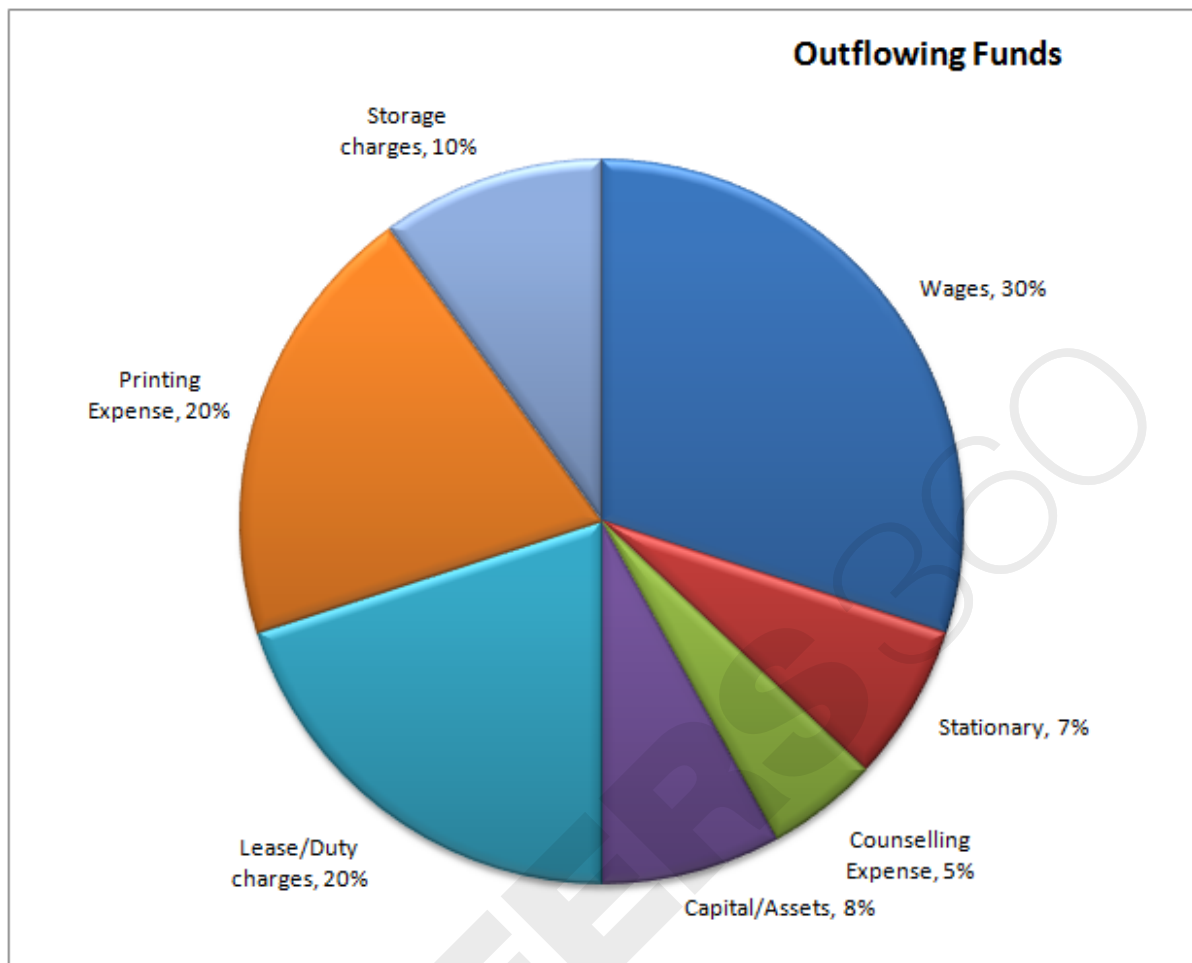
By how much percent is the number of male students in Jadavpur University (JU) more than the average number of female students in all the four universities combined together in 2022 ?

- A) 55.2%
B) 87.5%
C) 106.5%
D) 130.4%

Directions for questions from 31 to 35 :

The following two pie charts depict the inflow and outflow of funds on various heads as a percentage of the total of M/S SKD Test Prep, a Kolkata based education firm, in 2022 :





The profit made would be the inflow value minus the outflow value.

Q 31)

If in 2022 the overall inflow of funds was 60 crore rupees, and the overall outflow 54 crore rupees, then what was the ratio between the amount earned by Online Enrolment and the amount spent on Printing by M/S SKD Test Prep in 2022 ?

- A) 5 : 3
- B) 7 : 4
- C) 7 : 3
- D) 8 : 5

Q 32)

If in the year 2022, the sum of the inflow due to Study Material Sales and Miscellaneous Income were 15 crore rupees, then what would the overall profit or loss of M/S SKD Test Prep (in crore rupees) be, given that the sum of the outflow due to Stationary and Counselling Expense were 5.40 crore rupees ?

Q 33)

If in 2022, M/S SKD Test Prep incurred a loss of 6 crore rupees and if the total inflow of funds was 5% less than the outflow of funds, then what was the inflow of funds (in crore rupees) due to Online Enrolment ?

Q 34)

If the value of Study Material Sales equaled the Lease/Duty Charges of M/S SKD Test Prep in 2022, then what was the ratio of the Online Enrolment and Wages ?

- A) 2 : 5
- B) 3 : 4
- C) 1 : 1
- D) 4 : 3

Q 35)

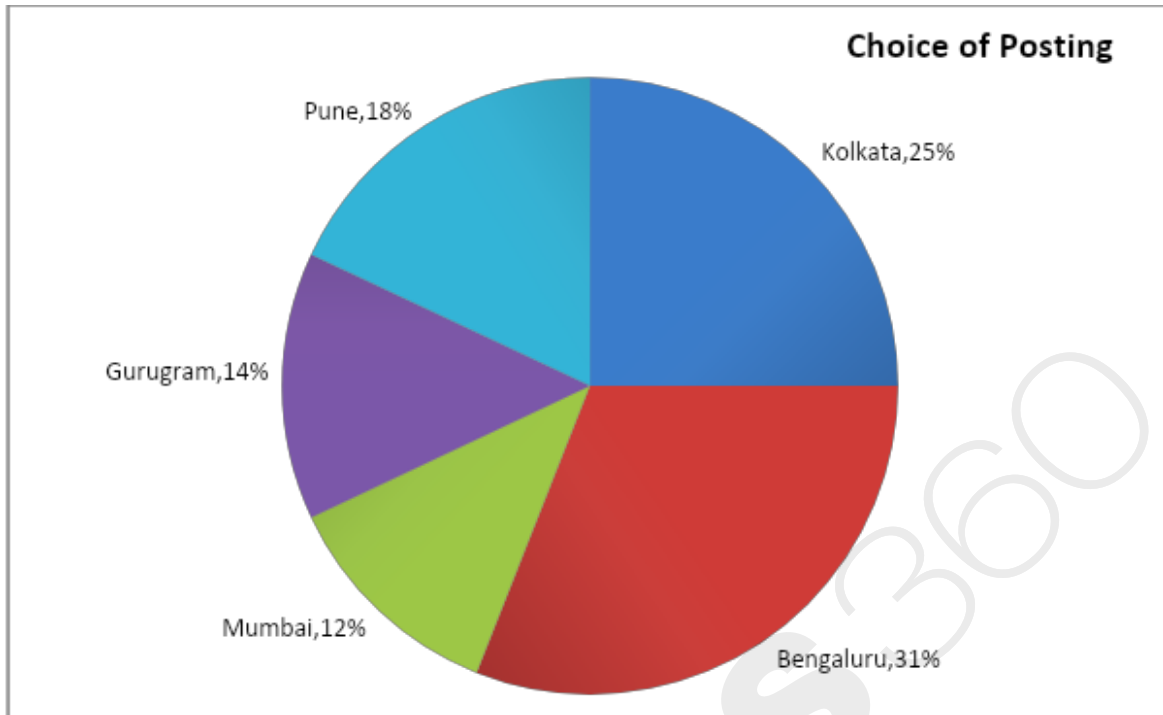
If in 2021, the value of the quantity of the different heads of outflow of funds of M/S SKD Test Prep were the same as in 2022 except Wages, which was 12 percent less than the value of the same in 2022, what was the percentage (rounded to two decimal places) of Printing compared to the total outflow of funds in 2021 ?

- A) 20.50%
- B) 20.75%
- C) 21.25%
- D) 21.50%

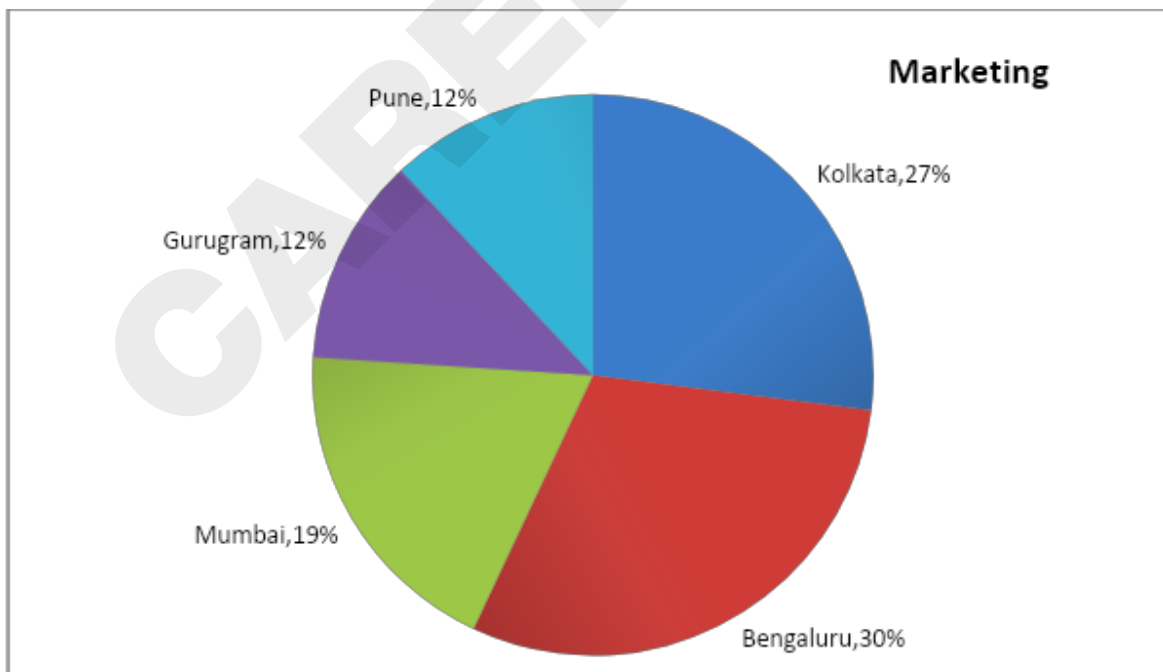
Directions for questions from 36 to 40 :

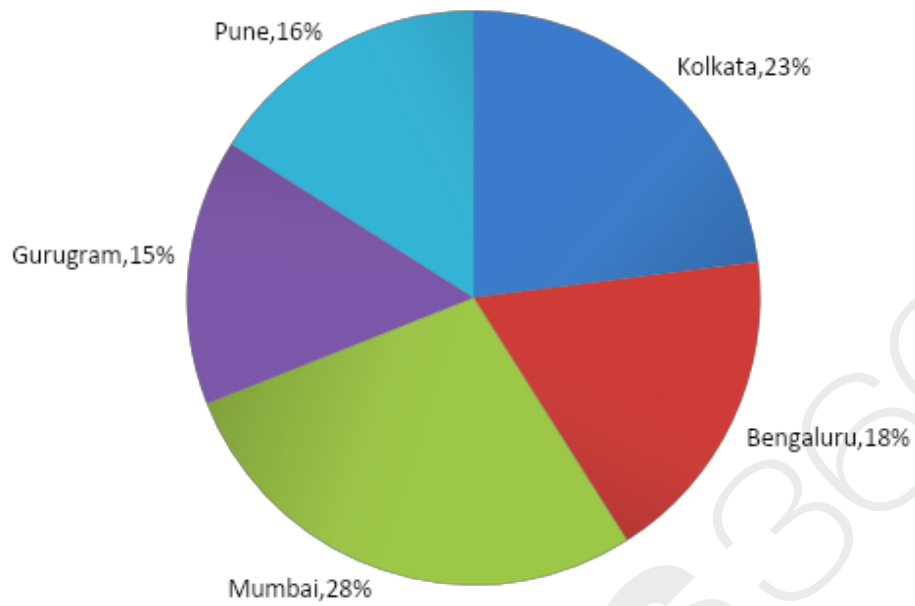
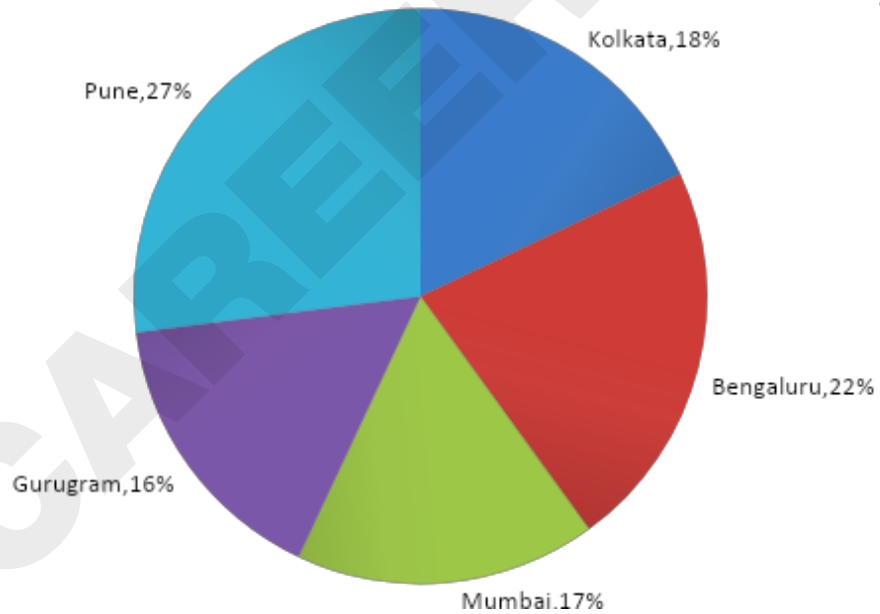
In the India segment of the US giant M/S Deloitte, an audit and tax consulting company, the management trainees for the four departments of a) Marketing, b) Consultancy, c) Accountancy, and d) Actuary had reached the moment in January 2023 when they had to decide their place of posting.

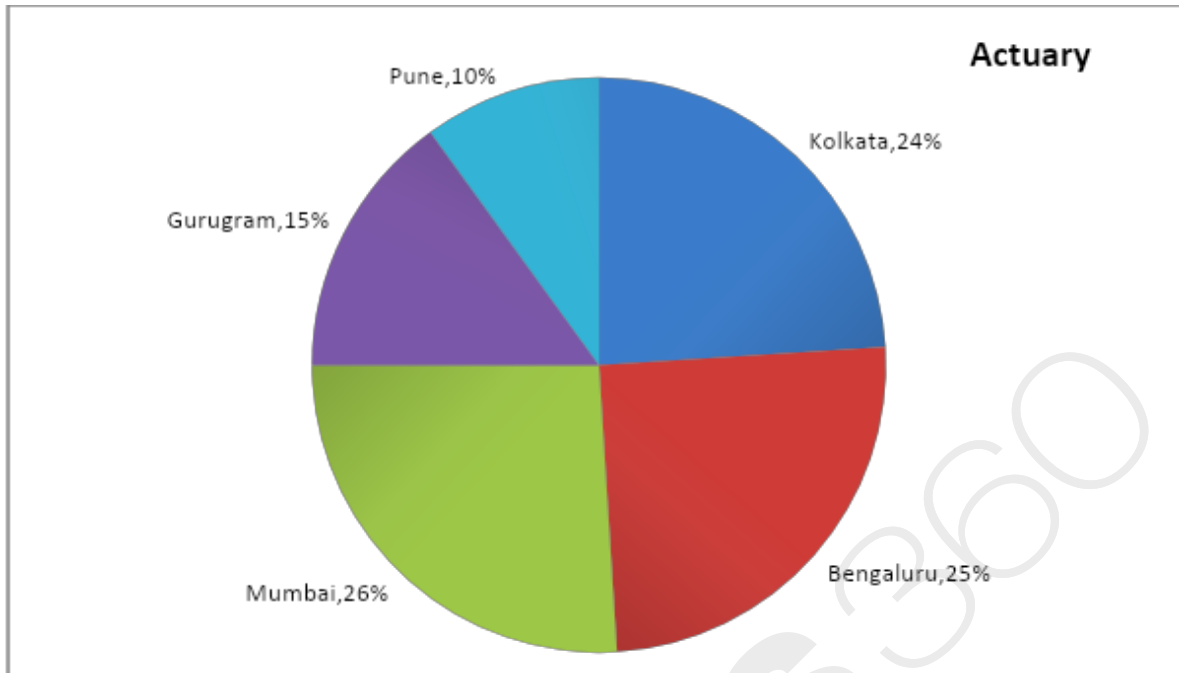
The following pie-chart shows the percentage of the management trainees in M/S Deloitte who in January 2023 chose a) Kolkata, b) Bengaluru, c) Mumbai, d) Gurugram, and e) Pune as their choice of posting :



The following pie charts show the percentage of the management trainees of M/S Deloitte for the four departments of Marketing, Consultancy, Accountancy, and Actuary respectively who in January 2023 chose Kolkata, Bengaluru, Mumbai, Gurugram, and Pune as their choice of posting :



Consultancy**Accountancy**



It was assumed that all the management trainees chose a place of posting and it was only one out of the above five cities.

Q 36)

If 15.5% of the management trainees of M/S Deloitte were from the department of Consultancy, what percent of management trainees who chose Bengaluru as their place of posting in January 2023 were in the department of Consultancy ?

- A) 9%
- B) 15%
- C) 23.5%
- D) 29.5%

Q 37)

If 20% of the management trainees of M/S Deloitte in January 2023 were from department of Marketing and 30% from department of Actuary, then the number of management trainees who chose Kolkata as their place of posting and were from department of Marketing is _____ % of the number of management trainees who chose Kolkata as their place of posting and were from department of Accountancy. Fill in the blank.

- A) 123%
- B) 106%
- C) 76%
- D) 42%

Q 38)

If 20% and 34.5% of the management trainees of M/S Deloitte in January 2023 were from the departments of Marketing and Actuary respectively, then find out the ratio of the percentage of management trainees from the department of Actuary who chose Gurugram as their place of posting to the percentage of management trainees from the department of Marketing who chose Pune as their place of posting ?

- A) 13 : 7
 B) 12 : 5
 C) 11 : 4
 D) 10 : 3

Q 39)

The number of management trainees of M/S Deloitte in January 2023 was 4000. Hence the number of management trainees who chose Bengaluru as their place of posting and were from department of Actuary was more than the number who chose Gurugram as their place of posting and were from department of Marketing was _____. ? Fill in the blank. (Data from the previous questions can be used if required)

Q 40)

If 15%, 20%, 25% and 40% of the management trainees of M/S Deloitte in January 2023 were from the departments of Marketing, Consultancy, Accountancy and Actuary respectively, and the number of management trainees who chose Mumbai as their place of posting and were from department of Consultancy was 252, what was the total number of management trainees of M/S Deloitte in January 2023 ?

- A) 5350
 B) 5000
 C) 4500
 D) 4000

Directions for questions from 41 to 45 :

Mr Ramamurthy is a quality control inspector of the Indian Government department that imports COVID-19 testing kits. Each testing kit that is imported has a unique Testing Kit ID where the digit at the start of the ID indicates the Lot Number from where the kit is procured.

Mr Ramamurthy as per procedural rules inspects each testing kit on seven different parameters - Platelets (P), Lymph (L), RBC (R), Haemoglobin (H), WBC (W), Swab (S) and Antibodies (A). For each testing kit that he inspects, Mr Ramamurthy records whether or not the testing kit passed the quality inspection on each parameter.

On a particular day, Mr Ramamurthy inspected twenty testing kits and the table below provides the results of the quality control inspection for each testing kit and on each parameter.

In each cell of the table, a '1' indicates that the testing kit has passed the quality inspection on the corresponding parameter, while a '0' indicates that it has failed the quality inspection on the corresponding parameter :

	Testin g kit ID	Parameters						
		P	L	R	H	W	S	A
1	2AA2 3	1	1	1	1	0	1	0
2	3SD34	1	1	1	0	0	1	0
3	2GF1 2	1	0	1	0	1	1	1

4	1CB4 3	1	1	0	1	1	0	1
5	1FD64	1	0	0	1	1	0	0
6	1JG89	1	0	1	1	0	0	0
7	4FF32	1	0	1	0	0	0	1
8	4JF05	0	1	1	0	1	0	1
9	9JS37	0	1	1	1	1	1	1
10	0KS93	1	1	0	1	1	1	0
11	3JS39	0	0	0	1	0	1	0
12	1IW9 1	1	0	1	0	0	1	1
13	3OD9 4	1	1	0	1	1	1	1
14	2SS48	0	1	1	1	1	0	1
15	0OW0 3	1	1	1	1	1	1	1
16	8IS43	0	1	1	1	0	1	0
17	1SD29	1	0	1	0	0	1	0
18	2FM9 3	0	1	1	1	1	0	1
19	5NC0 5	1	0	1	0	1	1	0
20	2HF8 2	1	1	1	1	1	1	1

Q 41)

A testing kit was certified OK by the Indian Government, if it passed the quality inspection on at least six parameters. What percentage of testing kits checked on the given day by Mr Ramamurthy were certified OK ?

Q 42)

On which parameter did the maximum number of testing kits checked on the given day by Mr Ramamurthy fail the quality inspection ?

- A) Swab
- B) Antibodies
- C) Haemoglobin
- D) WBC

Q 43)

Which Lot Number did the maximum number of testing kits checked on the given day by Mr Ramamurthy that failed the quality inspection on a parameter, belong to ?

- A) On the parameter 'Platelets' belonged to Lot Number 4
- B) On the parameter 'Lymph' belonged to Lot Number 2
- C) On the parameter 'WBC' belonged to Lot Number 1
- D) On the parameter 'Antibodies' belonged to Lot Number 3

Q 44)

How many testing kits checked on the given day by Mr Ramamurthy failed the quality inspection on exactly one parameter among Platelets, RBC and WBC but passed the quality inspection on at least one parameter among Lymph, Swab and Antibodies ?

Q 45)

How many Lot numbers of the twenty testing kits had the perfect quality as per the inspection of Mr Ramamurthy ?

- A) 4
B) 3
C) 2
D) 1

Directions for questions from 46 to 50 :

Below are the Investment portfolio distribution ratios of nine top investors of the country in 2019, 2020 and 2021, who invested only in the equity or debt or the gold market. Their percentage overall returns or returns for some specific market, in specific years (as specified in the column head) are also provided :

	Investors	Investment Distribution in each year for 2019, 2020 and 2021 (Equity : Debt : Gold)	Return on Equity during 2019	Return on total overall investment		
				For the three years together	Best in a year among the three years	In a year apart from the best
1	Mr Ashish	48 : 24 : 28	73%	26%	93%	12%
2	Mr Bhansali	62 : 21 : 17	61%	51%	106%	27%
3	Mr Damani	52 : 28 : 20	75%	62%	85%	31%
4	Mr Harshad	50 : 37 : 17	40%	29%	53%	11%
5	Mr Kedia	74 : 11 : 15	70%	65%	88%	32%
6	Mr Parekh	65 : 23 : 12	64%	36%	86%	44%
7	Mr Rakesh	77 : 14 : 9	73%	63%	88%	45%
8	Mr Shah	59 : 26 : 15	59%	49%	58%	40%
9	Mr Vineet	58 : 25 : 17	68%	56%	76%	21%

Q 46)

If the investments of Mr Damani and Mr Kedia for all the three years individually were in the ratio of 2 : 3, then the return in 2019 against the equity component of the investment of Mr Kedia was what percentage more than that of Mr Damani ?

- A) 99%
- B) 82%
- C) 75%
- D) 60%

Q 47)

If the investment of Mr Shah in each of 2019, 2020 and 2021 be Rs 7, Rs 6 and Rs 8 crores respectively, with the best return percentage received in 2020 and the other tabulated return percentage received in 2019, what is his return (in crores of rupees) for 2021 ?

Q 48)

Mr Rakesh had invested Rs 22.5 crores in each of the three years of 2019, 2020 and 2021. Within these three years what has been the worst yearly return percentage for Mr Rakesh ?

- A) 88%
- B) 56%
- C) 45%
- D) 36%

Q 49)

Mr Ashish had invested Rs 15 crores, Rs 18 crores and Rs 32 crores in each of the three years of 2019, 2020 and 2021, in any order. During the three year period what could have been the worst possible percentage return in a year for Mr Ashish ?

- A) 2%
- B) - 43%
- C) - 81%
- D) - 100%

Q 50)

If Mr Bhansali, Mr Harshad, Mr Parekh and Mr Vineet had invested Rs 17, Rs 25, Rs 15 and Rs 14 crores respectively every year for the three years, who amongst the above four investors had suffered a loss against investment during any one of the three years ?

- A) Mr Bhansali
- B) Mr Vineet
- C) Mr Parekh
- D) Mr Harshad

Directions for questions from 51 to 56 :

At the nets of the Indian Cricket Team for the Asia Cup 2022 at Dubai, coach Mr Rahul Dravid noticed that four of the key players – Mr Rohit, Mr Ashwin, Mr Chahal and Mr Bishnoi, were faltering in their accuracy of throws at the stumps.

In order to address the problem, he decided to arrange a special session for the four of them post the days' practice, where they would take turns one after the other to practice their throw at the stumps. Knowing that the players were always under a lot of pressure from family and friends for free passes to a match, as a motivating factor, Mr Dravid convinced the BCCI President Mr Sourav Ganguly to announce a prize of one free pass for the India-Pakistan qualifying match at Dubai International Stadium to the four players for each hit at the stumps.

All the four players threw the ball at the stumps from 150 feet away in the order of the names as mentioned above. The throws were done in rounds, without any breaks, with all the four players throwing once per round in the above order. If Mr Rohit was the first player to take a throw at the stumps, then Mr Rohit preceded Mr Ashwin, Mr Ashwin preceded Mr Chahal, Mr Chahal preceded Mr Bishnoi and Mr Bishnoi preceded Mr Rohit in the next round.

Coach Mr Rahul Dravid observed the following facts during the throws :

- a) If a player (say, Mr X) hit the stumps in the last round and so did his preceding player in the current round, then the player (Mr X) misses the stumps in the current round.
- b) If a player (say, Mr X) hit the stumps in the last round but his preceding player missed the stumps in the current round, then the player (Mr X) hits the stumps in the current round.
- c) If a player (say, Mr X) missed the stumps in the last round and so did his preceding player in the current round, then the player (Mr X) misses the stumps in the current round.
- d) If a player (say, Mr X) missed the stumps in the last round but his preceding player hit the stumps in the current round, then the player (Mr X) hits the stumps in the current round.
- e) Only one player hit the stumps in the first round.
- f) At least one player hit the stumps in every round.

Q 51)

If the practice session was of a total of sixty rounds, how many free passes in all would the BCCI President Mr Sourav Ganguly have to arrange for the four players, for the India-Pakistan qualifying match at Dubai International Stadium ?

Q 52)

What is the minimum number of free passes won by the four players in the first five rounds of the practice session ?

Q 53)

What is the probability of Mr Bishnoi winning a free pass in round number thirty-nine of the practice session ?

Q 54)

If the total practice session was of seventy-three rounds, how many free passes did Mr Rohit win ?

- A) 21
- B) 38
- C) 39
- D) Cannot be determined

Q 55)

The practice session started with a throw by Mr Chahal. However, after the throw of the twenty-fifth round, Mr Rohit sprained his throwing shoulder and had to retire hurt. How many free passes did Mr Ashwin win, if the session was of fifty-three rounds ?

- A) 56
- B) 42
- C) 30
- D) 26

Q 56)

The practice session of sixty rounds started with a throw by Mr Bishnoi. However, after the throw of the fifty-third round, Mr Bishnoi had to take a washroom break for the time in which five more rounds of throws with the rest three players happened. Mr Bishnoi then re-joined the session. How many free passes did Mr Rohit win in the practice session ?

- A) 31
B) 61
C) 71
D) 83

Directions for questions from 57 to 60 :

Mr Rajanvir Singh Kapoor (IAS), Managing Director of West Bengal Transport Corporation, issued a survey instruction in July 2022 of the different public transportation types out of the total ways of public transportation being used in by the commuting population in the four most populated cities in West Bengal – Kolkata, Durgapur, Asansol and Siliguri.

The report in individual percentage values in each city and their cumulative for the eight different modes of public transportation available in West Bengal were as follows :

July 2022		Kolkata	Durgapur	Asansol	Siliguri	All four cities combined
1	Government Buses	32.00%	30.20%	32.20%	34.70%	32.40%
2	Private Buses	21.20%	19.10%	13.10%	7.10%	14.60%
3	Private Taxis	7.90%	12.00%	14.70%	11.90%	11.60%
4	CNG Autos	9.10%	6.60%	12.00%	12.40%	10.10%
5	Electric Autos	5.60%	5.70%	7.70%	8.30%	6.70%
6	Cycle Rickshaws	5.80%	5.70%	5.00%	6.00%	5.70%
7	Electric Rickshaws	3.60%	3.90%	3.30%	3.80%	3.70%
8	App Cabs	14.80%	16.80%	12.00%	15.80%	15.20%

Q 57)

On observing the above data, two of the Under-Secretaries of the Transport Department drew the following two conclusions :

Conclusion I : The number of Government Buses per thousand population was the highest in Siliguri

Conclusion II : The number of Electric Rickshaws per thousand population was the highest in Durgapur

Which of the following options is definitely correct ?

- A) Conclusion I alone is definitely correct
 B) Conclusion II alone is definitely correct
 C) Either of the conclusions are definitely correct
 D) Neither of the conclusions are definitely correct

Q 58)

The average seating capacity of Private Taxis in Kolkata were double that of in Asansol. Which of the following can be concluded from the above data ?

- A) As far as Private Taxis were concerned, the commuting public of Kolkata prefer spacious taxis compared to those in Asansol
 B) As far as Private Taxis were concerned, cost per vehicle is lower in Kolkata than that of in Asansol
 C) The ratio of commuters travelling in Private Taxis in Kolkata and that of in Asansol is 1 : 1.86
 D) There are 7400 operating Private Taxis in Kolkata

Q 59)

If the number of Government Buses actually operating in Kolkata and Siliguri in July 2022 were found to be 32000 and 34700 respectively, what could be the ratio of the total number of public transportation units in Kolkata and Siliguri ?

- A) 1 : 1
 B) 1 : 2
 C) 2 : 3
 D) Cannot be determined

Q 60)

While going through the past records, Mr Kapoor found that his predecessor had done exactly the same survey five years ago in July 2017, whose report was as follows :

	July 2017	Kolkata	Durgapur	Asansol	Siliguri	All four cities combined
1	Government Buses	32.00%	40.00%	32.20%	30.00%	32.40%
2	Private Buses	25.00%	19.10%	13.10%	7.10%	14.60%
3	Private Taxis	7.90%	12.00%	14.90%	4.00%	11.60%
4	CNG Autos	9.10%	7.00%	12.00%	12.40%	10.10%
5	Electric Autos	5.80%	5.70%	7.60%	15.00%	6.70%
6	Cycle Rickshaws	5.80%	5.70%	5.00%	7.00%	5.70%
7	Electric Rickshaws	3.60%	3.90%	3.20%	3.90%	3.70%
8	App Cabs	10.80%	6.60%	12.00%	20.60%	15.20%

Which of the following statements can be definitely concluded ?

- A) In the last five years the number of Electric Autos had decreased in Siliguri
 B) In the last five years the number of Government Buses had decreased in Durgapur

- C) In the last five years the number of Cycle Rickshaws had remained constant in at the four cities together
- D) As per the old survey conducted, the number of Private Buses in Kolkata is next only to Government Buses in the same city

Directions for questions from 61 to 66 :

In the JPL 2022 Group Stage matches, Dominating Super Kings (DSK) were scheduled to play Laborious Knight Riders (LKR) in the first match. Enchanting Capitals (EC) were scheduled to play Nonchalant Indians (NI) in the second. Quarantined Kings (QBKS) were scheduled to play Sober Challengers Bangalore (SCB) in the third match. Homely Titans (HT) were scheduled to play Mundane SuperGiants (MSG) in the fourth match.

The infamous cricket gambling bookie Surendra Bagri, alias Junior Kolkata, offered the following 'Jeet ka Bhav' (odds on winning) on the teams in the above four matches, forty-eight hours before the first match started, with a window of twenty-four hours to place the bets :

Match	Jeet ka Bhav	Jeet ka Bhav
1st Match	DSK - 60/100	LKR - 100/20
2nd Match	EC - 100/10	NI - 50/100
3rd Match	QBKS - 100/40	SCB - 70/100
4th Match	HT - 90/100	MSG - 100/70

In Indian cricket gambling scenario, when a bookie offers a 'Jeet ka Bhav' of x/y on any cricket team, it means that if the team wins, for every Rs y the gambler has put at stake in the betting, he earns Rs x , in addition to the original stake of Rs y being returned to him. However, if the team loses, the gambler neither earns anything nor gets back his original stake of Rs y , which becomes directly the bookie's income.

A bookie will always offer less 'Jeet ka Bhav' on teams that are expected to win or are the favourites to win, and vice versa, as he would always want his payback to the gambler to be the minimum and his own profit to be the maximum. Thus if team A is the better favourite to win a match against team B, a bookie will offer a 'Jeet ka Bhav' of m/n on team A, where $m < n$, whereas, he will offer a 'Jeet ka Bhav' of p/q on team B, where $p > q$.

However, a bookie often uses the illegal method of fixing the outcome of a match, if it is possible for him to manage the fix. Fixing is done in a match by inducing the players or officials of a team to leak valuable team secrets or strategies so as to know beforehand the probable outcome of a match, or to induce players to deliberately underperform so as to influence otherwise the outcome of a match. If the expected outcome of a match is reversed, it results in immense profit to the bookie. Financial benefits are provided to the concerned player or official in return for the service.

The term 'punter' in Indian cricket gambling scenario means an individual, generally very well placed in society and well versed with the shady world of cricket betting, who acts as the broker of all the rich and famous retail gamblers in placing bets to a bookie, within a particular geographical area entrusted to him by the bookie. The term 'fixer' in Indian cricket gambling scenario means an individual under the payroll of a bookie, who has a good rapport with cricket

players and cricket team officials, with the responsibility of doing and managing the illegal job of fixing.

Bookie Surendra Bagri, alias Junior Kolkata, has a fixed rate of 10% and 5% commission to his punters and fixers (if fixing performed) respectively on his income per stake per match, after the fixing expenses are met. All payoffs made to each fixed player and each fixed team official is Rs 2 crore and Rs 1 crore per match respectively, made after the result of the match is decided. If the captain is fixed, the payoff is 3 crores. The profit of a bookie is calculated after all the payoffs have been made.

Q 61)

Arbaaz, the punter of Junior Kolkata in the Bandra area of Mumbai, put at stake Rs 15 crores, Rs 20 crores, Rs 25 crores and Rs 30 crores of the retail gamblers' money on each team in each of the first four matches of JPL 2022 Group Stage in any order. What was the maximum possible percentage return he could have earned for his retail gamblers (rounded to the nearest integer), assuming that in each of the four matches the expected outcome took place ?

- A) 71%
- B) 60%
- C) 52%
- D) 50%

Q 62)

Gurunath, the punter of Junior Kolkata in Chennai, put at stake Rs 30 crores of the retail gamblers' money on DSK, his home team and the favourite to win the first match, and Rs 5 crores each on the teams that were favourites to win in each of the remaining three matches. However, just after putting the stake, about twenty-five hours before the first match was to be played, he came to know from his sources in team DSK that their two most important strike bowlers (none being the captain) had been fixed by Junior Kolkata's fixer to lose the first match against LKR. Gurunath, himself being a gambler, put at stake 1 crore of his personal money on LKR within half an hour. What was the final profit Junior Kolkata made (in crores of Rs) on the stakes on all the four matches by Gurunath, assuming that all the other three matches showed expected results ?

Q 63)

Bindoo, the punter of Junior Kolkata in the Juhu and Versova area of Mumbai, put at stake Rs 20, 30, 40, and 50 crores of the retail gamblers' money on one team in each of the first four matches. Bindoo also knew for sure, before placing the stakes, that Junior Kolkata had fixed the first and last match to ensure an unexpected result. Bindoo, however, had the best possible interests of the retail gamblers in mind while putting the stakes. What was the maximum return (in crores of Rs, rounded to two decimal places) he could have ensured his retail gamblers, assuming that in the remaining two matches the expected outcome took place ?

Q 64)

A punter named Raj, put at stake an undisclosed amount of money equally on any one team in any three of the four matches. It is known by him that any one team will perform a result contrary to the expectation, but doesn't know which one. Which three teams should Raj place the stakes on, to try to ensure the maximum return of the retail gamblers ?

- A) DSK, SCB, HT
- B) LKR, EC, QBKS

- C) DSK, SCB, MSG
D) EC, SCB, HT

Q 65)

Sajid, a retail gambler from Juhu, had a strong feeling that MSG would win in the fourth match. So he put at stake Rs 2 crores on MSG. He also put at stake Rs 2 crores on a team in the third match. What can be the difference between his maximum and minimum earnings (in crores of Rs, rounded to two decimal places), assuming that none of the matches were fixed ?

Q 66)

Lalit, a retail gambler from London, wanted to put a total of Rs 80 crores at stake equally on one team in each of the four matches of JPL 2022. What can be his maximum percentage return on his total stake (rounded to the nearest integer), assuming no match is fixed ?

- A) 373%
B) 256%
C) 134%
D) 82%

Directions for questions from 67 to 70 :

In the 2022 Premier Division-A of Calcutta Football League there were eight teams divided into two groups. Group Britannia consisted of Mohun Bagan AC, Eastern Railway FC, Bhawanipore FC and Aryans SC, while Group Bisk Farm consisted of Mohammedan SC, East Bengal FC, George Telegraph SC and Port Trust SC.

In the Premier Division-A league each team of Group Britannia played exactly one match against each of the teams in Group Bisk Farm. No team plays any match against any other team in the same group.

Mohun Bagan AC won three, Eastern Railway FC won two, Bhawanipore FC won one and Aryans SC won two of the matches they played. Mohammedan SC won two, East Bengal FC won three, George Telegraph SC won two and Port Trust SC won one of the matches they played.

The following table gives some incomplete information of the results of some of the matches :

WINNERS OF MATCHES	Mohun Bagan AC	Eastern Railway FC	Bhawanipore FC	Aryans SC
Mohammedan SC		Eastern Railway FC		
East Bengal FC			East Bengal FC	
George Telegraph SC				George Telegraph SC
Port Trust SC	Mohun Bagan AC			

Based on the general performance of the teams there were four assumptions made regarding the incomplete results in the table :

Assumption No 1 : Mohammedan SC won against Mohun Bagan FC

Assumption No 2 : East Bengal FC won against Aryans SC

Assumption No 3 : Eastern Railway FC won against George Telegraph SC

Assumption No 4 : Aryans SC won against Port Trust SC

Q 67)

How many pairs of combinations of the above four assumptions given would be sufficient to determine the winners of all the matches played in the 2022 Premier Division-A of Calcutta Football League ?

- A) None
- B) One
- C) Two
- D) Three

Q 68)

Mr Bhutia, the eminent Indian footballer, commented that if Assumption No 2 was correct, then Assumption No 4 did not provide any new information and hence was unnecessary

Mr Chhetri, the present captain of the Indian football team, commented that if Assumption No 3 was correct, then Assumption No 4 did not provide any new information and hence was unnecessary

Which of the following options is correct ?

- A) Mr Bhutia was correct, Mr Chhetri was incorrect
- B) Mr Bhutia was incorrect, Mr Chhetri was correct
- C) Both Mr Bhutia and Mr Chhetri were incorrect
- D) Both Mr Bhutia and Mr Chhetri were correct

Q 69)

If only Assumption No 1 and Assumption No 2 were made, and both of them were correct assumptions, the result of how many matches played in the 2022 Premier Division-A of Calcutta Football League could not be determined ?

- A) Four
- B) Three
- C) Two
- D) One

Q 70)

Suppose only Assumption No 2 and Assumption No 3 were made, and both of them were correct assumptions.

Conclusion No A : Bhawanipore FC lost to George Telegraph SC

Conclusion No B : Aryans SC lost to Port Trust SC

Which of the following options is correct ?

- A) Conclusion No A is definitely incorrect, Conclusion No B is definitely correct
- B) Conclusion No A is definitely correct, Conclusion No B is definitely incorrect
- C) Both Conclusion No A and Conclusion No B are definitely incorrect

D) Both Conclusion No A and Conclusion No B are definitely correct

Directions for questions from 71 to 75 :

Three schoolchildren, Amal, Bimal and Chintu, went to the 46th Kolkata International Book Fair with their parents on 26th February'23, a Sunday. All three of them bought books of a number from 18 to 24, with none buying the same number of books.

Next day, at school, when their friend Dipak asked them as to how many books they had bought, they replied in the following manner, making three statements each :

Amal : Chintu has bought 2 books less than me
 Bimal is lying about the number of books he has bought.
 Chintu has bought any number of books from 19 to 23

Bimal : I have bought 19 books
 Chintu has bought 21 books
 Amal has bought less than 19 books

Chintu : Amal has not bought the highest number of books
 I have bought 24 books
 Amal's third statement is a lie

It is also known that at any particular point of time, exactly one among Amal, Bimal and Chintu always tells the truth, one always lies and one always alternates between truth and lie, in any order.

From the data given above, answer the following questions :

Q 71)

Which of the following must be true ?

- A) Amal is the truth teller
- B) Bimal is the truth teller
- C) Chintu is the truth Teller
- D) None of the above

Q 72)

If Bimal is the alternator, then which of the following are true ?

- A) Chintu has bought 21 books
- B) Chintu has bought 24 books
- C) Exactly one of (A) and (B)
- D) None of (A) and (B)

Q 73)

Chintu will have bought 24 books when

- I. Amal is the liar
 - II. Bimal is the alternator
 - III. Chintu is the truth teller
- A) Only I

- B) Only I and III
- C) I and either II or III only
- D) Chintu can never buy 24 books

Q 74)

Bimal will not have bought 19 books when

- I. Amal is the liar
- II. Bimal is the liar
- III. Chintu is the liar

- A) Only II and III
- B) Only I and III
- C) I and either II or III only
- D) I, II and III

Q 75)

Which of the following statement/(s) are definitely false ?

- A) Amal has bought 18 books
- B) Bimal's number of books bought cannot be definitely determined
- C) If Chintu buys 24 books, Amal too buys 24 books
- D) All the above statements are definitely false

Directions for questions from 76 to 81:

Anirban, Biswajit, Charbak, Dibyendu and Emon were five good friends since their Jadavpur University days, and were having an offshore posting in Manila for M/s CTS for the last few years. They were all Bengalis and shared the same bachelor accommodation in Manila. The CTS South-East Asia Team Head Mr Chatterjee brought them a big earthen pot of rasgullas from Kolkata as a personal gift during his Manila visit on a Saturday.

They decided to enjoy the delicacy rare for a resident of Manila, on Sunday, an off day for them. They kept the pot in the refrigerator.

Now, Bengalis inherently have a sweet tooth, and hence are extremely fond of rasgullas. Being young men, they found it extremely difficult to curb their urge to have a taste of the sweet. During the night, at different times, they stealthily raided the refrigerator, without the knowledge of the others, to eat a few of the rasgullas.

Next morning, on Sunday, during breakfast time the five friends found that only one-eighth of the original number of rasgullas remained in the pot.

It was also known that :

- a) Emon ate the rasgullas before Dibyendu did
- b) None of them ate more than half the number of rasgullas that were there in the pot when they went to eat it
- c) The friend who ate last ate only one-fourth of the rasgullas that were remaining in the pot when he went to eat it
- d) Emon ate half of the rasgullas that were left in the pot when he went to eat it
- e) Anirban ate the same number of rasgullas as Emon did
- f) Dibyendu ate the rasgullas after Charbak did
- g) When Anirban went to eat the rasgullas, only four-fifth of the original number of rasgullas were left in the pot

h) When Dibyendu had finished eating, more than one-eighth of the original number of rasgullas was left

Q 76)

Who was the last friend to eat the rasgullas on Saturday night ?

- A) Anirban
- B) Biswajit
- C) Dibyendu
- D) Cannot be determined

Q 77)

If only fifteen rasgullas were left in the pot during breakfast on Sunday morning, how many rasgullas did Charbak eat on Saturday night ?

- A) 12
- B) 18
- C) 24
- D) 32

Q 78)

Who among the following options ate the maximum number of rasgullas ?

- A) Emon
- B) Dibyendu
- C) Charbak
- D) Biswajit

Q 79)

If only fifteen rasgullas were left in the pot during breakfast on Sunday morning, after which of the following friends had finished eating, was less than sixty and more than twenty-four rasgullas remaining in the pot in the refrigerator ?

- A) Anirban
- B) Biswajit
- C) Dibyendu
- D) Emon

Q 80)

Who among the following options had eaten the least percentage of the number of rasgullas compared to the number of rasgullas remaining when he went to eat it ?

- A) Anirban
- B) Biswajit
- C) Charbak
- D) Dibyendu

Q 81)

If only fifteen rasgullas were left in the pot during breakfast on Sunday morning, how many rasgullas were remaining in the pot after Emon had finished eating the rasgullas on Saturday night ?

- A) 25
- B) 32
- C) 42

D) 48

Directions for questions 82 to 86 :

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

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

It was also known that :

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

Q 82)

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

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

Q 83)

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

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

Q 84)

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

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

Q 85)

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

- A) Orange
- B) Yellow

- C) Black
D) Cannot be determined

Q 86)

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

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

Directions for questions from 87 to 90 :

About eighty metres inside from Gate No 4 of the Jadavpur University Campus was the iconic 'Milan Da's Canteen', the oldest out of the eight canteens in the campus, catering to students, researchers, faculties, staff and even ex-students of the university for decades since the 60's, especially for the engineering and art departments. Milan Da, the owner, was quite an innovative chef, and churned out tasty, innovative delicacies with equally innovative names, so popular and iconic, that even NRI ex-students on a visit to Kolkata would line up to savour them.

Milan Da's wife, the 'Boudi' (sister-in-law in Bengali) to all – young or old, student or faculty – handled the cash and had a memory and calculation prowess which was extraordinary. She could exactly remember who ordered what at what time of the day and how much dues were carried forward for each customer.

One month of a particular year she decided to check out which of the snack items of the canteen were being preferred more, and hence started to keep a note of what all the customers – students, faculties and staff of the engineering and arts department – were ordering during snack times. After one month of continuous watch, she came to the following conclusions :

- a) Three of the snack items were the clear best-sellers :
- Chicken stuffed bread pakora named 'Dhoper Chop' or 'a chop of lies',
 - Very spicy vegetable chops named 'Bom' or 'a bomb', and
 - Chick-pea curry with shredded boiled egg and sprinkled with puffed rice named 'Ghorar Dim' or 'the egg of a horse'.
- b) The number of customers preferring all the three snack items was the same as that preferring none of the three
- c) The number of residents preferring any two of the three was the same as those preferring any other two, which in turn was the same as those preferring none of the three
- d) The number of customers preferring only the 'Dhoper Chop' was the same as those preferring only the 'Ghorar Dim', and each were twice the number of customers preferring only the 'Bom'
- e) Half the number of customers who preferred the 'Bom' preferred at least one of either the 'Dhoper Chop' or the 'Ghorar Dim'.

Q 87)

If the number of customers who preferred only the 'Bom' was 300, then what was the total number of customers at Milan-Da's Canteen ?

Q 88)

If 105 customers did not prefer any one of the three snack items, then what was the total number of customers at Milan-Da's Canteen ?

Q 89)

What percentage of the customers preferred to have 'Dhoper Chop' or 'Ghorar Dim', but not a 'Bom' ?

Q 90)

If the number of customers at Milan-Da's Canteen were 2500, how many of the customers preferred at least one of the three best-selling snack items at the canteen ?

- A) 500
- B) 1875
- C) 2250
- D) 2375

Directions for questions from 91 to 95:

Actors Pankaj, Naseer, Shahid and Amit were the lead actors and actresses Raveena, Sushmita, Kajol and Supriya were the lead actresses of OTT streaming movies of 2022, shown on four platforms namely, Zee5, Netflix, Amazon and Disney.

Table 1 below gives the number of movies in 2022 on each platform in which each actress plays a lead role. Table 2 below gives the number of movies in 2022 on these platforms in which the actors and actresses play lead pairs. Every movie has only one lead pair.

Table 1	Raveena	Sushmita	Kajol	Supriya
Zee5	2	0	1	1
Netflix	1	2	0	1
Amazon	2	0	2	0
Disney	1	2	0	1

Table 2	Raveena	Sushmita	Kajol	Supriya
Pankaj	2	1	1	0
Naseer	1	0	1	2
Shahid	2	1	0	1
Amit	1	2	1	0

It is also known that :

- a) Naseer and Raveena act as a lead pair in a movie on Disney
- b) No two movies on any platform had the same lead actor

Q 91)

Who was the lead actress in the movie on Netflix where Naseer was the lead actor ?

- A) Supriya
- B) Kajol
- C) Kajol or Raveena

D) Cannot be determined

Q 92)

Shahid and Sushmita are the lead pair in a movie on which platform ?

- A) Zee5
- B) Netflix
- C) Amazon
- D) Netflix or Amazon

Q 93)

Shahid and Raveena are the lead pair in a movie on which platform ?

- A) Disney
- B) Netflix
- C) Amazon or Zee5
- D) Amazon

Q 94)

Who/who all play/plays the lead actor/actors role opposite Kajol in a movie/movies on Amazon ?

- A) Amit
- B) Naseer
- C) Pankaj & Amit
- D) Pankaj & Naseer or Naseer & Amit

Q 95)

From the data given, the lead pairs of how many movies could be exactly determined ?

- A) 16
- B) 15
- C) 14
- D) 12

Directions for questions from 96 to 100 :

A to H are four married couples in no specific order who are sitting around a round table equidistant from each other, all facing the centre of the table, such that neither any couple nor any men are sitting next to each other. A is a man who is sitting opposite to G. E has both F and G as neighbours. H is to the immediate right of B. C and H belongs to the same gender and is not sitting opposite to each other. C and B is a couple and have two persons sitting in between them.

Q 96)

Who is sitting between E and C ?

- A) F
- B) G
- C) H
- D) A

Q 97)

Which of the following cannot be the couple according to the conditions of the arrangement ?

- A) G and H
- B) A and F
- C) B and C
- D) A and E

Q 98)

Who is married to D ?

- A) H
- B) G
- C) F
- D) D

Q 99)

Who is married to the man sitting between D and E ?

- A) A
- B) B
- C) F
- D) H

Q 100)

The two women who are neighbours are _____ ?

- A) E and F
- B) B and F
- C) A and D
- D) None of the above

ANSWER KEY

1) - A, 2) - B, 3) - C, 4) - 2 5) - D 6) - A, 7) - B, 8) - C, 9) - D, 10) - D, 11) - 20.2, 12) - 2019, 13) - C, 14) - D, 15) - D, 16) - 875, 17) - B, 18) - C, 19) - D, 20) - C, 21) - A, 22) - B, 23) - C, 24) - 35.50, 25) - B, 26) - 628.38, 27) - 320, 28) - B, 29) - C, 30) - D, 31) - A, 32) - 30, 33) - 34.20, 34) - D, 35) - B, 36) - A, 37) - B, 38) - C, 39) - 249, 40) - C, 41) - 20, 42) - B, 43) - C, 44) - 12, 45) - C, 46) - A, 47) - 4.01, 48) - C, 49) - D, 50) - C, 51) - 128, 52) - B, 53) - 0.75, 54) - D, 55) - C, 56) - A, 57) - D, 58) - A, 59) - A, 60) - D, 61) - A, 62) - 8.40, 63) - 338.14, 64) - D, 65) - 7.86, 66) - A, 67) - C, 68) - D, 69) - A, 70) - B, 71) - D, 72) - C, 73) - B, 74) - A, 75) - C, 76) - B, 77) - C, 78) - A, 79) - D, 80) - C, 81) - B, 82) - A, 83) - B, 84) - C, 85) - D, 86) - C, 87) - 2000, 88) - 2100, 89) - 65, 90) - D, 91) - A, 92) - B, 93) - C, 94) - D, 95) - D, 96) - A, 97) - B, 98) - C, 99) - D, 100) - D

SOLUTIONS

1)

Tabulating the data given in the table to our own convenience, we get :

Paramount Bakers	Showcase A		Showcase B		Showcase C		Vat V	
	Inventory	Sold	Inventory	Sold	Inventory	Sold	Inventory	Added
Monday	190		30		36		17	
Tuesday	285		43		9		45	
Wednesday	310		45		28		53	
Thursday	327		37		25		68	
Friday	270		46		16		87	
Saturday	210		17		23		96	
Monday	203		19		13		13	

Total units of cakes baked from Monday to Saturday = $(190+285+310+327+270+210) = 1592$

Total units of cakes not baked from Monday to Saturday, but still added to the inventory from Monday to Saturday = $(30+36) = 66$

Total units of cakes not sold from Monday to Saturday = $(96+13-17) + (19+13) = 92+32 = 124$

Hence, the total units of one pound fruit-cake baked and sold by Mr Sk. Anisuddin Kamal from the first Monday of December 1970 to the next Saturday at the Benachity Bazaar outlet of Paramount Bakers = $1592 + 66 - 124 = 1534$

2)

Tabulating the data given in the table to our own convenience, we get :

Paramount Bakers	Showcase A		Showcase B		Showcase C		Vat V	
	Inventory	Sold	Inventory	Sold	Inventory	Sold	Inventory	Added
Monday	190		30		36		17	
Tuesday	285		43		9		45	
Wednesday	310		45		28		53	

Thursday	327		37		25		68	
Friday	270		46		16		87	
Saturday	210		17		23		96	
Monday	203		19		13		13	

Thus the number of one pound fruit-cakes sold from each showcase on each day will be :

Paramount Bakers	Showcase A		Showcase B		Showcase C		Vat V	
	Invento ry	Sold	Invento ry	Sold	Invento ry	Sold	Invento ry	Added
Monday	190	190 - 43 = 147	30	30 - 9 = 21	36	36 - 28 = 8	17	X
Tuesday	285	285 - 45 = 240	43	43 - 28 = 15	9	9 - 8 = 1	45	45 - 17 = 28
Wednesday	310	310 - 37 = 273	45	45 - 25 = 20	28	28 - 15 = 13	53	53 - 45 = 8
Thursday	327	327 - 46 = 281	37	37 - 16 = 21	25	25 - 19 = 6	68	68 - 53 = 15
Friday	270	270 - 17 = 253	46	46 - 23 = 23	16	16 - 9 = 7	87	87 - 68 = 19
Saturday	210	210 - 19 = 191	17	17 - 13 = 4	23	23 - 13 = 10	96	96 - 87 = 9
Monday	203	X	19	X	13	X	13	13 - 0 = 13

Hence, the total units of one pound fruit-cake baked and sold by Mr Sk. Anisuddin Kamal from the first Tuesday of December 1970 to the next Saturday from showcase B at the Benachity Bazaar outlet of Paramount Bakers = $(15+20+21+23+4) = 83$

3)

We know that the number of one pound fruit-cakes sold from each showcase on each day was :

Paramount Bakers	Showcase A		Showcase B		Showcase C		Vat V	
	Invento ry	Sold	Invento ry	Sold	Invento ry	Sold	Invento ry	Added

Monday	190	$190 - 43 = 147$	30	$30 - 9 = 21$	36	$36 - 28 = 8$	17	X
Tuesday	285	$285 - 45 = 240$	43	$43 - 28 = 15$	9	$9 - 8 = 1$	45	$45 - 17 = 28$
Wednesday	310	$310 - 37 = 273$	45	$45 - 25 = 20$	28	$28 - 15 = 13$	53	$53 - 45 = 8$
Thursday	327	$327 - 46 = 281$	37	$37 - 16 = 21$	25	$25 - 19 = 6$	68	$68 - 53 = 15$
Friday	270	$270 - 17 = 253$	46	$46 - 23 = 23$	16	$16 - 9 = 7$	87	$87 - 68 = 19$
Saturday	210	$210 - 19 = 191$	17	$17 - 13 = 4$	23	$23 - 13 = 10$	96	$96 - 87 = 9$
Monday	203	X	19	X	13	X	13	$13 - 0 = 13$

Total units of cakes sold from showcase A from Monday to Saturday = $(147+240+273+281+253+191) = 1385$

Selling price per unit = Rs 50

Thus revenue earned by Mr Kamal = $1385 \times 50 = \text{Rs } 69250$

Total units of cakes sold from showcase B from Monday to Saturday = $(21+15+20+21+23+4) = 104$

Selling price per unit = $(50 \times 90) / 100 = \text{Rs } 45$

Thus revenue earned by Mr Kamal = $104 \times 45 = \text{Rs } 4680$

Total units of cakes sold from showcase C from Monday to Saturday = $(8+1+13+6+7+10) = 45$

Selling price per unit = $(50 \times 80) / 100 = \text{Rs } 40$

Thus revenue earned by Mr Kamal = $45 \times 40 = \text{Rs } 1800$

So, the total revenue earned by Mr Sk. Anisuddin Kamal by selling the one pound fruit-cakes from the first Monday of December 1970 to the next Saturday = $(69250+4680+1800) = \text{Rs } 75730$

Total units of cakes baked from Monday to Saturday = $(190+285+310+327+270+210) = 1592$
Cost of baking each unit = Rs 30

So, the total expenditure incurred by Mr Sk. Anisuddin Kamal in baking the one pound fruit-cakes from the first Monday of December 1970 to the next Saturday = $1592 \times 30 = \text{Rs } 47760$

Hence, the total profit made by Mr Sk. Anisuddin Kamal by baking and selling the one pound fruit-cakes from the first Monday of December 1970 to the next Saturday at the Benachity Bazaar outlet of Paramount Bakers = $(75730 - 47760) = \text{Rs } 27970$

4)

Table Directions for question : Refer to the data given below to answer the questions that follow The above two figures show the savings and expenditure of the family of the Banerjee's under various heads which is in the ratio of the area occupied by the heads. In the left handed figure, GB, FC and ED is perpendicular to AD. Also, $AB = BC = CD$, and $GB : FC : ED = 1 : 2 : 3$. In the right handed figure, MNOP and WXYZ are squares (having the same centre) where WX is half of MN. I, J, K, and L are the mid points of MN, NO, OP and PM respectively. The expenditure on Health is the same as the expenditure on Others. Question : What is the ratio of expenditure on Food to that of Travel in the Banerjee family ? 179,327 Directions for question : Refer to the data given below to answer the questions that follow The above two figures show the savings and expenditure of the family of the Banerjee's under various heads which is in the ratio of the area occupied by the heads. In the left handed figure, GB, FC and ED is perpendicular to AD. Also, $AB = BC = CD$, and $GB : FC : ED = 1 : 2 : 3$. In the right handed figure, MNOP and WXYZ are squares (having the same centre) where WX is half of MN. I, J, K, and L are the mid points of MN, NO, OP and PM respectively. The expenditure on Health is the same as the expenditure on Others.4)

We know that the number of one pound fruit-cakes sold from each showcase on each day was :

Paramount Bakers	Showcase A		Showcase B		Showcase C		Vat V	
	Inventory	Sold	Inventory	Sold	Inventory	Sold	Inventory	Added
Monday	190	$190 - 43 = 147$	30	$30 - 9 = 21$	36	$36 - 28 = 8$	17	X
Tuesday	285	$285 - 45 = 240$	43	$43 - 28 = 15$	9	$9 - 8 = 1$	45	$45 - 17 = 28$
Wednesday	310	$310 - 37 = 273$	45	$45 - 25 = 20$	28	$28 - 15 = 13$	53	$53 - 45 = 8$
Thursday	327	$327 - 46 = 281$	37	$37 - 16 = 21$	25	$25 - 19 = 6$	68	$68 - 53 = 15$
Friday	270	$270 - 17 = 253$	46	$46 - 23 = 23$	16	$16 - 9 = 7$	87	$87 - 68 = 19$
Saturday	210	$210 - 19 = 191$	17	$17 - 13 = 4$	23	$23 - 13 = 10$	96	$96 - 87 = 9$
Monday	203	X	19	X	13	X	13	$13 - 0 = 13$

Total units of cakes sold on Monday = $(147+21+8) = 176$

Total units of cakes sold on Tuesday = $(240+15+1) = 256$

Total units of cakes sold on Wednesday = $(273+20+13) = 306$

Total units of cakes sold on Thursday = $(281+21+6) = 308$

Total units of cakes sold on Friday = $(253+23+7) = 283$

Total units of cakes sold on Saturday = $(191+4+10) = 205$

Thus, we can see that only on Wednesday and Thursday more than 285 units of cakes were sold

Hence, only 2 days from the first Monday of December 1970 to the next Saturday, did Mr Sk. Anisuddin Kamal sell more than 285 units of one pound fruit-cakes at the Benachity Bazaar outlet of Paramount Bakers

5)

We know that the number of one pound fruit-cakes sold from each showcase on each day was :

Paramount Bakers	Showcase A		Showcase B		Showcase C		Vat V	
	Inventory	Sold	Inventory	Sold	Inventory	Sold	Inventory	Added
Monday	190	$190 - 43 = 147$	30	$30 - 9 = 21$	36	$36 - 28 = 8$	17	X
Tuesday	285	$285 - 45 = 240$	43	$43 - 28 = 15$	9	$9 - 8 = 1$	45	$45 - 17 = 28$
Wednesday	310	$310 - 37 = 273$	45	$45 - 25 = 20$	28	$28 - 15 = 13$	53	$53 - 45 = 8$
Thursday	327	$327 - 46 = 281$	37	$37 - 16 = 21$	25	$25 - 19 = 6$	68	$68 - 53 = 15$
Friday	270	$270 - 17 = 253$	46	$46 - 23 = 23$	16	$16 - 9 = 7$	87	$87 - 68 = 19$
Saturday	210	$210 - 19 = 191$	17	$17 - 13 = 4$	23	$23 - 13 = 10$	96	$96 - 87 = 9$
Monday	203	X	19	X	13	X	13	$13 - 0 = 13$

Total units of cakes sold from showcase A on Tuesday = 240

Since one customer purchased only one unit of the one pound fruit cake from showcase A, hence number of customers = 240

Selling price per unit for 50%, that is 120 of them = $(50*95)/100 = \text{Rs } 47.50$

Selling price per unit for the remaining 120 of them = Rs 50

Thus revenue earned by Mr Kamal = $(120*47.50 + 120*50) = (5700+6000) = \text{Rs } 11700$

Total units of cakes sold from showcase B on Tuesday = 115

Selling price per unit = $(50*90)/100 = \text{Rs } 45$

Thus revenue earned by Mr Kamal = $15*45 = \text{Rs } 675$

Total units of cakes sold from showcase C on Tuesday = 1
 Selling price per unit = $(50 \times 80) / 100 = \text{Rs } 40$
 Thus revenue earned by Mr Kamal = $1 \times 40 = \text{Rs } 40$

So, the total revenue earned by Mr Sk. Anisuddin Kamal by selling the one pound fruit-cakes on Tuesday = $(11700 + 675 + 40) = \text{Rs } 12415$

Total units of cakes baked on Tuesday = 285
 Cost of baking each unit = Rs 30

So, the total expenditure incurred by Mr Sk. Anisuddin Kamal in baking the one pound fruit-cakes on Tuesday = $285 \times 30 = \text{Rs } 8550$

Hence, the profit percentage made by Mr Sk. Anisuddin Kamal by baking and selling the one pound fruit-cakes on Tuesday at the Benachity Bazaar outlet of Paramount Bakers
 $= (12415 - 8550) \times 100 / 8550$
 $= (3865 \times 100) / 8550$
 $= 45\%$

6)

From the two tables, the following could be concluded :

In 1991:

- a) Since Agassi never played with Graf, Agassi's partner in both the wins was Navratilova
- b) Hence Connors and Borg both had Graf as their partner in their 2 wins each

In 1992 :

- a) Since Sabatini did not have the opportunity to play with Borg, Sabatini's partner in both her wins was Edberg
- b) Hence in his four Mixed-Doubles wins Borg had Navratilova and Chris Evert as his partner in two wins each

In 1994 :

- a) Since McEnroe did not team up with anybody else but Navratilova among the top four women seeds, both his wins could only be with Navratilova as his partner.
- b) Hence Connors paired up with Sabatini in both his wins.

In 1993 :

- a) Connors had paired up with only two women players in all five years, one of them being Graf in 1991 and the other Sabatini in 1994. Hence two of his four wins had to be with Graf, and the other two with Sabatini
- b) Hence McEnroe, Edberg, and Agassi all won their two Grand Slams each with the Others

In 1995 :

- a) Connors could only play with Graf for his two wins
- b) Borg did not team up with women players below the top four seed. Hence his two wins had to come from pairing up with Chris Evert .
- c) Hence Edberg and Agassi had teamed up with the Others for their two wins each.

Hence, in 1993, the four Mixed-doubles Grand-Slam wins of Connors were with Graf and Sabatini

7)

From the conclusions that could be drawn from the two tables, we can say that Chris Evert's four wins in the five years had been with Borg only

8)

From the conclusions that could be drawn from the two tables, we can say that Edberg's wins had been with Sabatini and Others

9)

From the conclusions that could be drawn from the two tables, we can say that both the wins of McEnroe in 1993 had been with Others only

10)

Below are the total number of wins by all pairs formed from 1991 to 1995 :

- a) Agassi and Navratilova – 2 wins
- b) Agassi and Others – 4 wins
- c) Borg and Graf – 2 wins
- d) Borg and Chris Evert – 4 wins
- e) Borg and Navratilova – 2 wins
- f) Edberg and Sabatini – 2 wins
- g) Edberg and Others – 4 wins
- h) McEnroe and Navratilova – 2 wins
- i) McEnroe and Others – 2 wins
- j) Connors and Sabatini – 4 wins
- k) Connors and Graf – 6 wins

Hence, the Connors and Graf pair had won the maximum Mixed-Doubles Grand Slams in the five years (1991 to 1995) taken together

11)

From Graph A we can say that the percentage utilization of the capacity of extra hardened steel ingot production at Durgapur Steel Plant in 2020 was 45%

From Graph C we can say that the extra hardened steel ingot production at Durgapur Steel Plant in 2020 was 9.1 billion tonnes

Hence, the total capacity of extra hardened steel ingot production at Durgapur Steel Plant in 2020 = $(9.1) / (45/100) = (9.1 \times 100) / 45 = 20.2$ billion tonnes

12)

From both Graph A and Graph C, we can say :

The total capacity of extra hardened steel ingot production at Durgapur Steel Plant in 2022 = $(8.9 \times 100) / 75 = 11.87$ billion tonnes

The total capacity of extra hardened steel ingot production at Durgapur Steel Plant in 2019 = $(6.4 \times 100) / 20 = 32$ billion tonnes

The total capacity of extra hardened steel ingot production at Durgapur Steel Plant in 2017 = $(9 \times 100) / 60 = 15$ billion tonnes

The total capacity of extra hardened steel ingot production at Durgapur Steel Plant in 2015 = $(4.5 \times 100) / 45 = 10$ billion tonnes

Hence, the total capacity of extra hardened steel ingot production at Durgapur Steel Plant was the highest in 2019 at 32 billion tonnes

13)

On observing the Graphs A and C, we may think that statement I is correct, as both the utilization of the capacity of production and the production are decreasing within 2017 to 2019. However, the proportion of decrease of the utilization of the capacity of production is $20/60 = 1/3$ in 2018 and $20/40 = 1/2$ in 2019, while the proportion of decrease of the production is $1/9$ in 2018 and $1.6/8 = 1/5$ in 2019.

Hence the proportion of decrease is not the same.

Thus statement I is not true.

The total capacity of extra hardened steel ingot production at Durgapur Steel Plant in 2017 = $(9 \times 100) / 60 = 15$ billion tonnes

The total capacity of extra hardened steel ingot production at Durgapur Steel Plant in 2018 = $(8 \times 100) / 40 = 20$ billion tonnes

The total capacity of extra hardened steel ingot production at Durgapur Steel Plant in 2019 = $(6.4 \times 100) / 20 = 32$ billion tonnes

Hence statement II is true

Production of extra hardened steel ingot at Durgapur Steel Plant was highest in 2021

Utilization of the capacity of extra hardened steel ingot production at Durgapur Steel Plant was the highest in 2022

Hence statement III is not true.

14)

Observing Graph B, we can say that in only 2019 to 2020, while the imports were on the increase from 150 to 200 thousand tonnes, exports were on the decrease from 600 to 500 thousand tonnes.

Hence, within 2015 to 2022, there was an increase in the imports accompanied by a decrease in the exports of extra hardened steel ingots at Durgapur Steel Plant only once.

15)

The total capacity of extra hardened steel ingot production at Durgapur Steel Plant in 2015 = $(4.5 \times 100) / 45 = 10$ billion tonnes

The total capacity of extra hardened steel ingot production at Durgapur Steel Plant in 2022 = $(8.9 \times 100) / 75 = 11.87$ billion tonnes

Percentage increase = $\{(11.87 - 10) \times 100\} / 10 = (1.87 \times 100) / 10 = 18.7\%$

Hence, the average annual percentage increase = $18.7 / 7 = 2.7\%$

16)

Total number of resident families owning a Hyundai = $(90 + 180 + 400 + 200 + 115 + 140) = 1125$

But Hyundai owners are 18% of the total resident families

Hence the number of Mahindra owners = $(1125/18)*14 = 875$

17)

Number of Hyundai owning resident families from tower Pine = 90

Total number of resident families owning a Hyundai = $(90+180+400+200+115+140) = 1125$

Total number of resident families owning a Maruti = $(1125/18)*20 = 1250$

Let number of Maruti owning resident families from tower Pine be x

Thus, $90/1125 = x/1250$

or, $x = (90*1250)/1125$

or, $x = 100$

Hence, number of Maruti owning resident families from tower Pine = 100

18)

Total number of resident families owning a Hyundai = $(90+180+400+200+115+140) = 1125$

Thus, total number of resident families owning a Kia = $(1125/18)*12 = 750$

Also total number of resident families in South-City Condominium = $(1125/18)*100 = 6250$

Hence total resident families in tower Fir = $(6250*12)/100 = 750$

In tower Fir, already 200 resident families own a Hyundai.

It may happen that the rest of the $(750 - 200) = 550$ resident families own a Kia

Hence, largest possible percentage of resident families owning a Kia that can be from tower

Fir = $(550/750)*100 = 73\%$

19)

Number of Hyundai owning resident families from tower Cedar = 180

Total number of resident families owning a Hyundai = $(90+180+400+200+115+140) = 1125$

Total number of resident families owning a Tata = $(1125/18)*16 = 1000$

Let number of Tata owning resident families from tower Cedar be x

Thus, $0.5*(180/1125) = (x/1000)$

or, $x = (0.5*180*1000)/1125$

or, $x = 80$

Hence, number of Tata owning resident families from tower Cedar = 80

Total number of resident families owning a Kia = $(1125/18)*12 = 750$

Let number of Kia owning resident families from tower Cedar be y

Thus, $80/1000 = (2/3)*(y/750)$

or, $y = (80*3*750)/2*1000$

or, $y = 90$

Hence, number of Kia owning resident families from tower Cedar = 90

20)

Total number of resident families owning a Hyundai = $(90+180+400+200+115+140) = 1125$

Thus, total number of resident families owning a Mercedes = $(1125/18)*10 = 625$

Also total number of resident families in South-City Condominium = $(1125/18)*100 = 6250$

Hence total resident families in tower Sequoia = $(6250*1)/5 = 1250$

Number of resident families owning a Hyundai in tower Spruce and tower Cypress together = $115 + 140 = 255$

Thus number of resident families in tower Sequoia who own a Mercedes = $(255*1)/5 = 51$

In tower Sequoia, already 400 resident families own a Hyundai and 51 resident families own a Mercedes

Hence, the number of resident families in tower Sequoia who own an automobile other than a Hyundai or a Mercedes

= $1250 - (255+51)$

= $1250 - 306$

= 944

21)

		Vegetable	Potato	Chicken	Egg	Flour	Bread Crumb	Total Weight	Frying Oil	Total Expense
Vegetable Cutlet before 20 th May	Normal Quantity (kg) or (lit)	2	1	0	0	2	0.5	5.5	2	
	Normal Rates (Rs/kg) or (Rs/lit)	80	40	0	0	80	200		180	
	Normal Expense (Rs)	$2*80 = 160$	$1*40 = 40$	0	0	$2*80 = 160$	$0.5*200 = 100$		$2*180 = 360$	820
Chicken Cutlet before 20 th May	Normal Quantity (kg) or (lit)	0	2	3	1	1	1	8	2	
	Normal Rates (Rs/kg) or (Rs/lit)	0	40	150	30	80	200		180	
	Normal Expense (Rs)	0	$2*40 = 80$	$3*150 = 450$	$1*30 = 30$	$1*80 = 80$	$1*200 = 200$		$2*180 = 360$	1200

Making cost per Chicken Cutlet = $1200/50 = \text{Rs } 24$

Selling price per item = Rs 45

Hence, profit % in selling Chicken Cutlets in May 2020, but before the 20th = $\{(45 - 24)/24\} * 100 = 87.50\%$

22)

		Vegetable	Potato	Chicken	Egg	Flour	Bread Crumb	Total Weight	Frying Oil	Total Expense
Vegetable Cutlet before 20 th May	Normal Quantity (kg) or (lit)	2	1	0	0	2	0.5	5.5	2	
	Normal Rates (Rs/kg) or (Rs/lit)	80	40	0	0	80	200		180	
	Normal Expense (Rs)	2*80 = 160	1*40 = 40	0	0	2*80 = 160	0.5*200 = 100		2*180 = 360	820
Chicken Cutlet before 20 th May	Normal Quantity (kg) or (lit)	0	2	3	1	1	1	8	2	
	Normal Rates (Rs/kg) or (Rs/lit)	0	40	150	30	80	200		180	
	Normal Expense (Rs)	0	2*40 = 80	3*150 = 450	1*30 = 30	1*80 = 80	1*200 = 200		2*180 = 360	1200

Making cost per Vegetable Cutlet = $820/50 = \text{Rs } 16.40$

Selling price per item = Rs 25

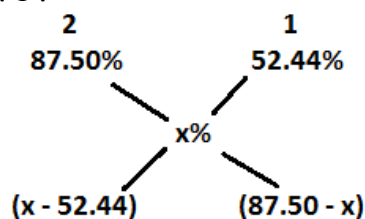
Hence, profit % in selling Vegetable Cutlets in May 2020, but before the 20th = $\{(25 - 16.40)/16.40\} * 100 = 52.44\%$

23)

Profit % of 1 Chicken Cutlet = 87.50% (answer to Q 1)

Profit % of 1 Vegetable Cutlet = 52.44% (answer to Q 2)

Alligating them in ratio of $66 : 33 = 2 : 1$:



$$(x - 52.44)/(87.50 - x) = 2/1$$

or, $x - 52.44 = 175 - 2x$

or, $x = 75.81\%$

Hence, the overall profit percent on a day in May 2022 before 20th is 75.81%

24)

If the Vegetable Cutlets have equal weight as before, then 50 Vegetable Cutlets will weigh the same as before, that is the total weight of the raw ingredients will be the same as before.

		Vegetable	Potato	Chicken	Egg	Flour	Bread Crumb	Total Weight	Frying Oil	Total Expense
Vegetable Cutlet before 20 th May	Normal Quantity (kg) or (lit)	2	1	0	0	2	0.5	5.5	2	
	Normal Rates (Rs/kg) or (Rs/lit)	80	40	0	0	80	200		180	
	Normal Expense (Rs)	$2*80 = 160$	$1*40 = 40$	0	0	$2*80 = 160$	$0.5*200 = 100$		$2*180 = 360$	820
Vegetable Cutlet after 20 th May	Different Ratio of Quantity	1	1	0	0	1	0	3	1	
	Different Quantity to make unit item of same weight and quantity (kg) or (lit)	$5.5*(1/3) = 1.83$	$5.5*(1/3) = 1.83$	0	0	$5.5*(1/3) = 1.83$	0	5.5	1.83	
	Changed Rates	$80*(200/100) = 160$	$40*(150/100) = 60$	0	0	$80*(130/100) = 104$	0		180 (No	

	(Rs/kg) or (Rs/lit)								change)	
	Changed Expense (Rs)	$1.83 \times 160 = 292.80$	$1.83 \times 60 = 109.80$	0	0	$1.83 \times 104 = 190.32$	0		$1.83 \times 180 = 329.40$	922.32

Price per Vegetable Cutlet after 20th = $922.32/50 = \text{Rs } 18.45$

Hence Profit % per Vegetable Cutlet of equal weight as before, on 22nd May 2020 = $\{(25 - 18.45)/18.45\} \times 100 = 35.50\%$

A 25)

		Vegetable	Potato	Chicken	Egg	Flour	Bread Crumb	Total Weight	Frying Oil	Total Expense
Vegetable Cutlet before 20 th May	Normal Quantity (kg) or (lit)	2	1	0	0	2	0.5	5.5	2	
	Normal Rates (Rs/kg) or (Rs/lit)	80	40	0	0	80	200		180	
	Normal Expense (Rs)	$2 \times 80 = 160$	$1 \times 40 = 40$	0	0	$2 \times 80 = 160$	$0.5 \times 200 = 100$		$2 \times 180 = 360$	820
Vegetable Cutlet after 20 th May	Different Quantity (kg) or (lit)	2	1	0	0	2	0	5	2	
	Different Quantity to make unit item of same weight and quantity (kg) or (lit)	$5.5 \times (2/5) = 2.2$	$5.5 \times (1/5) = 1.1$	0	0	$5.5 \times (2/5) = 2.2$	0	5.5	2 (Frying Oil has no influence over weight of Vegetable Cutlet)	
	Changed Rates (Rs/kg) or (Rs/lit)	$80 \times (200/100) = 160$	$40 \times (150/100) = 60$	0	0	$80 \times (130/100) = 104$	0		180 (No change)	

		Vegetable	Potato	Chicken	Egg	Flour	Bread Crumb	Total Weight	Frying Oil	Total Expense
Vegetable Cutlet before 20 th May	Normal Quantity (kg) or (lit)	2	1	0	0	2	0.5	5.5	2	
	Normal Rates (Rs/kg) or (Rs/lit)	80	40	0	0	80	200		180	
	Normal Expense (Rs)	2*80 = 160	1*40 = 40	0	0	2*80 = 160	0.5*200 = 100		2*180 = 360	820
	Changed Expense (Rs)	2.2*160 = 352	1.1*60 = 66	0	0	2.2*104 = 228.80	0		2*180 = 360	1006.80

Making cost of 50 Vegetable Cutlets = 1006.80

Making cost per Vegetable Cutlet = $1006.80/50 = \text{Rs } 20.14$

Selling price per item = Rs 25

Hence profit % per Vegetable Cutlet on 23rd May 2020 = $\{(25 - 20.14)/20.14\} * 100 = 24.13\%$

26)

Making cost of 50 Vegetable Cutlets = 1006.80 (answer to Q 5)

Profit per 50 Vegetable Cutlets = $25*50 - 1006.80 = \text{Rs } 243.20$

Thus profit per 100 Vegetable Cutlets = $243.20*2 = \text{Rs } 486.40$

		Vegetable	Potato	Chicken	Egg	Flour	Bread Crumb	Total Weight	Frying Oil	Total Expense
Chicken Cutlet before 20 th May	Normal Quantity (kg) or (lit)	0	2	3	1	1	1	8	2	
	Normal Rates (Rs/kg) or (Rs/lit)	0	40	150	30	80	200		180	

	Normal Expense (Rs)	0	$2*40 = 80$	$3*150 = 450$	$1*30 = 30$	$1*80 = 80$	$1*200 = 200$		$2*180 = 360$	1200
	Different Quantity (kg) or (lit)	0	2	3	1	1	0	7	2	
Chicken Cutlet after 20th May	Different Quantity to make unit item of same weight and quantity (kg) or (lit)	0	$8*(2/7) = 2.28$	$8*(3/7) = 3.43$	$8*(1/7) = 1.14$	$8*(1/7) = 1.14$	0	8	2 (Frying Oil has no influence over weight of Chicken Cutlet)	
	Changed Rates (Rs/kg) or (Rs/lit)	0	$40*(150/100) = 60$	$150*(250/100) = 375$	30 (No change)	$80*(130/100) = 104$	0		180 (No change)	
	Changed Expense (Rs)	0	$2.28*60 = 136.80$	$3.43*375 = 1286.25$	$1.14*30 = 34.20$	$1.14*104 = 118.56$	0		$2*180 = 360$	1935.81

Making cost of 50 Chicken Cutlets = 1935.81

Profit per 50 Chicken Cutlets = $45*50 - 1935.81 = \text{Rs } 314.19$

Thus profit per 100 Chicken Cutlets = $314.19*2 = \text{Rs } 628.38$

Hence, if the snack bar owner was able to make 100 units of only one item of the same size and weight per unit as before, his maximum profit in Rs on 23rd May 2020 = Rs 628.38

27)

As per the second graph, it is given that :

$(A+B+C) = 4680$ and $(B+C+D) = 3080$

Adding both we get $A+2(B+C) +D = 7760$ (1)

$$\text{Also } (A+D) = 2240 \dots\dots\dots (2)$$

Subtracting (2) from (1), we get

$$2(B+C) = 7760 - 2240 = 5520 \text{ or, } (B+C) = 2760 \dots\dots\dots (3)$$

$$\text{But } (B-C) = 1560 \dots\dots\dots (4)$$

Solving (3) and (4), we get $B = 2160$ and $C = 600$

$$\text{Thus } A = 4680 - (2160+600) = 1920 \text{ and } D = 3080 - (2160+600) = 320$$

Hence the number of female students enrolled in in Presidency University (PU) in the year 2022 = 320

28)

The number of female students enrolled in 2022 in JU, WBUHS, CU and PU are 1920, 2160, 600 and 320 respectively (answer to Q 1)

As per the first graph, the percentage of male students in JU, WBUHS, CU and PU are 60%, 70%, 75% and 90% respectively

Thus the percentages of the number of female students as found out are 40%, 30%, 25% and 10% of the total students in the four universities respectively

Hence the number of male students in the four universities are :

$$1920 * 60 / 40 = 2880,$$

$$2160 * 70 / 30 = 5040,$$

$$600 * 75 / 25 = 1800 \text{ and}$$

$$320 * 90 / 10 = 2880$$

in the four universities respectively

Hence number of students enrolled in the West Bengal University of Health Sciences (WBUHS) in 2022 = $2160 + 5040 = 7200$

29)

The number of female students in CU = 600

2000 students migrated in the middle of 2022 from other universities to the four universities respectively in the ratio of 2 : 3 : 4 : 1

Hence the number of students who migrated to the four universities respectively are $(2 * 2000) / 10 = 400$, $(3 * 2000) / 10 = 600$, $(4 * 2000) / 10 = 800$ and $(1 * 2000) / 10 = 200$

Since we have to find the minimum number of male students who have migrated, hence we assume that the maximum number of female students have migrated to CU

So the number of female students who have migrated to CU = 800

The number of female students in CU after the migration = $600 + 800 = 1400$

It is given that the number of female students in CU after the migration is equal to the total number of female students who have migrated

Thus number of female students out of the total of 2000 students who have migrated = 1400

Hence the number of male students who have migrated = $2000 - 1400 = 600$

Hence, the total number of male students that have migrated cannot be less than 600

30)

The number of female students enrolled in 2022 in JU, WBUHS, CU and PU are 1920, 2160, 600 and 320 respectively

Thus the average of the female students in the four universities = $(1920+2160+600+320)/4 = 1250$

Number of male students in Jadavpur University (JU) = 2880

Hence, the percent by which the number of male students in Jadavpur University (JU) is more than the average number of female students in all the four universities combined together in 2022 = $\{(2880 - 1250)*100\}/1250 = (1630*100)/1250 = 130.4\%$

31)

Ratio of the overall inflow and the overall outflow of funds by M/S SKD Test Prep in 2022 = $60 : 54 = 10 : 9$

Ratio of the percentage earned by Online Enrolment and the percentage spent on Printing by M/S SKD Test Prep in 2022

= $30 : 20 = 3 : 2$

Hence the ratio of the amount earned by Online Enrolment and the amount spent on Printing by M/S SKD Test Prep in 2022

= $(10*3) : (9*2)$

= $30 : 18$

= $5 : 3$

32)

The sum of the inflow due to Study Material sales and Miscellaneous Income in percentage = $15 + 5 = 20\%$

So, $20\% = 15$ crore rupees

Thus, overall inflow of M/S SKD Test Prep in 2022 = $(15*100)/20 = 75$ crore rupees

The sum of the outflow due to Stationary and Counselling Expense in percentage = $7 + 5 = 12\%$

So, $12\% = 5.40$ crore rupees

Thus, overall outflow of M/S SKD Test Prep in 2022 = $(5.40*100)/12 = 45$ crore rupees

Hence the overall profit of M/S SKD Test Prep in 2022 = $75 - 45 = 30$ crore rupees

33)

Let the total outflow of funds of M/S SKD Test Prep in 2022 be $100x$

So the total inflow of funds = $95x$

Resulting loss = $5x$

So, $5x = 6$ crore rupees

or, $x = 1.20$ crore rupees

Inflow due to Online Enrolment = 30% of $95x = (30*95x)/100 = 28.5x$

Hence the inflow of funds due to Online Enrolment by M/S SKD Test Prep in 2022 = $28.5 * 1.20$
= 34.20 crore rupees

34)

Let the total inflow of funds of M/S SKD Test Prep in 2022 be $100x$

So value of Study Material Sales = 15% of $100x = 15x$

Also value of Online Enrolment = 30% of $100x = 30x$

Let the total outflow of funds of M/S SKD Test Prep in 2022 be $100y$

So value of Lease/Duty Charges = 20% of $100y = 20y$

Also value of Wages = 30% of $100y = 30y$

As per data given,

$$15x = 20y \text{ or, } x = 4y/3$$

Hence, ratio of the Online Enrolment and Wages of M/S SKD Test Prep in 2022 = $30x : 30y =$
 $x : y = 4y/3 : y = 4 : 3$

35)

Let the total outflow of funds of M/S SKD Test Prep in 2022 be $100x$

So, value of Wages in 2022 = 30% of $100x = 30x$

Also value of Printing in 2022 = 20% of $100x = 20x$

Hence the deficit of outflow under the head of Wages of M/S SKD Test Prep in 2021 =
 $(12 * 30x) / 100 = 3.6x$

The outflow under the head of Printing of M/S SKD Test Prep in 2021 remains the same at $20x$

Thus total outflow of funds of M/S SKD Test Prep in 2021 = $100x - 3.6x = 96.4x$

Hence, the percentage of Printing compared to the total outflow of funds in 2021 =
 $(20x * 100) / 96.4x = 20.75\%$

36)

Let the number of management trainees of M/S Deloitte in January 2023 be x

So, the number of management trainees from the department of Consultancy = (15.5% of x)

Number of management trainees who chose Bengaluru as their place of posting = (31% of x)

The number of management trainees who chose Bengaluru as their place of posting and were
from the department of Consultancy = 18% of (15.5% of x)

Hence, percent of management trainees who chose Bengaluru as their place of posting and
were from the department of Consultancy

$$= \{18\% \text{ of } (15.5\% \text{ of } x)\} * 100 / (31\% \text{ of } x)$$

$$= (18 * 15.5) / 31$$

$$= 9\%$$

37)

Let the number of management trainees of M/S Deloitte in January 2023 be x

So, the number of management trainees from department of Marketing = (20% of x)

The number of management trainees from department of Accountancy = (30% of x)

Thus the number of management trainees who chose Kolkata as their place of posting and were from department of Marketing = 27% of (20% of x)

The number of management trainees who chose Mumbai as their place of posting and were from department of Accountancy = 17% of (30% of x)

Hence, compared to the number of management trainees who chose Mumbai as their place of posting and were from department of Accountancy, the number of management trainees who chose Kolkata as their place of posting and were from department of Marketing

$$= \{27\% \text{ of } (20\% \text{ of } x)\} * 100 / \{17\% \text{ of } (30\% \text{ of } x)\}$$

$$= (27*20)*100 / (17*30)$$

$$27/17 = \text{approx } 1.5 \text{ and } 20/30 = 2/3, \text{ and } 1.5*(2/3)*100 = \text{approx } 100$$

Hence result is 106%, as other options are far apart

38)

Let the number of management trainees of M/S Deloitte in January 2023 be x

Number of management trainees who chose Gurugram as their place of posting = (14% of x)

Number of management trainees who chose Pune as their place of posting = (18% of x)

The number of management trainees who chose Gurugram as their place of posting and were from department of Actuary = 15% of (34.5% of x)

The number of management trainees who chose Pune as their place of posting and were from department of Marketing = 12% of (20% of x)

Percent of management trainees who chose Gurugram as their place of posting and were from department of Actuary

$$= \{15\% \text{ of } (34.5\% \text{ of } x)\} * 100 / (14\% \text{ of } x)$$

$$= (15*34.5)/14$$

$$= \text{slightly less than } 37$$

Percent of management trainees who chose Pune as their place of posting and were from department of Marketing

$$= \{12\% \text{ of } (20\% \text{ of } x)\} * 100 / (18\% \text{ of } x)$$

$$= (12*20)/18$$

$$= 40/3$$

Hence, the ratio of the percentages

$$= \text{slightly less than } 37 : 40/3$$

$$= \text{slightly less than } 111 : 40$$

$$= 110 : 40$$

$$= 11 : 4$$

39)

From the previous questions we know that :

20%, 15.5%, 30% and 34.5% of the management trainees of M/S Deloitte in January 2023 were from the departments of Marketing, Consultancy, Accountancy and Actuary respectively

From the data of this question we know that the number of management trainees of M/S Deloitte in January 2023 = 4000

Thus the number of management trainees who chose Bengaluru as their place of posting and were from department of Actuary
 $= 25\%$ of $(34.5\%$ of $4000) = 345$

Also the number of management trainees who chose Gurugram as their place of posting and were from department of Marketing
 $= 12\%$ of $(20\%$ of $4000) = 96$

Hence the number of management trainees who chose Bengaluru as their place of posting and were from department of Actuary was more than the number who chose Gurugram as their place of posting and was from department of Marketing by
 $= 345 - 96$
 $= 249$

40)

Let the number of management trainees of M/S Deloitte in January 2023 be x

Thus the number of management trainees who chose Mumbai as their place of posting and were from department of Consultancy $= 28\%$ of $(20\%$ of x)

So,

$$28\% \text{ of } (20\% \text{ of } x) = 252$$

$$\text{or, } x = (252 * 100 * 100) / (28 * 20)$$

$$\text{or, } x = 4500$$

Hence, the total number of management trainees of M/S Deloitte in January 2023 $= 4500$

41)

The results of the quality control inspection by Mr Ramamurthy on the given day for each testing kit and on each parameter is as follows :

	Testing kit ID	Parameters						
		P	L	R	H	W	S	A
1	2AA23	1	1	1	1	0	1	0
2	3SD34	1	1	1	0	0	1	0
3	2GF12	1	0	1	0	1	1	1
4	1CB43	1	1	0	1	1	0	1
5	1FD64	1	0	0	1	1	0	0
6	1JG89	1	0	1	1	0	0	0
7	4FF32	1	0	1	0	0	0	1
8	4JF05	0	1	1	0	1	0	1
9	9JS37	0	1	1	1	1	1	1
10	0KS93	1	1	0	1	1	1	0
11	3JS39	0	0	0	1	0	1	0
12	1IW91	1	0	1	0	0	1	1

13	3OD9 4	1	1	0	1	1	1	1
14	2SS48	0	1	1	1	1	0	1
15	0OW0 3	1	1	1	1	1	1	1
16	8IS43	0	1	1	1	0	1	0
17	1SD29	1	0	1	0	0	1	0
18	2FM9 3	0	1	1	1	1	0	1
19	5NC0 5	1	0	1	0	1	1	0
20	2HF8 2	1	1	1	1	1	1	1

Out of them only the 9th, 13th, 15th and 20th testing kit passed the quality inspection on at least six parameters.

Hence the percentage = $(4 \times 100) / 20 = 20\%$

42)

The results of the quality control inspection by Mr Ramamurthy on the given day for each testing kit and on each parameter is as follows :

	Testin g kit ID	Parameters						
		P	L	R	H	W	S	A
1	2AA23	1	1	1	1	0	1	0
2	3SD34	1	1	1	0	0	1	0
3	2GF12	1	0	1	0	1	1	1
4	1CB43	1	1	0	1	1	0	1
5	1FD64	1	0	0	1	1	0	0
6	1JG89	1	0	1	1	0	0	0
7	4FF32	1	0	1	0	0	0	1
8	4JF05	0	1	1	0	1	0	1
9	9JS37	0	1	1	1	1	1	1
10	0KS93	1	1	0	1	1	1	0
11	3JS39	0	0	0	1	0	1	0
12	1IW91	1	0	1	0	0	1	1
13	3OD94	1	1	0	1	1	1	1
14	2SS48	0	1	1	1	1	0	1
15	0OW0 3	1	1	1	1	1	1	1
16	8IS43	0	1	1	1	0	1	0
17	1SD29	1	0	1	0	0	1	0
18	2FM9 3	0	1	1	1	1	0	1

19	5NC05	1	0	1	0	1	1	0
20	2HF82	1	1	1	1	1	1	1

It can be seen clearly from the shaded parts that maximum (nine) testing kits checked on the given day by Mr Ramamurthy failed the parameter of Antibodies

43)

The results of the quality control inspection by Mr Ramamurthy on the given day for each testing kit and on each parameter is as follows :

	Testin g kit ID	Parameters						
		P	L	R	H	W	S	A
1	2AA23	1	1	1	1	0	1	0
2	3SD34	1	1	1	0	0	1	0
3	2GF12	1	0	1	0	1	1	1
4	1CB43	1	1	0	1	1	0	1
5	1FD64	1	0	0	1	1	0	0
6	1JG89	1	0	1	1	0	0	0
7	4FF32	1	0	1	0	0	0	1
8	4JF05	0	1	1	0	1	0	1
9	9JS37	0	1	1	1	1	1	1
10	0KS93	1	1	0	1	1	1	0
11	3JS39	0	0	0	1	0	1	0
12	1IW91	1	0	1	0	0	1	1
13	3OD94	1	1	0	1	1	1	1
14	2SS48	0	1	1	1	1	0	1
15	0OW03	1	1	1	1	1	1	1
16	8IS43	0	1	1	1	0	1	0
17	1SD29	1	0	1	0	0	1	0
18	2FM93	0	1	1	1	1	0	1
19	5NC05	1	0	1	0	1	1	0
20	2HF82	1	1	1	1	1	1	1

The maximum number of testing kits checked on the given day by Mr Ramamurthy that failed the quality inspection

Option A: on the parameter 'Platelets' belonged to Lot Number 2. Hence, this option is false.

Option B: on the parameter 'Lymph' belonged to Lot Number 1. Hence, this option is false.

Option C: on the parameter 'WBC' belonged to Lot Number 1. Hence, this option is true.

Option D: on the parameter 'Antibodies' belonged to Lot Number 1. Hence, this option is false.

So the correct answer is Option C

44)

The results of the quality control inspection by Mr Ramamurthy on the given day for each testing kit and on each parameter is as follows :

	Testin g kit ID	Parameters						
		P	L	R	H	W	S	A
1	2AA23	1	1	1	1	0	1	0
2	3SD34	1	1	1	0	0	1	0
3	2GF12	1	0	1	0	1	1	1
4	1CB43	1	1	0	1	1	0	1
5	1FD64	1	0	0	1	1	0	0
6	1JG89	1	0	1	1	0	0	0
7	4FF32	1	0	1	0	0	0	1
8	4JF05	0	1	1	0	1	0	1
9	9JS37	0	1	1	1	1	1	1
10	0KS93	1	1	0	1	1	1	0
11	3JS39	0	0	0	1	0	1	0
12	1IW91	1	0	1	0	0	1	1
13	3OD94	1	1	0	1	1	1	1
14	2SS48	0	1	1	1	1	0	1
15	0OW03	1	1	1	1	1	1	1
16	8IS43	0	1	1	1	0	1	0
17	1SD29	1	0	1	0	0	1	0
18	2FM93	0	1	1	1	1	0	1
19	5NC05	1	0	1	0	1	1	0
20	2HF82	1	1	1	1	1	1	1

Fourteen testing kits failed the quality inspection in exactly one parameter among Platelets, RBC and WBC. Of these fourteen, two testing kits did not pass the quality inspection in all three parameters among Lymph, Swab and Antibodies.

Hence, $(14 - 2) = 12$ testing kits checked on the given day by Mr Ramamurthy failed the quality inspection on exactly one parameter among Platelets, RBC and WBC but passed the quality inspection on at least one parameter among Lymph, Swab and Antibodies.

45)

The results of the quality control inspection by Mr Ramamurthy on the given day for each testing kit and on each parameter is as follows :

	Testin g kit ID	Parameters						
		P	L	R	H	W	S	A
1	2AA2 3	1	1	1	1	0	1	0
2	3SD34	1	1	1	0	0	1	0
3	2GF1 2	1	0	1	0	1	1	1
4	1CB4 3	1	1	0	1	1	0	1
5	1FD64	1	0	0	1	1	0	0
6	1JG89	1	0	1	1	0	0	0
7	4FF32	1	0	1	0	0	0	1
8	4JF05	0	1	1	0	1	0	1
9	9JS37	0	1	1	1	1	1	1
10	0KS93	1	1	0	1	1	1	0
11	3JS39	0	0	0	1	0	1	0
12	1IW9 1	1	0	1	0	0	1	1
13	3OD9 4	1	1	0	1	1	1	1
14	2SS48	0	1	1	1	1	0	1
15	0OW0 3	1	1	1	1	1	1	1
16	8IS43	0	1	1	1	0	1	0
17	1SD29	1	0	1	0	0	1	0
18	2FM9 3	0	1	1	1	1	0	1
19	5NC0 5	1	0	1	0	1	1	0
20	2HF8 2	1	1	1	1	1	1	1

Only the testing kits with ID of 0OW03 and 2HF82 had the perfect quality
0 and 2 were the Lot numbers of them

Hence, the number of Lot numbers of the twenty testing kits had the perfect quality as per the inspection of Mr Ramamurthy = 2

46)

Since investments of Mr Damani and Mr Kedia for all the three years individually were in the ratio of 2 : 3,

Let the investments in 2019 of Mr Damani and Mr Kedia be 200 and 300 units respectively

In 2019, the equity component of the investment of Mr Damani and Mr Kedia were
(52*200)/100 = 104 units and (74*300)/100 = 222 units respectively

In 2019, the return against the equity component of the investment of Mr Damani and Mr Kedia were
 $(75 \times 104) / 100 = 78$ units and $(70 \times 222) / 100 = 155.4$ units respectively

Hence, the return in 2019 against the equity component of the investment of Mr Kedia was
 $\{(155.4 - 78) \times 100\} / 78 = (77.4 \times 100) / 78 = 99\%$ more than that of Mr Damani

47)

As per the data given on Mr Shah in the question, we can say that :

In 2019 his investment was Rs 7 crores at a return of 40%,

In 2020 his investment was Rs 6 crores at a return of 58%,

In 2021 his investment was Rs 8 crores at a return of (say) $x\%$, and

His overall return in the three years on $(7+6+8) =$ Rs 21 crores is 49%

Thus, $\{(7 \times 40) + (6 \times 58) + (8 \times x)\} = 21 \times 49$

or, $8x = 1029 - (280 + 348)$

or, $8x = 401$

Hence, Mr Shah's return for 2021 = $401 / 100 =$ Rs 4.01 crores

48)

As per the data given on Mr Rakesh,

His best return on investment was 88% in one year,

His return on investment in another year was 45%, and

His overall return on investment was 63%

Let the return on investment in the remaining year be (say) $x\%$

Since the investment of Mr Rakesh was the same every year, his overall return on investment was the arithmetic mean of the individual return on investment for each of the three years

Thus, $(88+45+x)/3 = 63$

or, $x = 63 \times 3 - 133$

or, $x = 56\%$

Thus, the return against investment of Mr Rakesh in the three years were 88%, 45% and 56% in any order

Hence, within these three years the worst yearly return percentage for Mr Rakesh was 45%

49)

As per the data given on Mr Ashish,

His best return on investment was 93% in one year,

His return on investment in another year was 12%, and

His overall return on investment was 26%

Let the return on investment in the remaining year be (say) $x\%$

If the worst possible percentage return in a year for Mr Ashish were to be found out, the maximum investment must have the maximum return of 93%

The total investment in three years by Mr Ashish = $(15+18+32) =$ Rs 65 crores

Case A :

Let the 32 crore investment have a return of 93%, the 18 crore investment a return of 12% and the 15 crore investment a return of $x\%$

$$\text{Thus } \{(32 \times 93) + (18 \times 12) + (15 \times x)\} = 26 \times 65$$

$$\text{or, } 2976 + 216 + 15x = 1690$$

$$\text{or, } 15x = -1502$$

$$\text{or, } x = -100\%$$

Case B :

Let the 32 crore investment have a return of 93%, the 15 crore investment a return of 12% and the 18 crore investment a return of $x\%$

$$\text{Thus } \{(32 \times 93) + (15 \times 12) + (18 \times x)\} = 26 \times 65$$

$$\text{or, } 2976 + 180 + 18x = 1690$$

$$\text{or, } 18x = -1466$$

$$\text{or, } x = -81\%$$

Hence, during the three year period the worst possible percentage return in a year for Mr Ashish = -100%

50)

I) As per the data given on Mr Bhansali, his best return on investment was 106% in one year, his return on investment in another year was 27%, and his overall return on investment was 51%

Let the return on investment in the remaining year be (say) $a\%$

Since the investment of Mr Bhansali was the same every year, his overall return on investment was the arithmetic mean of the individual return on investment for each of the three years

$$\text{Thus, } (106 + 27 + a)/3 = 51$$

$$\text{or, } a = 51 \times 3 - 133$$

$$\text{or, } a = 20\%$$

Thus, the return against investment of Mr Bhansali in the three years were 106%, 27% and 20% in any order, and in no year was a loss incurred

II) As per the data given on Mr Harshad, his best return on investment was 53% in one year, his return on investment in another year was 11%, and his overall return on investment was 29%

Let the return on investment in the remaining year be (say) $b\%$

Since the investment of Mr Harshad was the same every year, his overall return on investment was the arithmetic mean of the individual return on investment for each of the three years

$$\text{Thus, } (53 + 11 + b)/3 = 29$$

$$\text{or, } b = 29 \times 3 - 64$$

$$\text{or, } b = 23\%$$

Thus, the return against investment of Mr Harshad in the three years were 53%, 11% and 23% in any order, and in no year was a loss incurred

III) As per the data given on Mr Parekh, his best return on investment was 86% in one year, his return on investment in another year was 44%, and his overall return on investment was 36%

Let the return on investment in the remaining year be (say) $c\%$

Since the investment of Mr Parekh was the same every year, his overall return on investment was the arithmetic mean of the individual return on investment for each of the three years

$$\text{Thus, } (86+44+c)/3 = 36$$

$$\text{or, } c = 36 \times 3 - 130$$

$$\text{or, } c = -22\%$$

Thus, the return against investment of Mr Parekh in the three years were 86%, 44% and -22% in any order, and hence in one year a loss was incurred

IV) As per the data given on Mr Vineet, his best return on investment was 76% in one year, his return on investment in another year was 21%, and his overall return on investment was 56%

Let the return on investment in the remaining year be (say) $d\%$

Since the investment of Mr Vineet was the same every year, his overall return on investment was the arithmetic mean of the individual return on investment for each of the three years

$$\text{Thus, } (76+21+d)/3 = 56$$

$$\text{or, } d = 56 \times 3 - 97$$

$$\text{or, } d = 71\%$$

Thus, the return against investment of Mr Vineet in the three years were 76%, 21% and 71% in any order, and in no year was a loss incurred

Hence, amongst the above four investors only Mr Parekh had suffered a loss against investment during any one of the three years

51)

Considering the observed fact number (e), and the order of the throws at the stumps, we can understand there are four distinct cases depending upon who throws the first throw at the stumps.

The cases will occur depending upon the conditions laid down by the observed facts from (a) to (d). The four cases are as given below, with '1' being a throw that hit the stumps, and '0' being a throw that missed the stumps :

1) If Mr Rohit has the first throw :

	Mr Rohit	Mr Ashwin	Mr Chahal	Mr Bishnoi
Round 1	1	0	0	0

Round 2	1	1	1	1
Round 3	0	1	0	1
Round 4	1	0	0	1
Round 5	0	0	0	1
Round 6	1	1	1	0
Round 7	1	0	1	1
Round 8	0	0	1	0
Round 9	0	0	1	1
Round 10	1	1	0	1
Round 11	0	1	1	0
Round 12	0	1	0	0
Round 13	0	1	1	1
Round 14	1	0	1	0
Round 15	1	1	0	0
Round 16	1	0	0	0

2) If Mr Ashwin has the first throw :

	Mr Rohit	Mr Ashwin	Mr Chahal	Mr Bishnoi
Round 1	0	1	0	0
Round 2	0	1	1	1
Round 3	1	0	1	0
Round 4	1	1	0	0
Round 5	1	0	0	0

Round 6	1	1	1	1
Round 7	0	1	0	1
Round 8	1	0	0	1
Round 9	0	0	0	1
Round 10	1	1	1	0
Round 11	1	0	1	1
Round 12	0	0	1	0
Round 13	0	0	1	1
Round 14	1	1	0	1
Round 15	0	1	1	0
Round 16	0	1	0	0

3) If Mr Chahal has the first throw :

	Mr Rohit	Mr Ashwin	Mr Chahal	Mr Bishnoi
Round 1	0	0	1	0
Round 2	0	0	1	1
Round 3	1	1	0	1
Round 4	0	1	1	0
Round 5	0	1	0	0
Round 6	0	1	1	1
Round 7	1	0	1	0
Round 8	1	1	0	0
Round 9	1	0	0	0

Round 10	1	1	1	1
Round 11	0	1	0	1
Round 12	1	0	0	1
Round 13	0	0	0	1
Round 14	1	1	1	0
Round 15	1	0	1	1
Round 16	0	0	1	0

4) If Mr Bishnoi has the first throw :

	Mr Rohit	Mr Ashwin	Mr Chahal	Mr Bishnoi
Round 1	0	0	0	1
Round 2	1	1	1	0
Round 3	1	0	1	1
Round 4	0	0	1	0
Round 5	0	0	1	1
Round 6	1	1	0	1
Round 7	0	1	1	0
Round 8	0	1	0	0
Round 9	0	1	1	1
Round 10	1	0	1	0
Round 11	1	1	0	0
Round 12	1	0	0	0
Round 13	1	1	1	1

Round 14	0	1	0	1
Round 15	1	0	0	1
Round 16	0	0	0	1

We can clearly see that irrespective of who has the first throw, a cyclicity of 15 rounds take place.

In the practice session of sixty rounds, the cyclicity of 15 rounds will be repeated four times, as $15 \times 4 = 60$.

We can also add up and notice that irrespective of who throws at the stumps first, each player hits the stump 8 times in 15 rounds.

So per cycle of 15 rounds, the four players will hit the stumps $4 \times 8 = 32$ times.

So, in sixty rounds, a total of $32 \times 4 = 128$ hits at the stumps will be made

Hence, the BCCI President Mr Sourav Ganguly would have to arrange 128 free passes in all for the four players, for the India-Pakistan qualifying match at Dubai International Stadium

52)

The first five rounds of the four cases are as given below, with '1' being a throw that hit the stumps, and '0' being a throw that missed the stumps :

1) If Mr Rohit has the first throw :

	Mr Rohit	Mr Ashwin	Mr Chahal	Mr Bishnoi
Round 1	1	0	0	0
Round 2	1	1	1	1
Round 3	0	1	0	1
Round 4	1	0	0	1
Round 5	0	0	0	1

2) If Mr Ashwin has the first throw :

	Mr Rohit	Mr Ashwin	Mr Chahal	Mr Bishnoi
Round 1	0	1	0	0

Round 2	0	1	1	1
Round 3	1	0	1	0
Round 4	1	1	0	0
Round 5	1	0	0	0

3) If Mr Chahal has the first throw :

	Mr Rohit	Mr Ashwin	Mr Chahal	Mr Bishnoi
Round 1	0	0	1	0
Round 2	0	0	1	1
Round 3	1	1	0	1
Round 4	0	1	1	0
Round 5	0	1	0	0

4) If Mr Bishnoi has the first throw :

	Mr Rohit	Mr Ashwin	Mr Chahal	Mr Bishnoi
Round 1	0	0	0	1
Round 2	1	1	1	0
Round 3	1	0	1	1
Round 4	0	0	1	0
Round 5	0	0	1	1

We can observe that when Mr Rohit or Mr Bishnoi has the first throw, a total of 10 hits are made in the first five rounds.

But when Mr Ashwin or Mr Chahal has the first throw, a total of 9 hits are made in the first five rounds.

Hence, the minimum number of free passes won by the four players in the first five rounds of the practice session = 9

53)

Results of round number thirty-nine would be equivalent to results of round number nine, as there is a cyclicity of 15 rounds in the results of the throws, and because $39 = (15 \times 2 + 9)$

The ninth round of the four cases are as given below, with '1' being a throw that hit the stumps, and '0' being a throw that missed the stumps :

1) If Mr Rohit has the first throw :

	Mr Rohit	Mr Ashwin	Mr Chahal	Mr Bishnoi
Round 9	0	0	1	1

2) If Mr Ashwin has the first throw :

	Mr Rohit	Mr Ashwin	Mr Chahal	Mr Bishnoi
Round 9	0	0	0	1

3) If Mr Chahal has the first throw :

	Mr Rohit	Mr Ashwin	Mr Chahal	Mr Bishnoi
Round 9	1	0	0	0

4) If Mr Bishnoi has the first throw :

	Mr Rohit	Mr Ashwin	Mr Chahal	Mr Bishnoi
Round 9	0	1	1	1

We can see that out of the four different cases possible, Mr Bishnoi hits the stumps in three cases.

Hence, the probability of Mr Bishnoi winning a free pass in round number thirty-nine of the practice session = $\frac{3}{4} = 0.75$

54)

$$73 = (15 \times 4 + 13)$$

So, results of round number seventy-three would be equivalent to results of round number thirteen, as there is a cyclicity of 15 rounds in the results of the throws, irrespective of who throws first.

We can observe that when Mr Rohit or Mr Chahal has the first throw, a total of $(8 \times 4 + 6) = 38$ hits are made by Mr Rohit in seventy-three rounds.

While when Mr Ashwin or Mr Bishnoi has the first throw, a total of $(8 \times 4 + 7) = 39$ hits are made by Mr Rohit in seventy-three rounds.

Since it has not been mentioned in the question as to who had the first throw, hence the number of hits, and hence the number of free passes won, can be either 38 or 39.

Hence, if the total practice session was of seventy-three rounds, the number of free passes Mr Rohit won cannot be determined.

55)

If Mr Chahal has the first throw, we know :

	Mr Rohit	Mr Ashwin	Mr Chahal	Mr Bishnoi
Round 1	0	0	1	0
Round 2	0	0	1	1
Round 3	1	1	0	1
Round 4	0	1	1	0
Round 5	0	1	0	0
Round 6	0	1	1	1
Round 7	1	0	1	0
Round 8	1	1	0	0
Round 9	1	0	0	0
Round 10	1	1	1	1
Round 11	0	1	0	1
Round 12	1	0	0	1

Round 13	0	0	0	1
Round 14	1	1	1	0
Round 15	1	0	1	1
Round 16	0	0	1	0

$$25 = (15 \times 1 + 10)$$

So the result of round number twenty-five is equivalent to the result of round number ten.

So, the scenario in the practice session from the twenty-fifth round (equivalent to 10th round) onwards :

	Mr Rohit	Mr Ashwin	Mr Chahal	Mr Bishnoi
Round 25	1	1	1	1
Round 26		0	1	0
Round 27		0	1	1
Round 28		1	0	1
Round 29		0	0	1
Round 30		1	1	0
Round 31		1	0	0
Round 32		1	1	1
Round 33		0	1	0

So, from the twenty-sixth round, where only Mr Ashwin, Mr Chahal and Mr Bishnoi are participating, a cyclicity of 7 rounds takes place.

Number of rounds between the twenty-sixth and fifty-third round, including both of them = $53 - 26 + 1 = 28$ rounds.

So the cyclicity of 7 rounds will be repeated exactly four times in between the twenty-sixth and fifty-third round, including both of them.

Number of hits at the stumps Mr Ashwin achieved from 1st round till the 25th round

$$= (\text{Hits from 1}^{\text{st}} \text{ round till 15}^{\text{th}} \text{ round}) + (\text{Hits till 1}^{\text{st}} \text{ round till 10}^{\text{th}} \text{ round})$$

$$= 8 + 6$$

$$= 14$$

Number of hits at the stumps Mr Ashwin achieved from 26th round till 53rd round

$$= (\text{Hits till 26}^{\text{th}} \text{ round till 32}^{\text{nd}} \text{ round}) * 4$$

$$= 4 * 4$$

$$= 16$$

$$\text{So, total hits} = 14 + 16 = 30$$

Hence, the number of free passes Mr Ashwin won, in the session of fifty-three rounds initiated by Mr Chahal, where Mr Rohit had to retire hurt after the twenty-fifth throw = 30

56)

If Mr Bishnoi has the first throw, we know :

	Mr Rohit	Mr Ashwin	Mr Chahal	Mr Bishnoi
Round 1	0	0	0	1
Round 2	1	1	1	0
Round 3	1	0	1	1
Round 4	0	0	1	0
Round 5	0	0	1	1
Round 6	1	1	0	1
Round 7	0	1	1	0
Round 8	0	1	0	0
Round 9	0	1	1	1
Round 10	1	0	1	0
Round 11	1	1	0	0
Round 12	1	0	0	0
Round 13	1	1	1	1
Round 14	0	1	0	1

Round 15	1	0	0	1
Round 16	0	0	0	1

$$53 = (15 \times 3 + 8)$$

So the result of round number fifty-three is equivalent to the result of round number eight.

So, the scenario in the practice session from the fifty-third round (equivalent to 8th round) onwards till the end of the session :

	Mr Rohit	Mr Ashwin	Mr Chahal	Mr Bishnoi
Round 53	0	1	0	0
Round 54	0	1	1	
Round 55	1	0	1	
Round 56	0	0	1	
Round 57	1	1	0	
Round 58	1	0	0	
Round 59	1	1	1	1
Round 60	0	1	0	1

Number of hits at the stumps Mr Rohit achieved from 1st round till the 53rd round

$$= (\text{Hits from 1st round till 15th round}) \times 3 + (\text{Hits till 1st round till 8th round})$$

$$= 8 \times 3 + 3$$

$$= 24 + 3$$

$$= 27$$

Number of hits at the stumps Mr Rohit achieved from 54th round till 60th round

$$= 4$$

$$\text{So, total hits} = 27 + 4 = 31$$

Hence, the number of free passes Mr Rohit won, in the session of sixty rounds initiated by Mr Bishnoi, where Mr Bishnoi had to take a washroom break after the fifty-third throw, for the time in which five more rounds of throws with the rest three players happened = 31

57)

The survey was about the percentages of the different public transportation types out of the total ways of public transportation being used in the four cities in West Bengal.

We have no idea about the comparative quantity of total units of public transportation being used in the four cities in West Bengal.

Hence, we can make no comment on the comparative quantity of different public transportation types in the four cities.

Hence, neither of the conclusions are correct

58)

For the given data that the average seating capacity of Private Taxis in Kolkata were double that of Asansol, only option A can be the possible conclusion out of the options.

The other four options are invalid as

B) There is no data given nor any conceivable logic to conclude that vehicles cost less in Kolkata than in Asansol because average seating capacity of Private Taxis in Kolkata were double that of in Asansol

C) We can have no idea of the number of commuters using the Private Taxis

D) No such data is given

59)

Percentage of Government Buses out of the total ways of public transportation being used in Kolkata and Siliguri = 32.00% and 34.70% respectively

The number of Government Buses actually operating in Kolkata and Siliguri in July 2022 was 32000 and 34700 respectively

Thus in Kolkata :

$$32.00\% = 32000$$

$$\text{or, } 100\% = (32000 \times 100) / 32 = 10^5$$

Hence, in Kolkata the total number of public transportation units = 10^5

Also in Siliguri :

$$34.70\% = 34700$$

$$\text{or, } 100\% = (34700 \times 100) / 34.7 = 10^5$$

Hence, in Siliguri the total number of public transportation units = 10^5

Hence, the ratio of the total number of public transportation units in Kolkata and Siliguri = 10^5 : 10^5 = 1 : 1

60)

We have no idea of the total number of transportation units in Siliguri in 2017 or 2022.

Due to this reason the first four options can never be said to be definitely true

Only option D can be definitely concluded

61)

A bookie will always offer less 'Jeet ka Bhav' on teams that are expected to win or are the favorites to win, and vice versa.

Hence, from the 'Jeet ka Bhav's offered by Junior Kolkata on the first four matches of JPL 2022, we can conclude that :

- a) In the first match of DSK versus LKR, DSK is expected to win and LKR is expected to lose, that is DSK is the favorite.
- b) In the second match of EC versus NI, NI is expected to win and EC is expected to lose, that is NI is the favorite.
- c) In the third match of QBKS versus SCB, SCB is expected to win and QBKS is expected to lose, that is SCB is the favorite.
- d) In the fourth match of HT versus MSG, HT is expected to win and MSG is expected to lose, that is HT is the favorite.

When a bookie offers a 'Jeet ka Bhav' of x/y on any cricket team, it means that if the team wins, for every Rs y the gambler has put at stake in the betting, he earns Rs x , in addition to the original stake of Rs y being returned to him. However, if the team loses, the gambler neither earns anything nor gets back his original stake of Rs y , which becomes directly the bookie's profit.

Assuming that in each of the four matches the expected outcome took place, in order to maximize the earnings for his retail gamblers, punter Arbaaz should put the larger amounts at stake on the teams that offer a better return.

From the 'Jeet ka Bhav's offered by bookie Junior Kolkata, we can see that the order of the returns in descending order are from teams HT, SCB, DSK and NI. Hence Arbaaz should put at stake Rs 30 crores on HT, Rs 25 crores on SCB, Rs 20 crores on DSK and Rs 15 crores on NI.

Total stakes put on all four teams = $30+25+20+15 = \text{Rs } 90$ crores

Return on HT = $30 \times (90/100) = \text{Rs } 27$ crores

Return on SCB = $25 \times (70/100) = \text{Rs } 17.5$ crores

Return on DSK = $20 \times (60/100) = \text{Rs } 12$ crores

Return on NI = $15 \times (50/100) = \text{Rs } 7.5$ crores

Hence, total return = $27 + 17.5 + 12 + 7.5 = \text{Rs } 64$ crores

Hence, the maximum possible percentage return Arbaaz could have earned for his retail gamblers (rounded to the nearest integer), assuming that in each of the four matches the expected outcome took place = $(64/90) \times 100 = 71\%$

62)

Money of the retail gamblers put as stake by Gurunath on the favorites to win each of the four matches are as follows :

DSK : Rs 30 crores

NI : Rs 5 crores

SCB : Rs 5 crores

MSG : Rs 5 crores

Later, after getting information that the DSK-LKR match was fixed and LKR was to win the match against DSK, amount of his own money Gurunath put at stake on LKR was Rs 1 crore. In the remaining three matches, the results were as expected, that is the favorite team won.

When a bookie offers a 'Jeet ka Bhav' of x/y on any cricket team, it means that if the team loses, the gambler neither earns anything nor gets back his original stake of Rs y , which becomes directly the bookie's income.

Hence, Income of the bookie Junior Kolkata = Rs 30 crores (since DSK lost)

As a result, due to the stakes put by Gurunath :

Amounts to be paid by the bookie as return to the gamblers are

Gurunath : $1*(100/20) = \text{Rs } 5$ crores (LKR won)

Retail gamblers :

NI won : $5*(50/100) = \text{Rs } 2.5$ crores

SCB won : $5*(70/100) = \text{Rs } 3.5$ crores

HT won : $5*(90/100) = \text{Rs } 4.5$ crores

Amounts to be paid by the bookie as payoffs to the fixed players = $2*2 = \text{Rs } 4$ crores

Amount earned by the bookie on the stakes of Gurunath from fixing the DSK-LKR match = $30 - (5+4) = \text{Rs } 21$ crores.

Hence, amount to be paid by the bookie to the fixer = $21*(5/100) = \text{Rs } 1.05$ crores

Amount earned by the bookie on the stakes of Gurunath for all the four matches = $30 - (5+2.5+3.5+4.5+4) = \text{Rs } 10.5$ crores.

Hence, amount to be paid by the bookie to the punter Gurunath = $10.5*(10/100) = \text{Rs } 1.05$ crores

Hence the final profit Junior Kolkata made (in crores of Rs) on the stakes on all the four matches by Gurunath

= $30 - (5+2.5+3.5+4.5+4+1.05+1.05)$

= $30 - 21.60$

= Rs 8.40 crore

63)

If a punter has the best interests of the retail gamblers in mind, he will put the money at stake on the teams that are favorites, or are surely going to win, with the maximum returns provided on the stake.

If the first and last match was fixed, then a result contrary to the expectation was supposed to take place, that is, the least favorite teams LKR and MSG was to win.

Hence to maximize the returns, Bindoo would put the following stakes on the following teams :

Rs 50 crores on LKR, ensuring return = $50*(100/20) = \text{Rs } 250$ crores

Rs 40 crores on MSG, ensuring return = $40*(100/70) = \text{Rs } 57.14$ crores

Rs 30 crores on SCB, ensuring return = $30*(70/100) = \text{Rs } 21$ crores

Rs 20 crores on NI, ensuring return = $20*(50/100) = \text{Rs } 10$ crores

Hence, the maximum return (in crores of Rs, rounded to two decimal places) he could have ensured his retail gamblers

= $(250 + 57.14 + 21 + 10)$

= Rs 338.14 crores

64)

Since Raj is not aware which team will perform contrary to expectation, he will make the selection based upon the three best returns that can be provided.

His logic would be that if the second match between EC and NI showed an unexpected result, then EC would win providing the best return ((100/10) among all eight teams. Then Raj would go for selecting the top two teams in lieu of returns provided if the expected result happens. They are HT (90/100) and SCB (70/100) in that order.

Hence, the three teams should Raj place the stakes on, to try to ensure the maximum return of the retail gamblers are EC, SCB and HT.

65)

In any match, even if it is not fixed, an unexpected result can take place.

Sajid's best return will be ensured if MSG wins, as he has put his Rs 2 crore at stake on MSG. In the third match, Sajid's return will be maximized if he had put at stake his Rs 2 crores on QBKS, and unexpectedly QBKS won.

His maximum possible return in total = $2*(100/70) + 2*(100/40) = 2.86 + 5.00 = \text{Rs } 7.86$ crore.

Sajid's minimum return can be Rs 0 crores, as it may happen that MSD and whatever team in the third match he had put his stake upon lost the matches.

Hence, the difference between his maximum and minimum earnings (in crores of Rs, rounded to two decimal places), assuming that none of the matches were fixed = $7.86 - 0 = \text{Rs } 7.86$ crores

66)

In any match, even if it is not fixed, an unexpected result can take place.

Lalit's best returns will take place if LKR wins the first match contrary to expectation, EC wins the second match contrary to expectation, QBKS wins the third match contrary to expectation, and MSG wins the fourth match contrary to expectation.

Since Lalit is putting at stake equal amounts in each match (whatever it may be), hence his maximum percentage return on his total stake will be the arithmetic mean of the percentage returns of the four teams he should put his stake on.

Percentage return on LKR winning = $(100-20)*100/20 = 400\%$

Percentage return on EC winning = $(100-10)*100/10 = 900\%$

Percentage return on QBKS winning = $(100-40)*100/40 = 150\%$

Percentage return on MSG winning = $(100-70)*100/70 = 42.86\%$

Hence, Lalit's maximum percentage return on his total stake (rounded to the nearest integer), assuming no match is fixed

= $(400 + 900 + 150 + 42.86) / 4$

= 373%

67)

a) Pairing Assumption No 1 and Assumption No 2 :

WINNERS OF MATCHES	Mohun Bagan AC	Eastern Railway FC	Bhawanipore FC	Aryans SC
Mohammedan SC	Mohammedan SC	Eastern Railway FC		
East Bengal FC			East Bengal FC	East Bengal FC
George Telegraph SC				George Telegraph SC
Port Trust SC	Mohun Bagan AC			

Mohun Bagan AC won three, Eastern Railway FC won two, Bhawanipore FC won one and Aryans SC won two of the matches they played.

Mohammedan SC won two, East Bengal FC won three, George Telegraph SC won two and Port Trust SC won one of the matches they played.

Thus :

WINNERS OF MATCHES	Mohun Bagan AC	Eastern Railway FC	Bhawanipore FC	Aryans SC	
Mohammedan SC	Mohammedan SC	Eastern Railway FC	Mohammedan SC	Aryans SC	2
East Bengal FC	Mohun Bagan AC	East Bengal FC	East Bengal FC	East Bengal FC	3
George Telegraph SC	Mohun Bagan AC	Can't be determined	Can't be determined	George Telegraph SC	
Port Trust SC	Mohun Bagan AC	Can't be determined	Can't be determined	Aryans SC	
	3			2	

b) Pairing Assumption No 1 and Assumption No 3 :

WINNERS OF MATCHES	Mohun Bagan AC	Eastern Railway FC	Bhawanipore FC	Aryans SC
Mohammedan SC	Mohammedan SC	Eastern Railway FC		
East Bengal FC			East Bengal FC	

George Telegraph SC		Eastern Railway FC		George Telegraph SC
Port Trust SC	Mohun Bagan AC			

Mohun Bagan AC won three, Eastern Railway FC won two, Bhawanipore FC won one and Aryans SC won two of the matches they played.
 Mohammedan SC won two, East Bengal FC won three, George Telegraph SC won two and Port Trust SC won one of the matches they played.

Thus :

WINNERS OF MATCHES	Mohun Bagan AC	Eastern Railway FC	Bhawanipore FC	Aryans SC	
Mohammedan SC	Mohammedan SC	Eastern Railway FC	Mohammedan SC	Aryans SC	2
East Bengal FC	Mohun Bagan AC	East Bengal FC	East Bengal FC	East Bengal FC	3
George Telegraph SC	Mohun Bagan AC	Eastern Railway FC	George Telegraph SC	George Telegraph SC	2
Port Trust SC	Mohun Bagan AC	Port Trust SC	Bhawanipore FC	Aryans SC	1
	3	2	1	2	

c) Pairing Assumption No 1 and Assumption No 4 :

WINNERS OF MATCHES	Mohun Bagan AC	Eastern Railway FC	Bhawanipore FC	Aryans SC
Mohammedan SC	Mohammedan SC	Eastern Railway FC		
East Bengal FC			East Bengal FC	
George Telegraph SC				George Telegraph SC
Port Trust SC	Mohun Bagan AC			Aryans SC

Mohun Bagan AC won three, Eastern Railway FC won two, Bhawanipore FC won one and Aryans SC won two of the matches they played.
 Mohammedan SC won two, East Bengal FC won three, George Telegraph SC won two and Port Trust SC won one of the matches they played.

Thus :

WINNERS OF MATCHES	Mohun Bagan AC	Eastern Railway FC	Bhawanipore FC	Aryans SC	
Mohammedan SC	Mohammedan SC	Eastern Railway FC	Mohammedan SC	Aryans SC	2
East Bengal FC	Mohun Bagan AC	East Bengal FC	East Bengal FC	East Bengal FC	3
George Telegraph SC	Mohun Bagan AC	Can't be determined	Can't be determined	George Telegraph SC	
Port Trust SC	Mohun Bagan AC	Can't be determined	Can't be determined	Aryans SC	
	3			2	

d) Pairing Assumption No 2 and Assumption No 3 :

WINNERS OF MATCHES	Mohun Bagan AC	Eastern Railway FC	Bhawanipore FC	Aryans SC
Mohammedan SC		Eastern Railway FC		
East Bengal FC			East Bengal FC	East Bengal FC
George Telegraph SC		Eastern Railway FC		George Telegraph SC
Port Trust SC	Mohun Bagan AC			

Mohun Bagan AC won three, Eastern Railway FC won two, Bhawanipore FC won one and Aryans SC won two of the matches they played.
 Mohammedan SC won two, East Bengal FC won three, George Telegraph SC won two and Port Trust SC won one of the matches they played.

Thus :

WINNERS OF MATCHES	Mohun Bagan AC	Eastern Railway FC	Bhawanipore FC	Aryans SC	
Mohammedan SC	Mohammedan SC	Eastern Railway FC	Mohammedan SC	Aryans SC	2
East Bengal FC	Mohun Bagan AC	East Bengal FC	East Bengal FC	East Bengal FC	3
George Telegraph SC	Mohun Bagan AC	Eastern Railway FC	George Telegraph SC	George Telegraph SC	2
Port Trust SC	Mohun Bagan AC	Port Trust SC	Bhawanipore FC	Aryans SC	1
	3	2	1	2	

e) Pairing Assumption No 2 and Assumption No 4 :

WINNERS OF MATCHES	Mohun Bagan AC	Eastern Railway FC	Bhawanipore FC	Aryans SC
Mohammedan SC		Eastern Railway FC		
East Bengal FC			East Bengal FC	East Bengal FC
George Telegraph SC				George Telegraph SC
Port Trust SC	Mohun Bagan AC			Aryans SC

Mohun Bagan AC won three, Eastern Railway FC won two, Bhawanipore FC won one and Aryans SC won two of the matches they played.
 Mohammedan SC won two, East Bengal FC won three, George Telegraph SC won two and Port Trust SC won one of the matches they played.

Thus :

WINNERS OF MATCHES	Mohun Bagan AC	Eastern Railway FC	Bhawanipore FC	Aryans SC	
Mohammedan SC	Mohammedan SC	Eastern Railway FC	Mohammedan SC	Aryans SC	2
East Bengal FC	Mohun Bagan AC	East Bengal FC	East Bengal FC	East Bengal FC	3
George Telegraph SC	Mohun Bagan AC	Can't be determined	Can't be determined	George Telegraph SC	
Port Trust SC	Mohun Bagan AC	Can't be determined	Can't be determined	Aryans SC	
	3			2	

f) Pairing Assumption No 3 and Assumption No 4 :

WINNERS OF MATCHES	Mohun Bagan AC	Eastern Railway FC	Bhawanipore FC	Aryans SC
Mohammedan SC		Eastern Railway FC		
East Bengal FC			East Bengal FC	
George Telegraph SC		Eastern Railway FC		George Telegraph SC

Port Trust SC	Mohun Bagan AC			Aryans SC
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Mohun Bagan AC won three, Eastern Railway FC won two, Bhawanipore FC won one and Aryans SC won two of the matches they played.

Mohammedan SC won two, East Bengal FC won three, George Telegraph SC won two and Port Trust SC won one of the matches they played.

Thus :

WINNERS OF MATCHES	Mohun Bagan AC	Eastern Railway FC	Bhawanipore FC	Aryans SC	
Mohammedan SC	Can't be determined	Eastern Railway FC	Mohammedan SC	Can't be determined	
East Bengal FC	Can't be determined	East Bengal FC	East Bengal FC	Can't be determined	
George Telegraph SC	Mohun Bagan AC	Eastern Railway FC	George Telegraph SC	George Telegraph SC	2
Port Trust SC	Mohun Bagan AC	Port Trust SC	Bhawanipore FC	Aryans SC	1
		2	1		

Observing all the six possible pairings (a to f) of assumptions, we find that only in pairs (b) - Pairing Assumption No 1 and Assumption No 3, and (d) - Pairing Assumption No 2 and Assumption No 3, the winners of all the matches played in the 2022 Premier Division-A of Calcutta Football League can be determined.

Hence, only two pairs of combinations of the four assumptions given would be sufficient to determine the winners of all the matches played in the 2022 Premier Division-A of Calcutta Football League.

68)

a) If Assumption No 2 was correct, then :

WINNERS OF MATCHES	Mohun Bagan AC	Eastern Railway FC	Bhawanipore FC	Aryans SC
Mohammedan SC		Eastern Railway FC		
East Bengal FC			East Bengal FC	East Bengal FC
George Telegraph SC				George Telegraph SC
Port Trust SC	Mohun Bagan AC			

Mohun Bagan AC won three, Eastern Railway FC won two, Bhawanipore FC won one and Aryans SC won two of the matches they played.
Mohammedan SC won two, East Bengal FC won three, George Telegraph SC won two and Port Trust SC won one of the matches they played.

Thus :

WINNERS OF MATCHES	Mohun Bagan AC	Eastern Railway FC	Bhawanipore FC	Aryans SC	
Mohammedan SC	Mohammedan SC	Eastern Railway FC	Mohammedan SC	Aryans SC	2
East Bengal FC	Mohun Bagan AC	East Bengal FC	East Bengal FC	East Bengal FC	3
George Telegraph SC	Mohun Bagan AC	Can't be determined	Can't be determined	George Telegraph SC	
Port Trust SC	Mohun Bagan AC	Can't be determined	Can't be determined	Aryans SC	
	3			2	

Assumption No 4 said that Aryans SC won against Port Trust SC. But that could be deducted if Assumption No 2 was correct, as shown above. So if Assumption No 2 was correct, Assumption No 4 did not provide any new information and hence was unnecessary. So Mr Bhutia was correct.

b) If Assumption No 3 was correct, then :

WINNERS OF MATCHES	Mohun Bagan AC	Eastern Railway FC	Bhawanipore FC	Aryans SC
Mohammedan SC		Eastern Railway FC		
East Bengal FC			East Bengal FC	
George Telegraph SC		Eastern Railway FC		George Telegraph SC
Port Trust SC	Mohun Bagan AC			

Mohun Bagan AC won three, Eastern Railway FC won two, Bhawanipore FC won one and Aryans SC won two of the matches they played.
Mohammedan SC won two, East Bengal FC won three, George Telegraph SC won two and Port Trust SC won one of the matches they played.

Thus :

WINNERS OF MATCHES	Mohun Bagan AC	Eastern Railway FC	Bhawanipore FC	Aryans SC	
Mohammedan SC	Can't be determined	Eastern Railway FC	Mohammedan SC	Can't be determined	
East Bengal FC	Can't be determined	East Bengal FC	East Bengal FC	Can't be determined	
George Telegraph SC	Mohun Bagan AC	Eastern Railway FC	George Telegraph SC	George Telegraph SC	2
Port Trust SC	Mohun Bagan AC	Port Trust SC	Bhawanipore FC	Aryans SC	1
		2	1		

Assumption No 4 said that Aryans SC won against Port Trust SC. But that could be deducted if Assumption No 3 was correct, as shown above. So if Assumption No 3 was correct, Assumption No 4 did not provide any new information and hence was unnecessary. So Mr Chhetri was also correct.

Hence, both Mr Bhutia and Mr Chhetri were correct.

69)

We have already deduced in the first question that if Assumption No 1 and Assumption No 2 both were correct, then :

WINNERS OF MATCHES	Mohun Bagan AC	Eastern Railway FC	Bhawanipore FC	Aryans SC	
Mohammedan SC	Mohammedan SC	Eastern Railway FC	Mohammedan SC	Aryans SC	2
East Bengal FC	Mohun Bagan AC	East Bengal FC	East Bengal FC	East Bengal FC	3
George Telegraph SC	Mohun Bagan AC	Can't be determined	Can't be determined	George Telegraph SC	
Port Trust SC	Mohun Bagan AC	Can't be determined	Can't be determined	Aryans SC	
	3			2	

The results of a) George Telegraph SC vs Eastern Railway FC, b) George Telegraph SC vs Bhawanipore FC, c) Port Trust FC vs Eastern Railway FC, and d) Port Trust FC vs Bhawanipore FC could not be determined.

Hence, if only Assumption No 1 and Assumption No 2 were made, and both of them were correct assumptions, the results of four matches played in the 2022 Premier Division-A of Calcutta Football League could not be determined.

70)

We have already deduced in the first question that if Assumption No 2 and Assumption No 3 both were correct, then :

WINNERS OF MATCHES	Mohun Bagan AC	Eastern Railway FC	Bhawanipore FC	Aryans SC	
Mohammedan SC	Mohammedan SC	Eastern Railway FC	Mohammedan SC	Aryans SC	2
East Bengal FC	Mohun Bagan AC	East Bengal FC	East Bengal FC	East Bengal FC	3
George Telegraph SC	Mohun Bagan AC	Eastern Railway FC	George Telegraph SC	George Telegraph SC	2
Port Trust SC	Mohun Bagan AC	Port Trust SC	Bhawanipore FC	Aryans SC	1
	3	2	1	2	

Bhawanipore FC did lose to George Telegraph SC
 Also Aryans SC won against Port Trust SC

Hence, Conclusion No A is definitely correct, Conclusion No B is definitely incorrect

71)

It is given that at any particular point of time, exactly one among Amal, Bimal and Chintu always tells the truth, one always lies and one always alternates between truth and lie, in any order.

Case 1 : Let us assume that Amal is the truth teller.

Hence all of Amal's statements are true.

Considering his second statement it can be concluded that Bimal's first statement is false.
 Also considering his third statement it can be concluded that Chintu's second statement is false.
 Also Chintu's third statement is false, as we have considered Amal to be a truth teller
 Hence :

	Stat 1	Stat 2	Stat 3
Amal	T	T	T
Bimal	F		
Chintu		F	F

So Bimal has to be the alternator and Chintu the liar.

Hence :

	Stat 1	Stat 2	Stat 3
Amal	T	T	T
Bimal	F	T	F

Chintu	F	F	F
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Hence, when Amal is the truth teller,

We can conclude that Chintu has bought 21 books (Bimal Stat 2), or 19/20/22/23 books (Amal Stat 3)

Hence we can conclude that Amal has bought $21+2 = 23$ or, $19+2 = 21$ or, $20+2 = 22$ or, $22+2 = 24$ books (Amal Stat 1). But $23+2 = 25$ books is not possible as it violates the upper criteria of books bought.

Bimal has not bought 19 books (Amal Stat 2). But no other conclusion can be drawn about books bought by Bimal. So Bimal has bought either 18 or, 20 or, 21 or, 22 or, 23 or, 24 books

Case 2 : Let us assume that Bimal is the truth teller.

Hence all of Bimal's statements are true.

Considering his first statement it can be concluded that Amal's second statement is false

Also considering his second statement it can be concluded that Chintu's second statement is false and Amal's third statement is true

Also, considering his second and third statement together, it can be concluded that Amal's first statement is also false.

Hence :

	Stat 1	Stat 2	Stat 3
Amal	F	F	T
Bimal	T	T	T
Chintu		F	

But such a case of FFT (for Amal) is not possible.

So Bimal can never be the truth teller.

Case 3 : Let us assume that Chintu is the truth teller.

Hence all of Chintu's statements are true.

Considering his second statement, we can conclude that Amal's third statement and Bimal's second statement are both false.

Also, considering his second statement, Chintu has the highest possible number of books bought, and hence Amal cannot buy 2 books more than Chintu. Hence Amal's first statement is also false.

Hence :

	Stat 1	Stat 2	Stat 3
Amal	F		F
Bimal		F	
Chintu	T	T	T

Hence, when Chintu is the truth teller, two sub-cases can happen. Either, Amal is the alternator and Bimal the liar, or vice-versa.

Sub-case 3A : Amal is the alternator and Bimal the liar

	Stat 1	Stat 2	Stat 3
Amal	F	T	F
Bimal	F	F	F
Chintu	T	T	T

We can conclude that Chintu has bought 24 books (Chintu Stat 2)

We can conclude that Amal has not bought 18 books (Bimal Stat 3), nor 24 books (Chintu Stat 1). Hence Amal has bought either 19 or, 20 or, 21 or, 22 or, 23 books

Bimal has not bought 19 books (Amal Stat 2). But no other conclusion can be drawn about books bought by Bimal. So Bimal has bought either 18 or, 20 or, 21 or, 22 or, 23 books.

Sub-case 3B : Amal is the liar and Bimal the alternator

	Stat 1	Stat 2	Stat 3
Amal	F	F	F
Bimal	T	F	T
Chintu	T	T	T

We can conclude that Chintu has bought 24 books (Chintu Stat 3)

We can conclude that Bimal has bought 19 books (Bimal Stat 1)

Amal has bought 18 books (Bimal Stat 3)

As we can see from the above, either Amal or Chintu can be the truth teller

Hence, 'None of the above' is the correct option

72)

As we can see from the explanation given in answer 1, Bimal can be the alternator either in Case 1 or Case 3B.

In Case 1, Chintu can buy 21 books.

In Case 3B, Chintu can buy 24 books.

Hence exactly one of the cases can be true

73)

As we can see from the explanation given in answer 1,

Whenever Amal has been the liar, Chintu has bought 24 books (Case 3B)

Whenever Chintu has been the truth teller, Chintu has bought 24 books (Case 3A and 3B)

Whenever Bimal has been the alternator, Chintu has bought either 24 books (Case 3B) or 19, 20, 21, 22 or 23 books (Case 1)

Hence, Chintu will have bought 24 books when Amal is the Liar and Chintu is the truth teller

74)

As we can see from the explanation given in answer 1,
Whenever Amal has been the liar, Bimal has bought 19 books (Case 3B)
Whenever Bimal has been the liar, Bimal has not bought 19 books (Case 3A)
Whenever Chintu is the liar, Bimal has not bought 19 books (Case 1)

Hence, Bimal has not bought 19 books when Bimal is the liar and Chintu is the liar

75)

As we can see from the explanation given in answer 1,
If Chintu buys 24 books, Amal can buy 18 books in Case 3B. So it can be true.
If Chintu buys 24 books, Bimal's number of books bought cannot be definitely determined in Case 1 and Case 3A. So it can be true.
If Chintu buys 24 books, Amal buys 24 books is definitely false, as no two of them can buy the same number of books

Hence, option C is the correct answer

76)

From information number (b), (d) and (e) we can conclude that Emon ate the rasgullas after Anirban. Had the reverse been the case, then to eat the same number of rasgullas as Emon, Anirban would have to eat more than half the number of rasgullas, which is not possible as per (b).

From (a), Dibyendu ate the rasgullas after Emon.

From (g), we can conclude that Anirban was not the first friend to eat the rasgullas

Since at breakfast on Sunday morning exactly one-eighth of the original number of rasgullas were left, hence from (h) we can conclude that Dibyendu was not the last friend to eat the rasgullas

Hence, from (f) we can be sure that Charbak was the friend before Anirban and Dibyendu to eat the rasgullas.

The only friend left was Biswajit, who must have been the one to eat the rasgullas at the last.

The order of the friends eating the rasgullas on Saturday night was 1) Charbak, 2) Anirban, 2) Emon, 4) Dibyendu, and 5) Biswajit.

Hence, Biswajit was the last friend to eat the rasgullas on Saturday night

77)

The order of the friends eating the rasgullas on Saturday night was 1) Charbak, 2) Anirban, 2) Emon, 4) Dibyendu, and 5) Biswajit.

During breakfast time on Sunday the five friends found that only one-eighth of the original number of rasgullas remained in the pot. But that was fifteen rasgullas. Hence original number of rasgullas was $15 \times 8 = 120$

Now, as per information (g), we can say that when Anirban went to eat the rasgullas on Saturday night, $120 \times \frac{4}{5} = 96$ rasgullas were left. The remaining must have been eaten by Charbak, who was the first to eat the rasgullas.

Hence, Charbak ate $(120 - 96) = 24$ rasgullas on Saturday night

78)

From information number (c), the friend who ate last, that is Biswajit, ate only one-fourth of the number of rasgullas that were remaining in the pot. However, after Biswajit had finished, one-eighth of the original number of rasgullas remained in the pot. Hence, after Biswajit had finished, three-fourth of the number of rasgullas that were remaining in the pot before he started eating would be left. But that is one-eighth of the original number. Thus, the fraction of original number of rasgullas that were remaining in the pot before Biswajit started eating would be $(1/8)/(3/4) = 1/6$. Also Biswajit had eaten $(1/6 - 1/8) = 1/24$ of the original number of rasgullas.

As per information (g), fraction of rasgullas left in the pot when Anirban went to eat was four-fifth of the original number. Hence fraction of original number of rasgullas eaten by Charbak was one-fifth.

Let x be the fraction of rasgullas left after Anirban finished eating. As per information (d), the next friend, Emon, ate $x/2$ of the number of rasgullas. Hence Anirban, who ate the same number, also ate $x/2$ of the number of rasgullas.

Thus, we can say that

$$4/5 - x/2 = x$$

$$\text{or, } 3x/2 = 4/5$$

$$\text{or, } x = 8/15$$

So, Anirban ate $(8/15)/2 = 4/15$ of the original number of rasgullas, and so did Emon. Also after Anirban finished eating, $8/15$ of the original number of rasgullas was left. Also, after Emon finished eating $(8/15 - 4/15) = 4/15$ of the original number of rasgullas were left.

Now, the fraction of original number of rasgullas that were remaining in the pot before Biswajit started eating was $1/6$. Hence the fraction of original number of rasgullas that were remaining in the pot after Dibyendu had eaten was also $1/6$. So Dibyendu ate $(4/15 - 1/6) = 1/10$

Hence :

Order of eating rasgullas on Saturday night	Fraction before eating	Fraction after eating	Fraction eaten
Charbak	1	4/5	1/5
Anirban	4/5	8/15	4/15
Emon	8/15	4/15	4/15
Dibyendu	4/15	1/6	1/10
Biswajit	1/6	1/8	1/24

It can be seen that of all the fractions eaten, $4/15$ is the largest amount. So both Anirban and Emon ate the maximum number of rasgullas on Saturday night.

Hence, among the given options, Emon ate the maximum number of rasgullas

79)

We know that :

Order of eating rasgullas on Saturday night	Fraction before eating	Fraction after eating	Fraction eaten
Charbak	1	4/5	1/5
Anirban	4/5	8/15	4/15
Emon	8/15	4/15	4/15
Dibyendu	4/15	1/6	1/10
Biswajit	1/6	1/8	1/24

If only fifteen rasgullas were left in the pot during breakfast on Sunday morning, the above would look like :

Order of eating rasgullas on Saturday night	Number before eating	Number after eating	Number eaten
Charbak	120	96	24
Anirban	96	64	32
Emon	64	32	32
Dibyendu	32	20	12
Biswajit	20	15	5

Hence, if only fifteen rasgullas were left in the pot during breakfast on Sunday morning, after Emon had finished eating, 32, that is, less than sixty and more than twenty-four rasgullas were remaining in the pot in the refrigerator

80)

We can say that :

Order of eating rasgullas on Saturday night	Fraction before eating	Fraction after eating	Fraction eaten	Percentage eaten against number before eating
Charbak	1	4/5	1/5	20%
Anirban	4/5	8/15	4/15	33.33%
Emon	8/15	4/15	4/15	50%
Dibyendu	4/15	1/6	1/10	37.5%
Biswajit	1/6	1/8	1/24	25%

Hence, among the options given, Charbak at 20% had eaten the least percentage of the number of rasgullas compared to the number of rasgullas remaining when he went to eat it

81)

We know that :

Order of eating rasgullas on Saturday night	Fraction before eating	Fraction after eating	Fraction eaten
Charbak	1	4/5	1/5
Anirban	4/5	8/15	4/15
Emon	8/15	4/15	4/15
Dibyendu	4/15	1/6	1/10
Biswajit	1/6	1/8	1/24

If only fifteen rasgullas were left in the pot during breakfast on Sunday morning, the above would look like :

Order of eating rasgullas on Saturday night	Number before eating	Number after eating	Number eaten
Charbak	120	96	24
Anirban	96	64	32
Emon	64	32	32
Dibyendu	32	20	12
Biswajit	20	15	5

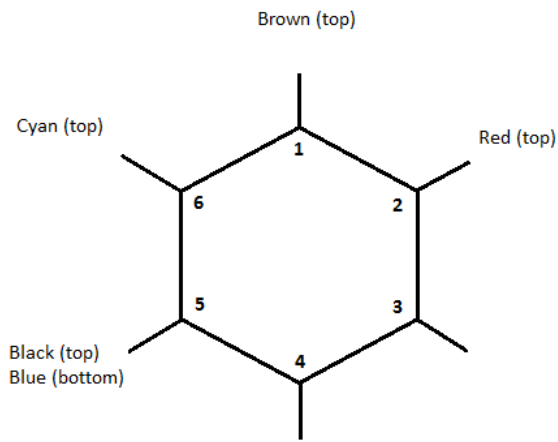
Hence, if only fifteen rasgullas were left in the pot during breakfast on Sunday morning, thirty-two rasgullas were remaining in the pot after Emon had finished eating the rasgullas on Saturday night.

82)

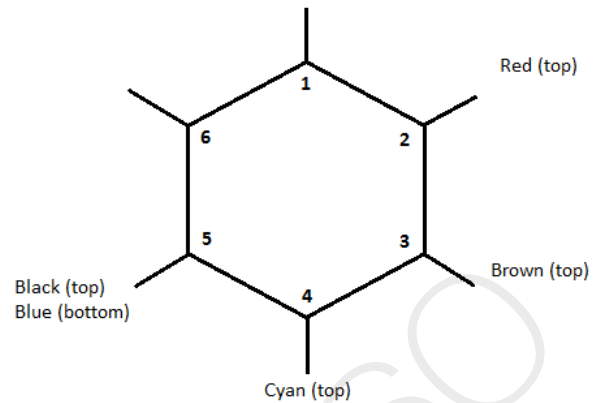
From (b) we know that there were exactly two sticks whose both ends had colours whose names started with the same letter.

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

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



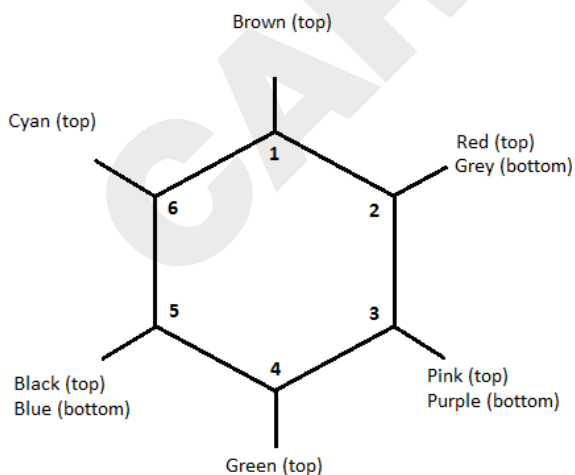
Case : 1



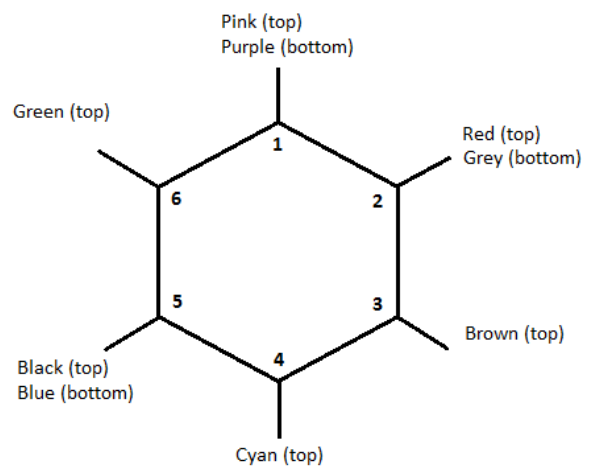
Case : 2

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

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



Case : 1



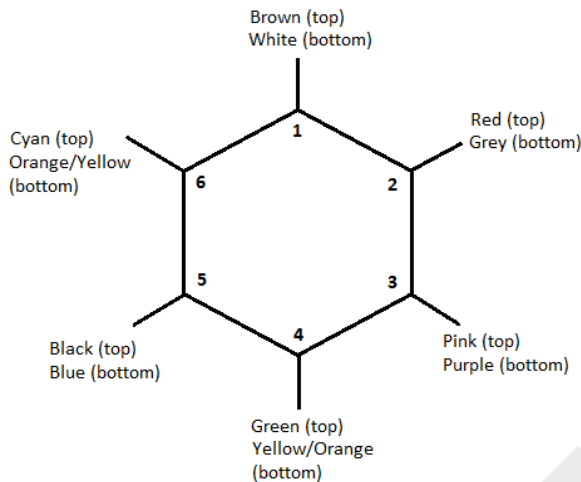
Case : 2

Now, from (c) we get to know that the stick with the grey colour was adjacent to the stick with the white colour

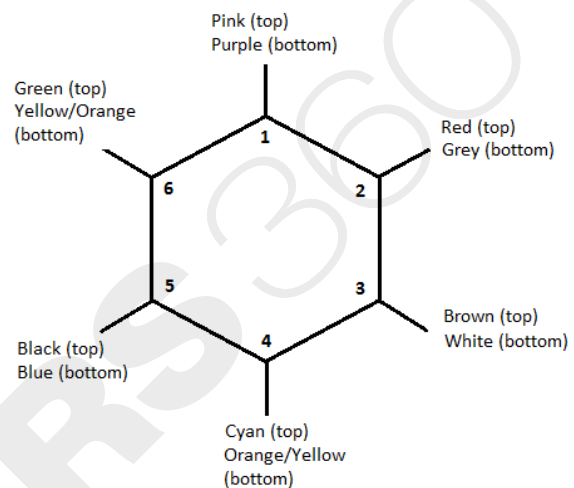
White was the colour of a bottom end. So in both the cases white had to be the colour of the bottom end of the stick with brown colour at the top

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

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



Case : 1

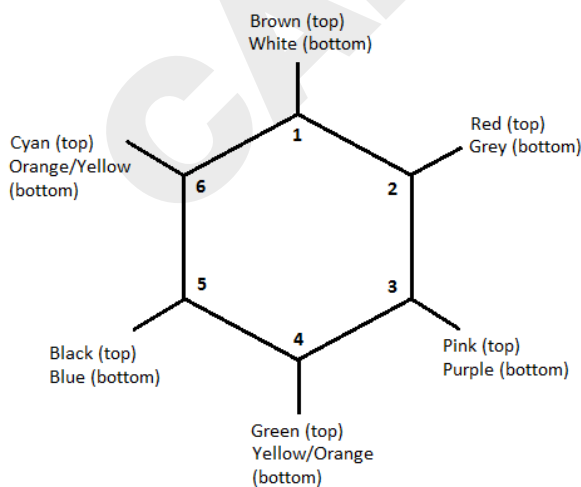


Case : 2

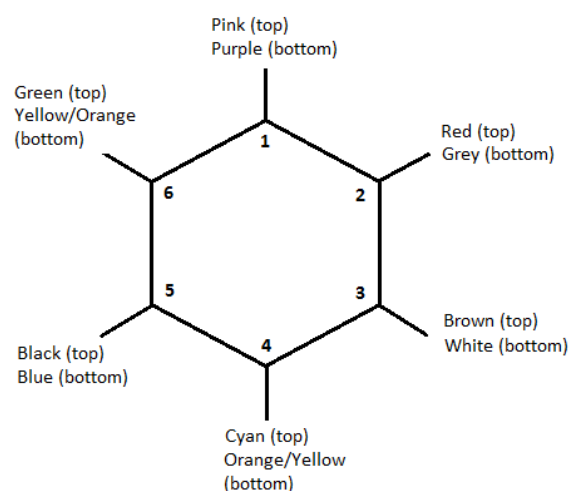
Hence, the colour of the bottom end of the stick having brown colour at the top end is white

83)

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



Case : 1

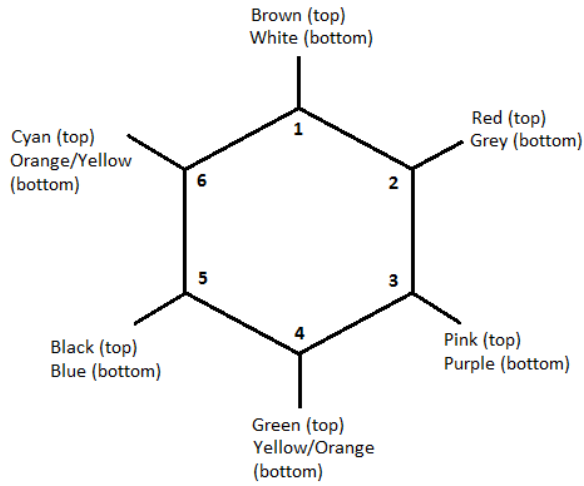


Case : 2

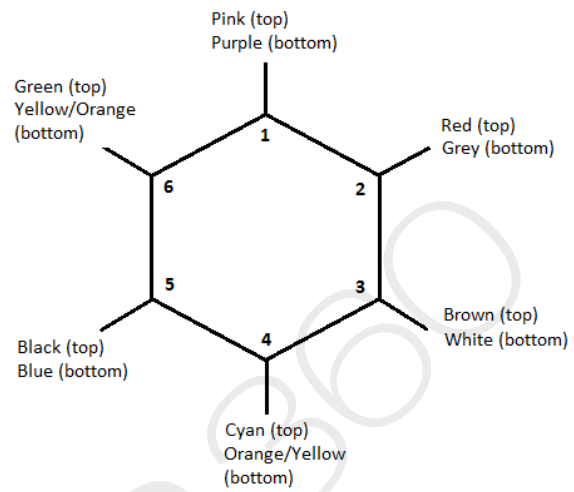
Hence, the colour of the top end of the stick having grey colour at the bottom end is red

84)

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



Case : 1

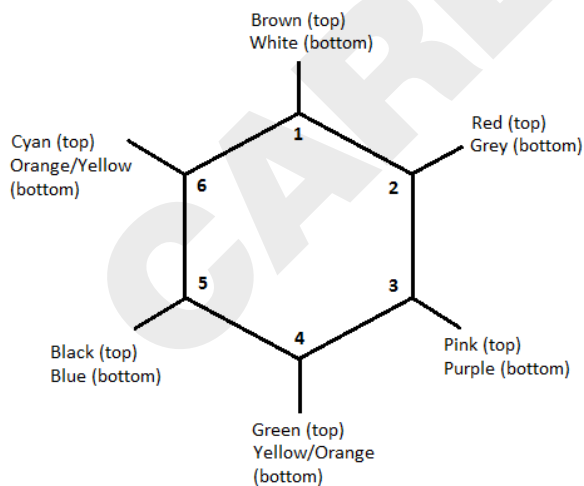


Case : 2

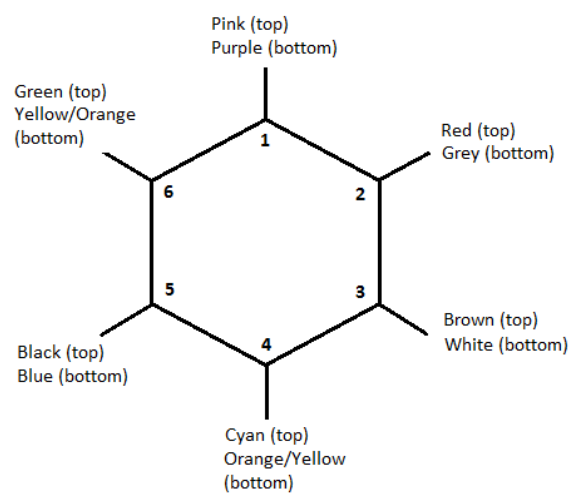
Hence, the colour of the bottom end of the stick opposite the stick with blue colour at the bottom end is grey

85)

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



Case : 1



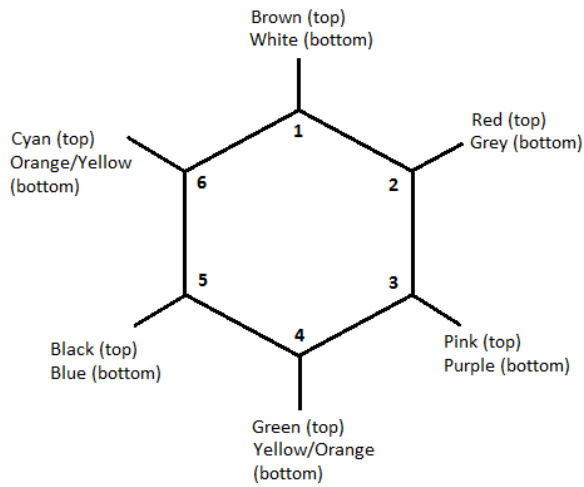
Case : 2

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

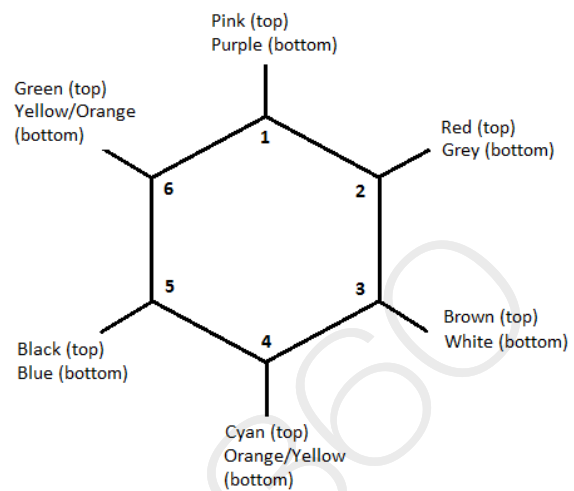
Hence the answer cannot be determined

86)

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

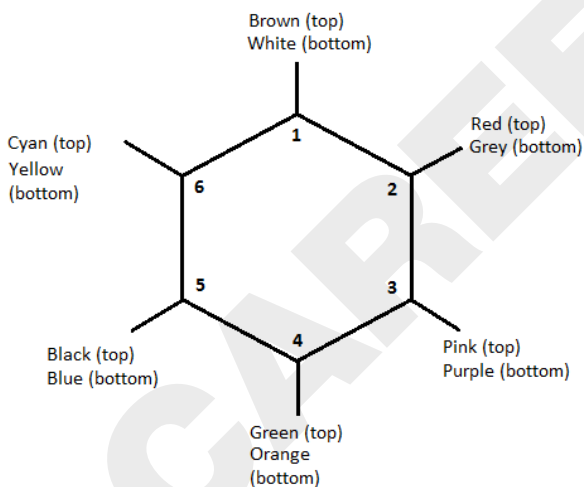


Case : 1

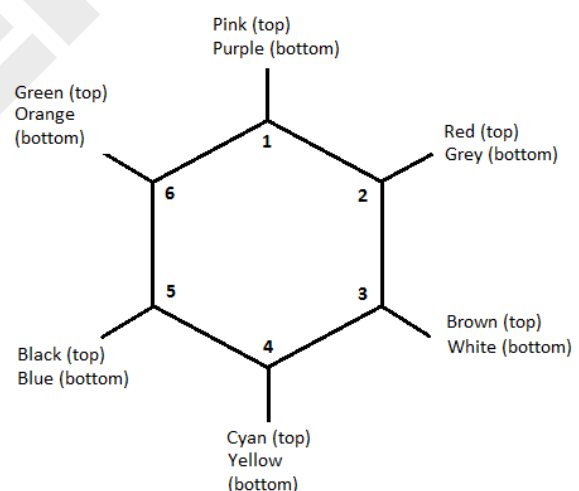


Case : 2

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



Case : 1



Case : 2

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

87)

Let the total number of customers at Milan-Da's canteen be represented by 100%.

Let the number of customers preferring all the three snack items be represented as x

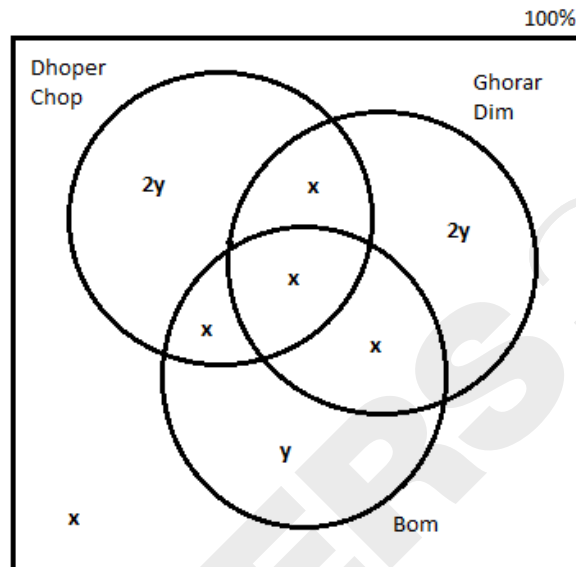
Hence, as per (b), the number of customers preferring none of the three snack items = x

Also, as per (c), the number of customers preferring the Dhooper Chop and Ghorar Dim = the number of customers preferring the Dhooper Chop and Bom = the number of customers preferring the Ghorar Dim and Bom = x

Let the number of customers preferring only the Bom be represented by y

Hence, as per (d), the number of customers preferring only the Dhooper Chop = the number of customers preferring only the Ghorar Dim = $2y$

Expressing the above relations in a Venn Diagram we get :



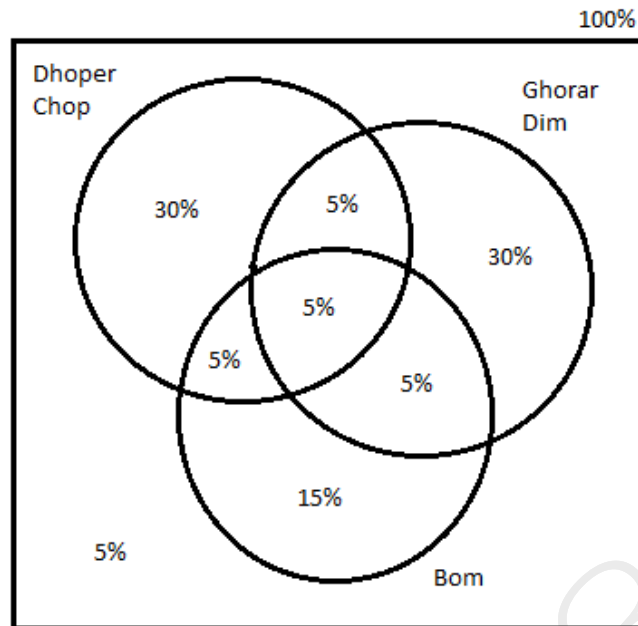
Now, $(x+x+x+x+x) + (y+2y+2y) = 100\%$
 or, $5x + 5y = 100\%$
 or, $x + y = 20\%$ (1)

The number of customers who preferred the Bom = $(3x+y)$

But, from (e), it is clear that $(3x+y)/2 = 3x$
 or, $3x - y = 0\%$ (2)

Solving both the equations we get
 $x = 5\%$ and $y = 15\%$

Hence the Venn diagram becomes :



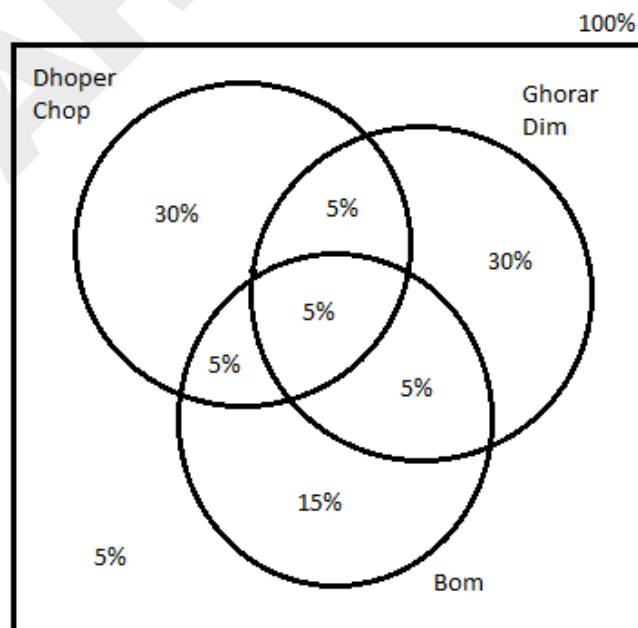
If the number of customers who preferred only the 'Bom' was 300, then 15% of the total customers = 300 customers
 or, 100% of the total customers = $(300 \times 100) / 15 = 2000$

Hence, if the number of customers who preferred only the 'Bom' was 300, then the total number of customers at Milan-Da's Canteen = 2000

88)

Correct Answer : 2100

We know that the Venn diagram representing the distribution of preferences at Milan-Da's Canteen is :

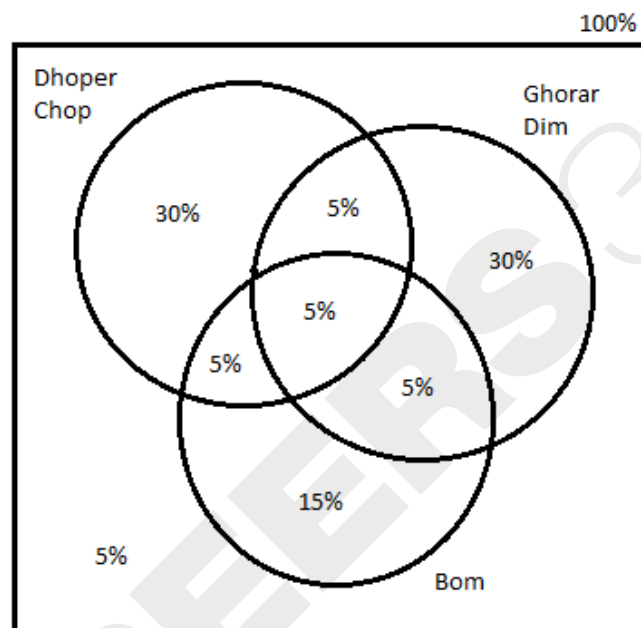


If 105 customers did not prefer any one of the three snack items, it implies that
 5% of the customers = 105 customers
 or, 100% of the customers = $(105 \times 100) / 5 = 2100$ customers

Hence, if 105 customers did not prefer any one of the three snack items, then the total number of customers at Milan-Da's Canteen = 2100

89)

The percentage of customers who preferred to have 'Dhoper Chop' or 'Ghorar Dim', but not a 'Bom' is represented by the shaded part of the Venn Diagram as shown below :

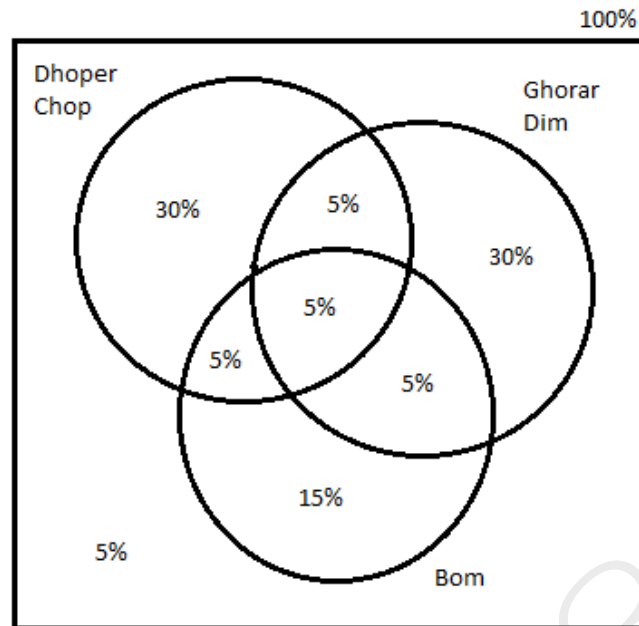


Hence, the percentage of the customers who preferred to have 'Dhoper Chop' or 'Ghorar Dim', but not a 'Bom' is represented by the shaded part of the Venn Diagram as shown below :

$$= (30\% + 5\% + 30\%) = 65\%$$

90)

We know that :



The number of customers who preferred at least one of the three best-selling snack items will be represented by all the areas except the area representing the number of customers who preferred none of the three best-selling snack items, that is, $(100\% - 5\%) = 95\%$

Now, 100% of the customers = 2500
or, 95% of the customers = $(2500 \times 95) / 100 = 2375$

Hence, if the number of customers at Milan-Da's Canteen were 2500, the number of customers who preferred at least one of the three best-selling snack items at the canteen = 2375

91)

From the data, apart from the fact that on any platform an actor could perform as a lead only once, we also get to know :

<i>Table 1</i>	Raveena	Sushmita	Kajol	Supriya
Zee5		X		
Netflix			X	
Amazon		X		X
Disney	Naseer		X	

Now, Supriya did not pair up with Amit or Pankaj in any movie on any platform, and Naseer could not be her lead actor on Disney anymore, so Supriya had paired up with Shahid on Disney

Supriya had paired up as the lead with only one movie with Shahid, and two movies with Naseer. So Supriya's one movie each on Zee5 and Netflix was with Naseer as the lead actor

Hence Sushmita had paired up with Pankaj in one movie and with Amit in another movie on Disney

So Sushmita had paired up with Shahid once and Amit the second time on Netflix, as Sushmita never paired up with Naseer

<i>Table 1</i>	Raveena	Sushmita	Kajol	Supriya
Zee5		X		Naseer
Netflix		Shahid & Amit	X	Naseer
Amazon		X		X
Disney	Naseer	Pankaj & Amit	X	Shahid

Kajol had paired up in one movie with Naseer. But it could not be a movie on Zee5, as Naseer had already played the lead in one movie there. So Kajol had paired with Naseer as the lead in a movie on Amazon

Since, on Netflix, Naseer, Shahid and Amit had all acted as a lead actor, so Raveena had paired up with Pankaj in her only movie on Netflix

Raveena had paired up with Shahid in two movies. They could not be on the same platform. So Raveena had paired up with Shahid once in a movie on Zee5 and once in a movie on Amazon

<i>Table 1</i>	Raveena	Sushmita	Kajol	Supriya
Zee5	Shahid	X		Naseer
Netflix	Pankaj	Shahid & Amit	X	Naseer
Amazon	Shahid	X	Naseer	X
Disney	Naseer	Pankaj & Amit	X	Shahid

Now, Kajol had acted as the lead actress in one more movie on Amazon and one movie on Zee5, and it could be with either Pankaj or Amit in any order

Also, Raveena had acted as the lead actress in one more movie on Zee5 and one more movie on Amazon, and it could be with either Pankaj and Amit in the order depending upon the order chosen for Kajol pairing up with Pankaj and Amit.

Hence, the final scenario reduces to :

<i>Table 1</i>	Raveena	Sushmita	Kajol	Supriya
Zee5	Shahid & Pankaj or Shahid & Amit	X	Amit or Pankaj	Naseer
Netflix	Pankaj	Shahid & Amit	X	Naseer
Amazon	Shahid and Amit or Shahid & Pankaj	X	Naseer & Pankaj or Naseer & Amit	X
Disney	Naseer	Pankaj & Amit	X	Shahid

Hence, Supriya was the lead actress in the movie on Netflix where Naseer was the lead actor

92)

We know that :

<i>Table 1</i>	Raveena	Sushmita	Kajol	Supriya
Zee5	Shahid & Pankaj or Shahid & Amit	X	Amit or Pankaj	Naseer
Netflix	Pankaj	Shahid & Amit	X	Naseer
Amazon	Shahid and Amit or Shahid & Pankaj	X	Naseer & Pankaj or Naseer & Amit	X
Disney	Naseer	Pankaj & Amit	X	Shahid

Hence, Shahid and Sushmita are the lead pair in a movie on Netflix

93)

We know that :

<i>Table 1</i>	Raveena	Sushmita	Kajol	Supriya
Zee5	Shahid & Pankaj or Shahid & Amit	X	Amit or Pankaj	Naseer
Netflix	Pankaj	Shahid & Amit	X	Naseer
Amazon	Shahid and Amit or Shahid & Pankaj	X	Naseer & Pankaj or Naseer & Amit	X
Disney	Naseer	Pankaj & Amit	X	Shahid

Hence, Shahid and Raveena are the lead pair in a movie on either Amazon or Zee5

94)

We know that :

<i>Table 1</i>	Raveena	Sushmita	Kajol	Supriya
Zee5	Shahid & Pankaj or Shahid & Amit	X	Amit or Pankaj	Naseer
Netflix	Pankaj	Shahid & Amit	X	Naseer
Amazon	Shahid and Amit or Shahid & Pankaj	X	Naseer & Pankaj or Naseer & Amit	X
Disney	Naseer	Pankaj & Amit	X	Shahid

Hence, Pankaj & Naseer or Naseer & Amit plays the lead actors role opposite Kajol in movies on Amazon

95)

We know that :

<i>Table 1</i>	Raveena	Sushmita	Kajol	Supriya
Zee5	Shahid & Pankaj or Shahid & Amit	X	Amit or Pankaj	Naseer
Netflix	Pankaj	Shahid & Amit	X	Naseer
Amazon	Shahid and Amit or Shahid & Pankaj	X	Naseer & Pankaj or Naseer & Amit	X
Disney	Naseer	Pankaj & Amit	X	Shahid

In total 16 movies had been shown on the four platforms.

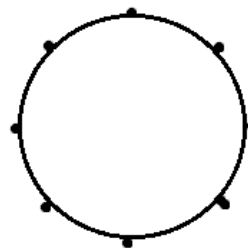
Out of them the lead actor of one movie each with Raveena on Zee5 and Amazon could not be established exactly (either Pankaj or Amit)

Also the lead actor of one movie each with Kajol on Zee5 and Amazon could not be established exactly (either Pankaj or Amit)

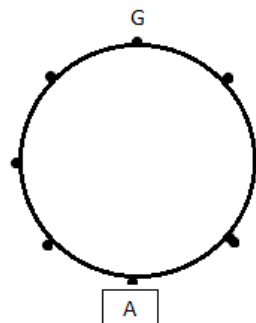
Hence apart from the above 4 movies, the lead pairs of remaining 12 movies could be exactly determined

96)

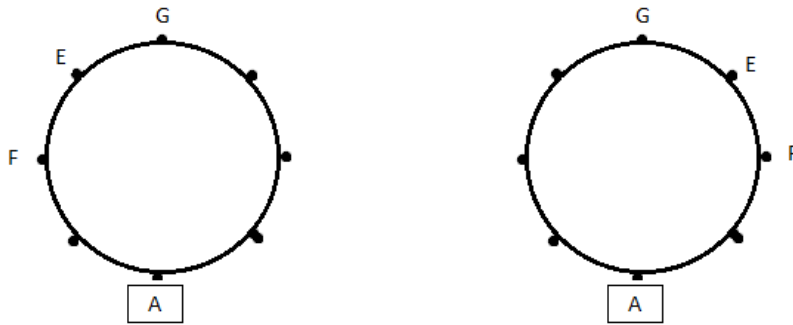
A to H are four married couples in no specific order who are sitting around a round table equidistant from each other. Thus the table has 8 equidistant sitting positions :



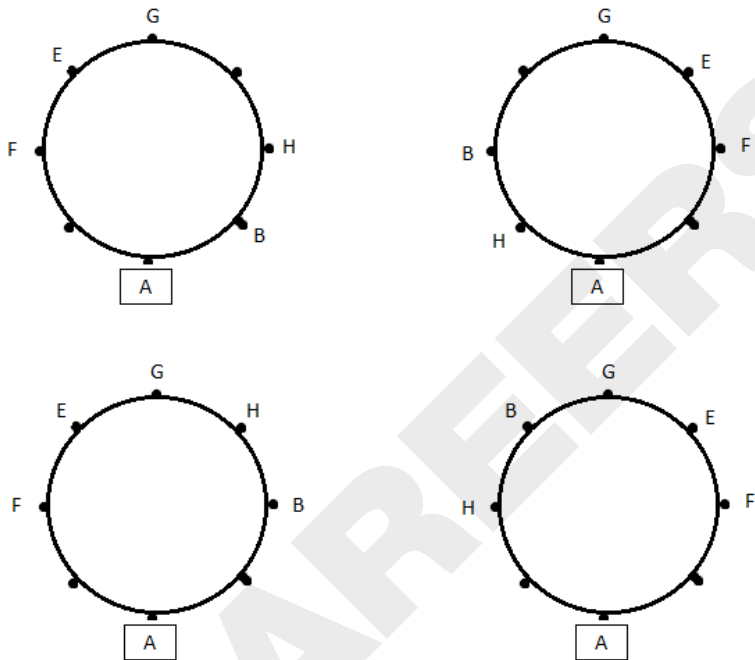
A is a man who is sitting opposite to G. Thus :



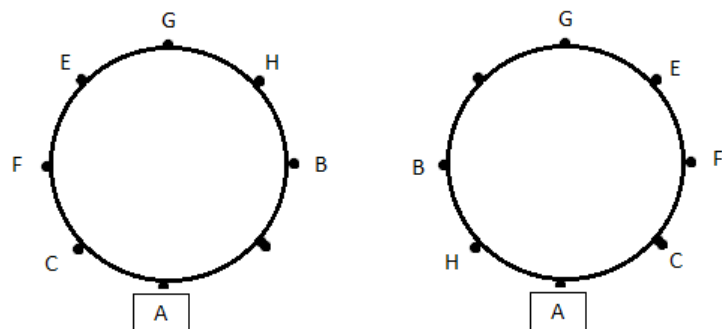
E has both F and G as neighbours. Two cases arise from this point :



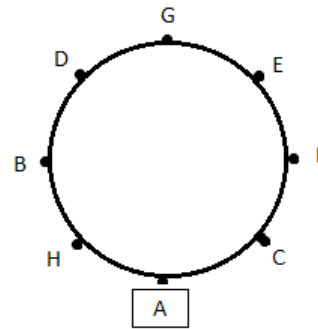
H is to the immediate right of B. Four cases rise from this point :



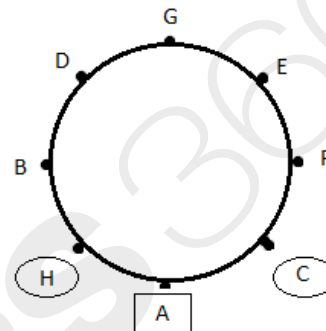
C and B have two persons sitting in between them. Two cases are only possible out of the above four cases due to this point :



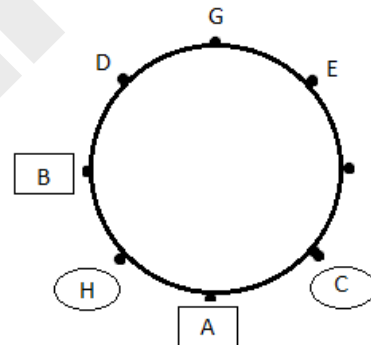
But C and H are not sitting opposite to each other. Hence the first case from above does not hold. Hence the final positions of seating are :



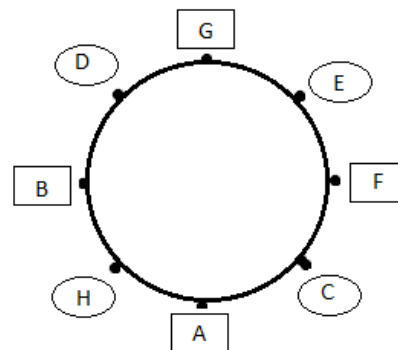
It is given that neither any couple nor any men are sitting next to each other. So since A is a man, C and H must be women. Thus :



C and B is a couple. Since C is a woman, thus B must be a man. Thus :



There are two men among the others, and no men are sitting next to each other. So G and F are bound to be men and D and E women. Hence :



C and B are a couple.

G cannot be the husband of D, E and C. So H and G must be another couple.

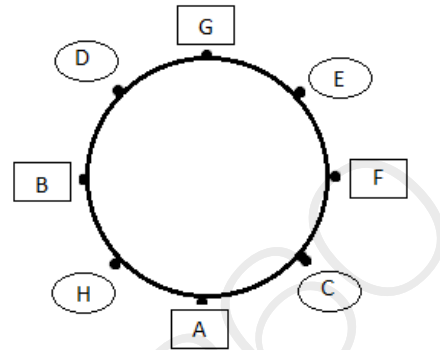
F cannot be the husband of E, C and H. So D and F must be the third couple.

So the fourth couple is E and A.

Hence F is sitting between E and C

97)

We already know that the final arrangement is as follows :

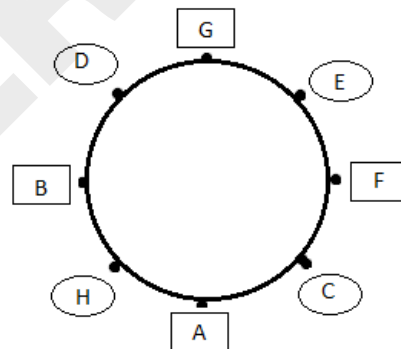


with C–B, H–G, D–F, and E–A being the couples.

Out of the options only A and F cannot be a couple.

98)

We already know that the final arrangement is as follows :

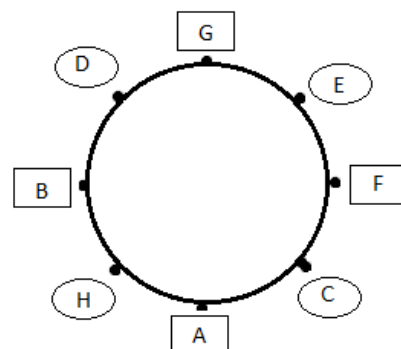


with C–B, H–G, D–F, and E–A being the couples.

Hence, F is married to D

99)

We already know that the final arrangement is as follows :

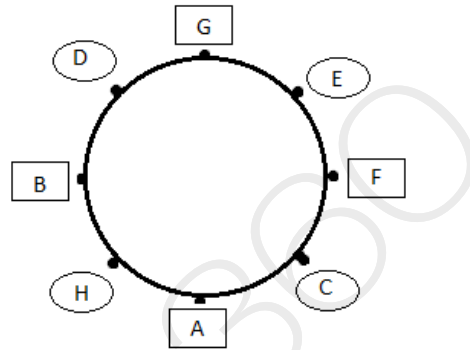


with C–B, H–G, D–F, and E–A being the couples.

The man sitting between D and E is G.
H is married to G

100)

We already know that the final arrangement is as follows :



with C–B, H–G, D–F, and E–A being the couples.

We can observe that no two women are neighbours.
Hence the answer is 'None of the above'.

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