PART – A

DATA INTERPRETATION

Exercise – 1

Directions for questions 1 to 5: Answer these questions on the basis of the information given below.

An MBA coaching institute, while ranking the regional business schools for the reference of its students, looks at four parameters – faculty (F); reputation(R); placement (P) and infrastructure (I). The four parameters are used to arrive at a composite score (CS), which the institute uses to grade the B-schools. In each parameter, there are four possible letter grades given, each carrying certain points: A(10 points), B(8 points), C(6 points), D(4 points) and F(0 points). The composite score for the college is the weighted sum of the points scored in the four parameters. The weights of the parameters are 0.1, 0.2, 0.3, and 0.4, in some order, which is not disclosed. The grading is based on the following scheme.

Range	Grading
$CS \geq 9$	AAA
$7 \leq CS < 9$	AA
$5 \leq CS < 7$	A
$3 \leq CS < 5$	BBB
$CS < 3$	Not graded

Eight B-schools were ranked and given the following grades in the four parameters (F, R, P and I):

	F	R	P	I
B-school 1	D	D	B	C
B-school 2	A	A	B	A
B-school 3	B	C	D	D
B-school 4	C	D	D	B
B-school 5	A	A	A	B
B-school 6	C	F	D	D
B-school 7	B	D	D	C
B-school 8	A	A	B	B

It is further known that in terms of composite score:
1. B-school 4 is better than B-school 3;
2. B-school 3 is better than B-school 7; and
3. B-school 2 is better than B-school 5.

1. What is the weight of the parameter placement?
(A) 0.1 (B) 0.2 (C) 0.3 (D) 0.4

2. How many of the eight B-schools had a composite score between 5.0 and 8.0, both inclusive?
(A) 2 (B) 4 (C) 5 (D) 3

3. What is the highest composite score among the eight B-schools?
(A) 9.2 (B) 9.4 (C) 9.6 (D) 9.8

4. How many B-schools received a grade of AAA?

5. How many of the eight B-schools were awarded a better grade than B-school 1?

Directions for questions 6 to 10: Answer these questions on the basis of the information given below.

The base exchange rate of a currency X with respect to a currency Y is the number of units of currency Y which is equivalent in value to one unit of currency X. Currency exchange outlets buy currency at buying exchange rates that are lower than base exchange rates and sell currency at selling exchange rates that are higher than base exchange rates.

A currency exchange outlet uses the local currency D to buy and sell three international currencies – P, Q and R, but does not exchange one international currency with other. The base exchange rates of P, Q and R with respect to D are in the ratio.1 : 120 : 100. The buying exchange rates of each of P, Q and R with respect to D are 5% below the corresponding base exchange rates and their selling exchange rates are 10% above their corresponding base exchange rates.

The following rates are known about the outlet on a particular day.
(A) The amounts of D used by the outlet to buy Q and R are in the ratio 3 : 5.
(B) The amounts of D used by the outlet to buy P equals the amount of D received by selling P.
(C) The amounts of D the outlet received from the sales of Q and R are in the ratio 9 : 5.
(D) The outlet received 88000 units of D by selling R during the day.
(E) The outlet started the day with some amount of D, 48000 units of P, 4800 units of Q and 2500 units of R.
(F) The outlet ended the day with some amount of D, 51000 units of P, 4800 units of Q and 3300 units of R.

6. How many units of currency Q did the outlet sell on that day?
(A) 400 (B) 600 (C) 800 (D) 1200

7. What was the base exchange rate of currency Q with respect to currency D on that day?

8. How many units of currency R did the outlet buy on that day?

9. What was the buying exchange rate of currency P with respect to currency D on that day?
(A) 0.95 (B) 1.0 (C) 1.9 (D) 2.0

10. How many units of currency P was sold by the outlet on that day?
(A) 12,000 (B) 15,000
(C) 18,000 (D) None of these

Directions for questions 11 to 15: Answer these questions on the basis of the information given below.

Three doctors – Dr. Shyam, Dr. Anand and Dr. Rahul visit a particular clinic from Monday to Saturday, to see patients. Dr. Shyam sees each patient for 20 minutes and charges ₹200, Dr. Anand sees each patient for 30 minutes and charges ₹350 and Dr. Rahul sees each patient for 40 minutes and charges ₹500.

The clinic has three rooms numbered 1, 2 and 3 which are assigned to the three doctors as per the following table.

Room No.	Monday and Tuesday	Wednesday and Thursday	Friday and Saturday
1	Shyam	Rahul	Anand
2	Anand	Shyam	Rahul
3	Rahul	Anand	Shyam

The clinic is opened from 8 a.m. to 2 p.m. every Monday to Saturday.

On arrival, each patient is handed a numbered token indicating their position in the queue, starting with token number 1 every day. As soon as any doctor becomes free, the next patient in the queue enters the emptied room for consultation. If at any time, more than one room is free, then the waiting patient enters the room with the smallest number. For example, if the next two patients in the queue have token numbers 4 and 5 and rooms numbered 1 and 3 are free, then the patient with token number 4 enters room number 1 and the patient with token number 5 enters room number 3.

11. What is the maximum number of patients that the clinic can cater to any single day?
(A) 36 (B) 38
(C) 39 (D) None of these

12. If there were at least five patients waiting in the queue at any point of time, which of the three doctors would earn the maximum amount in consultation charges on that day?
(A) Dr. Shyam (B) Dr. Anand
(C) Dr. Rahul (D) Cannot be determined

13. Mr. Ramesh visited the clinic on Monday, Wednesday and Friday of a particular week, arriving at 7.55 a.m. on each of the three days. His token number was 1 4 on all the three days. On which day was he at the clinic for the maximum duration?
(A) Monday
(B) Wednesday
(C) Friday
(D) Same duration on all three days.

14. On a Wednesday, Dr. Shyam sees five patients. What is the maximum number of patients who came to the clinic on that day?
(A) 12 (B) 15 (C) 18 (D) 20

15. On a slow Thursday, only two patients are waiting at 8 a.m. After that, two patients keep arriving at exact 20 minute intervals starting at 8:20 a.m., 8:40 a.m. etc. What is the total duration in minutes for which all the three doctors are simultaneously free?
(A) 0 (B) 10 (C) 15 (D) 30

Directions for questions 16 to 20: Answer these questions on the basis of the information given below.

There are only four brands of microwave ovens called Aska, Beta, Cora and Dega in a country. Details about their market share, unit selling price and profitability (defined as the profit as a percentage of the revenue) for the year 2017 are given in the table below.

Brand	Market share (%)	Unit selling price (₹)	Probability (%)
Aska	40	21,000	15
Beta	25	28,000	30
Cora	15	42,000	35
Dega	20	35,000	25

In 2018, sales volume of microwave ovens grew by 60% as compared to that in 2017, Cora offered a 50% discount on its unit selling price in 2018, which resulted in a 15% increase in its market share. Each of the other three brands lost 5% market share. The profitability of Cora came down to half its value in 2017. The unit selling price of the other three brands and their profitability values remained the same in 2018 as they were in 2017.

16. Which brand had the highest revenue in 2017?
(A) Aska (B) Beta (C) Cora (D) Dega

17. Which brand had the highest profit in 2017?
(A) Aska (B) Beta (C) Cora (D) Dega

18. Which brand had the highest profit in 2018?
(A) Aska (B) Beta (C) Cora (D) Dega

19. What was the percentage increase in the total revenue of the four brands from 2017 to 2018?
(A) 36.6 (B) 38.4 (C) 40.2 (D) 34.7

20. What was the highest percentage increase in the profit of any brand from 2017 to 2018?
(A) 28 (B) 32 (C) 36 (D) 40

Directions for questions 21 to 25: Answer these questions on the basis of the information given below.

Amol, Balu, Chandra, Deepak and Eshan were the five members of a school wrestling team. The following are their weights, three of them taken at a time – 136 kg, 138 kg, 134 kg, 139 kg, 143 kg, 141 kg, 143 kg, 147 kg, 150 kg and 145 kg. Students were selected such that all possible combination of three students, were weighed.

Directions for questions 21 and 22: Type in your answer in the input box provided below the question.

21. What was the weight of the lightest student?

22. If Deepak weighed 5 kg more than Eshan, who in turn was heavier than Balu, by how much (in kg) did Chandra weigh more than Amol?

Directions for questions 23 to 25: Select the correct alternative from the given choices.

23. If Chandra weighed 11 kg more than Balu, what was the combined weight (in kg) of Eshan, Amol and Deepak?
(A) 145 (B) 143
(C) 141 (D) 139

24. If the weight of Amol was closest to the average weight of the five students, what is the minimum difference (in kg) between the sum of the weights of Eshan and Balu and that of Deepak and Chandra?
(A) 4 (B) 3 (C) 2 (D) 1

25. What was the total weight of all the students (in kg)?
(A) 228 (B) 231
(C) 234 (D) None of these

Exercise – 2

Directions for questions 1 to 5: Answer these questions on the basis of the information given below.

Six colleges, 1 to 6, conducted a common written test with four different sections, each with a maximum of 50 marks. The following table gives the aggregate as well as section cut off marks fixed by the six colleges. A student will get admission only if he/she gets marks greater than or equal to the cut off marks in each of the sections and his/her aggregate marks are at least equal to the aggregate cut off marks as specified by the college.

	School cut off marks				Aggregate cut off marks
	Section A	Section B	Section C	Section D	
College 1	38			37	151
College 2	37		41		157
College 3			42		159
College 4		41		35	156
College 5		35		39	162
College 6	41	38	40		160

Directions for questions 1 to 3: Type in your answer in the input box provided below the question.

1. Shyam got calls from all the six colleges. What could be the minimum aggregate marks obtained by him?

2. Anand got calls from three colleges. What could be the maximum aggregate marks scored by him?

3. Priya got calls from two colleges. What could be the minimum marks obtained by her in a section?

Directions for questions 4 and 5: Select the correct alternative from the given choices.

4. Remesh did not get calls from even a single college. What could be the maximum aggregate marks obtained by him?
(A) 170 (B) 171
(C) 173 (D) 174

5. What is the maximum difference between the aggregate marks obtained by two students who got calls from exactly one college?
(A) 20 (B) 21
(C) 22 (D) 24

Directions for questions 6 to 10: Answer these questions on the basis of the information given below.

The first table gives the number of medals won by five countries in the Commonwealth Athletics Championship. The second table gives the name of atheletes who won medals from these five countries.

Number of medals			
Day			
Country	Gold	Silver	Bronze
Canada	2	0	0
India	1	1	0
UK	1	2	0
Kenya	2	0	2
Australia	1	0	1

Number of medals			
Day			
Athlete	Gold	Silver	Bronze
John	1	0	0
James	2	0	0
Anju	0	1	0
Keshav	0	0	2
Tony	1	0	0
Martina	1	0	1
Antony	2	0	0
Serena	0	2	0

6. Which among the following countries can John belong to?
(A) India
(B) Canada
(C) Kenya
(D) More than one of the above

7. To which country does Tony belong to?
(A) Canada
(B) Kenya
(C) UK
(D) Cannot be determined

8. Which among the five given countries can three of the eight medal winners belong to?
(A) 0 (B) 1 (C) 2 (D) 3

9. How many of the eight medals winners are from Kenya?
(A) 1 (B) 2
(C) 3 (D) Cannot be determined

10. The countries of how many of the eight athletes can be uniquely determined?
(A) 2
(B) 4
(C) 6
(D) 8

Directions for questions 11 to 15: Answer these questions on the basis of the information given below.

A company started manufacturing solar power generators in the year 2011. The panels used in the generators can be used for exactly one year and is discarded after that. The company provides panels, free of cost, for the first two years in which they have to be replaced. After that, panels bought from company cost ₹2000 while third party vendors provide it for ₹1500. Every year, 30% of the customers buy the panels from the company while the remaining opt for the cheaper option available. The following table gives the number of filters sold or given free by the company and sold by third-party vendors in each year from 2015 to 2019. Three of the values have been left blank. Assume that all solar power generators manufactured from 2011 are working currently.

Replacement source	2015	2016	2017	2018	2019
Company				3900	4460
Third party	840	1610	2170	2800	3640

11. How many solar power generators were sold in 2016?
(A) 1000 (B) 1100
(C) 1200 (D) 1300

12. How many solar power generators were sold from 2011 to 2013?
(A) 1800 (B) 2000
(C) 2100 (D) 2300

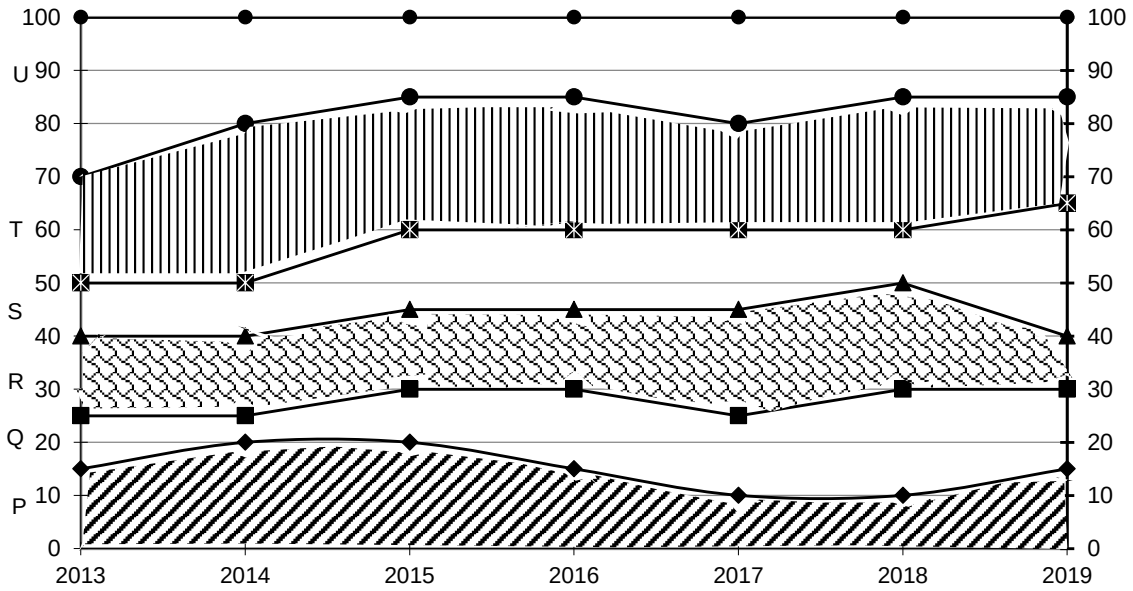
13. In 2015, how many panels did the company sell or replace?
(A) 2260 (B) 2410
(C) 2640 (D) 2760

14. How many solar power generators were sold in 2013?
(A) 800
(B) 1000
(C) 1100
(D) 1200

15. How many solar power generators did the company sell in 2018?
(A) 1200
(B) 1400
(C) 1500
(D) Cannot be determined

Directions for questions 16 to 20: Answer these questions on the basis of the information given below.

A survey was done regarding the number of mobiles phone subscribers of six companies in a country over the period 2013 to 2019. The graph gives the percentage break up of number of subscribers of these six companies P, Q, R, S, T and U. It is observed that, each year, the total number of subscribers of these six companies increased by 25% over the previous year.



16. What is the percentage increase in the number of subscribers of company P from 2014 to 2019?
(A) 110% (B) 121% (C) 129% (D) 137%

17. The ratio of the number of subscribers of company R in 2016 and company T in 2018 was approximately
(A) 2 : 7 (B) 5 : 13
(C) 4 : 9 (D) 7 : 13

18. Which company had the maximum numerical increase in the number of subscribers from one year to the next?
(A) P (B) R
(C) S (D) T

19. What was the percentage increase in the number of subscribers of all the six companies from 2013 to 2018?
(A) 225% (B) 205%
(C) 180% (D) 175%

20. How many companies had a decrease in the number of subscribers from one year to the next, at least once during the given period?
(A) 2 (B) 4
(C) 5 (D) 6

Directions for questions 21 to 25: Answer these questions on the basis of the information given below.

UBS, an investment company, invested a part of its assets in stocks of four companies – A, B, C and D. Each of these companies belonged to a different sectors – capital goods, real estate, oil and gas and pharma, in no particular order. At the time of investment, the price of each stock was ₹1000. UBS purchased one lakh shares of each of these companies. It was expecting returns of 20%, 10%, 30% and 40% from the stock of companies A, B, C and D respectively. Returns are defined as the change in the value of the stock after one year, expressed as a percentage of the initial value. During the year, two of these companies announced extraordinarily good results. One of the two companies belonged to the capital goods or real estate sector, while the other belonged to either the oil and gas or the pharma sector. As a result the return on the stocks of these two companies was higher than the initially expected returns. For a company belonging to the capital goods or the real estate sector with extraordinarily good results, the returns were twice that of the initially expected returns. For the company belonging to the oil and gas or the pharma sector, the returns on announcement of extraordinarily good results were only one and a half times the initially expected returns. For the remaining two companies, which did not announce extraordinarily good results, the returns realized during the year were the same as initially expected.

21. What is the minimum average returns UBS would have earned during the year?
(A) 30% (B) 31.25%
(C) 32.5% (D) Cannot be determined

22. If UBS earned a 35% returns on average during the year, then which of these statements would necessarily be true?
I. Company A belonged either the oil and gas or to pharma sector.
II. Company B did not announce extraordinarily good results.
III. Company A announced extraordinarily good results.
IV. Company D did not announce extra-ordinarily good results.

(A) Only I & II (B) Only II & III
(C) Only III & IV (D) Only II & IV

23. If UBS earned a 38.75% returns on average during the year, then which of these statements would necessarily be true?

I. Company C belonged either to oil and gas or to the pharma sector.
II. Company D belonged either to the oil and gas or to the pharma sector.
III. Company A announced extraordinarily good results.
IV. Company B did not announce extra-ordinarily good results.

(A) Only I & II (B) Only II & III
(C) Only I & IV (D) Only II & IV

24. If company C belonged to the capital goods or the real estate sector and did announce extraordinarily good results, then which of these statements would necessarily be true?
I. UBS earned not more than 36.25% returns on average.
II. UBS earned not less than 33.75% returns on average.
III. If UBS earned 33.75% returns on average, company A announced extraordinarily good results.
IV. If UBS earned 33.75% returns on average, company B belonged either to oil and gas or to pharma sector.

(A) Only I & II (B) Only II & IV
(C) Only II & III (D) Only III & IV

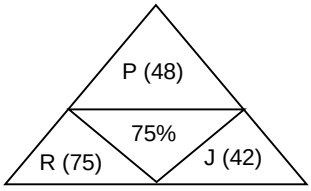
25. What is the maximum average returns UBS would have earned during the year?
(A) 135% (B) 37.5%
(C) 38.75% (D) 40%

Exercise – 3

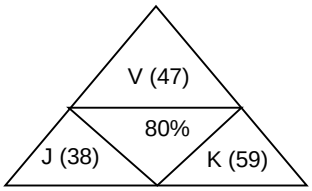
Directions for questions 1 to 4: Answer these questions on the basis of the information given below.

The coach of the Indian cricket team was analyzing the performance of five Indian batsmen in three matches. The batsmen are – Vijay (V), Pujara (P), Kohli (K), Rohit (J) and Rahul (R). The performance of these batsmen in the last three matches they played is represented in the following three diagrams, one for each match. In each diagram, the outer triangle represents the scores made by the top three of the five batsmen in that match and the middle triangle denotes the runs scored by these three batsmen as a percentage of the total runs scored by the five players. No two players scored the same runs in a single match. The players are analyzed using two parameters – the median index, which gives the middle

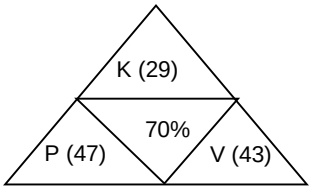
number if the scores in the three matches are arranged in an ascending order and the consistency index, which gives the difference between the highest and the lowest scores in the three matches.



Match – I



Match – II



Match – III

1. Which of the given players has the highest median score?
(A) Vijay
(B) Pujara
(C) Kohli
(D) Cannot be determined

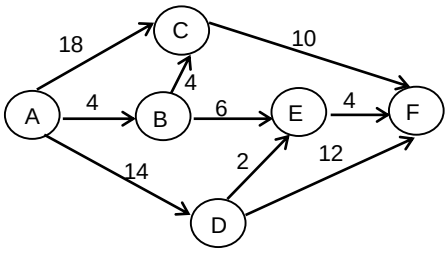
2. The exact median score of how many players can be determined?
(A) 1 (B) 2
(C) 3 (D) 4

3. How many players had a consistency index definitely less than 40?
(A) 2 (B) 1
(C) 0 (D) 3

4. Which of the given players can have the highest value for the consistency index?
(A) Only Rahul
(B) Only Rahul and Pujara
(C) Only Rahul, Pujara and Kohli
(D) Rahul, Pujara, Kohli and Vijay

Directions for questions 5 to 9: These questions are based on the information given below.

Given below is a one-way network from point A to F along which a significant amount of traffic flows. Parts B, C, D and E are junctions in the network, and the arrow mark gives the direction of traffic flow. The fuel cost in rupees for travelling along a street is indicated by the number adjacent to the arrow representing the street.



Motorists travelling from point A to F would obviously take the route for which the total cost of travelling is the minimum. If two or more routes have the same least cost of travel, then motorists are indifferent between them. Hence, the traffic gets evenly distributed among all the least cost routes.

The government can control the flow of traffic only by levying appropriate toll at each junction. For example, if a motorist takes the route A - C - F (using junction C alone), then the total cost of travel would be ₹28 (₹18 + ₹10) plus the toll charged at junction C.

5. If the government wants to ensure that no traffic flows on the street from D to F, while equal amount of traffic flows through junctions C and E, then a feasible set of toll charged (in rupees) at junctions C, B, E and D respectively to achieve the goal is
(A) 2, 10, 6, 6
(B) 2, 8, 8, 6
(C) 0, 10, 4, 4
(D) 0, 10, 4, 6

6. If the government wants to ensure that all motorists travelling from A to F pay the same amount (fuel costs and toll combined) regardless of the route they choose and the street from B to E is under repairs (and hence unusable), then a feasible set of toll charged (in rupees) at junctions C, B, E, D respectively to achieve this goal is
(A) 4, 10, 6, 4
(B) 0, 10, 6, 2
(C) 2, 10, 8, 4
(D) 4, 6, 10, 2

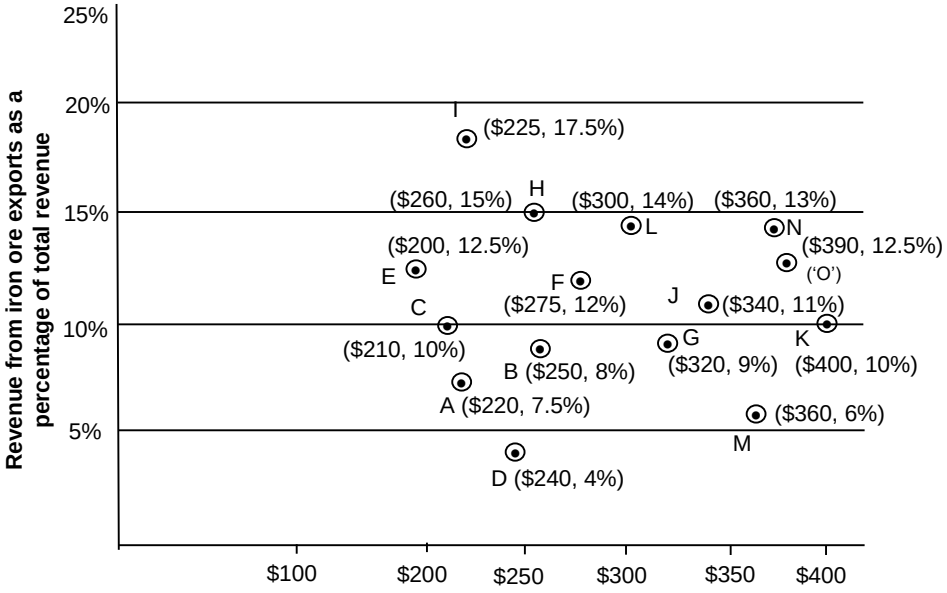
7. If the government wants to ensure that traffic at A gets evenly distributed along streets from A to C, A to B and A to D, then a feasible set of toll charged (in rupees) at junctions C, B, E, D respectively to achieve this goal is
(A) 0, 10, 4, 4
(B) 0, 10, 8, 2
(C) 2, 10, 6, 6
(D) 2, 10, 6, 4

8. If the government wants to ensure that all routes from A to F get the same amount of traffic, then a feasible set of toll charged (in rupees) at junctions, C, B, E, D respectively to achieve this goal is
(A) 0, 10, 4, 4
(B) 0, 10, 8, 2
(C) 2, 10, 6, 6
(D) 2, 10, 6, 4

9. The government wants to devise a toll policy such that the total cost of the commuters per trip is minimized. The policy should also ensure that not more than 70 percent of the total traffic passes through junction B. The cost incurred by the commuter travelling from point A to point F under this policy will be
(A) ₹14 (B) ₹18
(C) ₹20 (D) ₹26

Directions for questions 10 to 13: Answer the following questions based on the information given below.

The following table gives the average selling price per tonne of iron ore and the revenue generated from iron ore exports as a percentage of the total revenue for 15 multinational companies among A, B, C, D, E, F G, H, I, J, K, L, M, N and O. The average selling price is given in US dollars.



10. It was found that the total volume of iron ore exported by companies B and E were equal. Which of the following is true?
(A) The total revenue in both the companies were same.
(B) Total revenue of B was 2 times that of E.
(C) Total revenue of B was 3 times that of E.
(D) Total revenue of E was 2 times that of B.

11. It is expected that in 2017, the revenue from iron ore exports as a percentage of the total revenue will double for C and quadruple for M. Assume that in 2017, the total revenue for C is twice that of M and the volume of iron ore exported by both the companies is same. What is the approximate percentage increase in the selling price per tonne of iron ore for company C if the percentage increase of the same for M is 25?
(A) 150% (B) 230% (C) 260% (D) 360%

12. If the total revenue is the same for the pairs of companies listed in the choices below, choose the pair that has approximately the same volume of iron ore exports.
(A) A and C (B) F and N
(C) E and I (D) D and M

13. If the total volume of iron ore exported by all the companies were equal, which company had the highest total revenue?
(A) D
(B) I
(C) M
(D) More than one of the above

Directions for questions 14 to 17: Answer these questions on the basis of the information given below.

The table below represents the results of the annual performance appraisal in a company. Each individual's performance is rated on a scale of 1 - 20 and represented in the table under various parameters like designation, experience, etc. For example, 6 managers with an experience of 2 years, got an appraisal in the range 12 - 14 with at least one of them getting a 12 and one of them getting a 14.

	Performance appraisal score	
Experience (in years)	**Engineers**	**Managers**
1	1(12, 12)	6(15 – 17)
2	4(10 – 13)	6(12 – 14)
3	3(12 – 16)	10(10 – 12)
4	5(9 – 15)	5(10 – 13)
Total	13	27

14. At the most, what percentage of the employees of the company have an appraisal score equal to or more than 15?
(A) $46\frac{2}{3}\%$ (B) $33\frac{1}{3}\%$ (C) 30% (D) $43\frac{1}{3}\%$

15. The average performance appraisal score among the following is the highest for
(A) All the managers with 2 years experience
(B) All the engineers with 3 years experience
(C) All the managers
(D) Cannot be determined

16. Among those with three and four years of experience, the average performance appraisal score of managers differs from that of engineers by _____ points
(A) at least 3 (B) at least 4
(C) at most 2.12 (D) at most 3.79

17. What is the minimum average appraisal score for all the managers in the company?
(A) 12.25 (B) 12.06 (C) 11.89 (D) 11.72

Directions for questions 18 to 21: In each question there are two statements I and II, either of which can be true or false on the basis of the information given below.

The table below gives details about the number of IAS (Intelligent Administrative Services) aspirants at different stages of the selection process.
Assume that the candidates selected/qualified for a round after the prelims, always attend.

Year	Qualification (Education)	Applications	Appeared for prelims	Qualified for mains	Selected for Interview	Forwarded for background check
2018	Graduate	23,176	19,158	7,271	2,204	927
	Postgraduate	9,294	7,972	4,386	2,289	741
2019	Graduate	26,122	23,140	16,022	2,529	1,132
	Postgraduate	10,379	9,234	7,236	3,314	1,520

Choose (A) if only statement I is true
Choose (B) if only statement II is true
Choose (C) if both I and II are true
Choose (D) if neither I nor II is true

18. Statement I: The number of graduates who were selected for the interview as a percentage of the applicants is higher in 2019 as compared to that in 2018.

Statement II: The absenteeism among post-graduates in the prelims in higher in 2019 than in 2018.

19. Statement I: Among those selected for the interview, postgraduates had a higher success rate in both the years combined.

Statement II: The ratio of graduates to postgraduates who appeared for their prelims is lower in 2019 than in 2018.

20. Statement I: If the percentage of candidates, among the candidates who were forwarded for background check, clearing the final background check to undergo training is 40% in 2018 and 30% in 2019, the success rate of candidates, in going from the application stage to being selected to undergo training was higher in 2018 as compared to that in 2019.

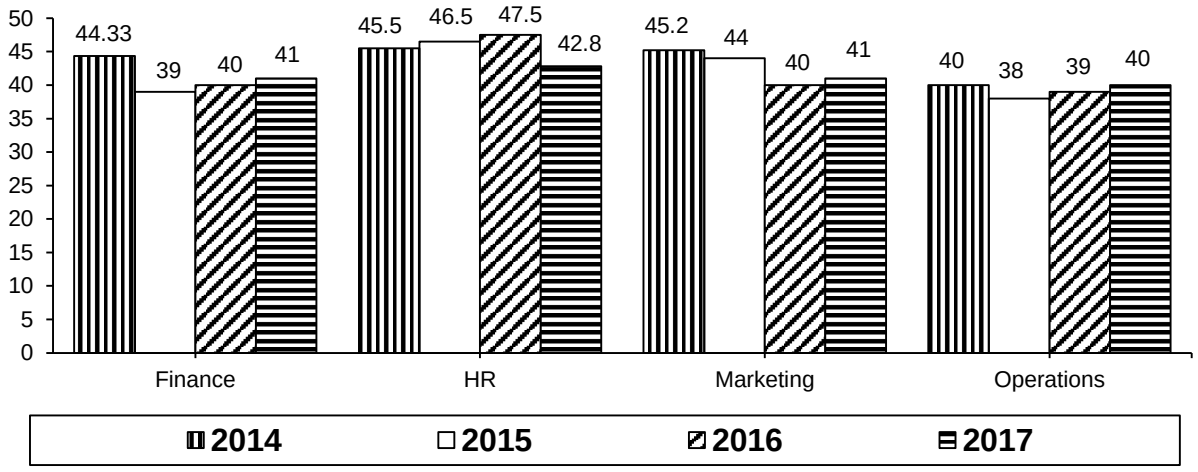
Statement II: The success rate (in Percentage terms) of graduates in prelims in 2018 is lower than the success rate of postgraduates in interview in 2019.

21. Statement I: The percentage of graduates among the candidates who were forwarded for background check in both the years combined is less than 48%.

Statement II: The percentage of candidates who were selected for the interview, among those who appeared for prelims in both the years combined is more than 18%.

Directions for questions 22 to 25: Answer these questions based on the information given below.

A company was established on January 1, 2014 with 3, 4, 5 and 6 employees in the Finance, HR, Marketing and Operations departments respectively to start with. No employee left or joined the company in the first three months of the year 2014. In the next four years, the company recruited one person in each of the four departments. All these new persons, who joined the company subsequently over the years, were 20 years old at the time of their joining the company. All of them joined the company on April 1. During these four years, one employee aged 55 retired from the company. The following diagram gives the department wise average age (in terms of number of completed years) of employees as on April 1 of 2014, 2015, 2016 and 2017.



Directions for questions 22 and 23: Type in your answer in the input box provided below the question.

22. Naveen and Deepak, two employees in the finance department, who had been with the company since its inception, share a birthday which falls on 20th November. One was born in 1966 and the other one in 1969. On April 1, 2019, what would be the age of the third person, who has been in the same department since inception?

23. In which year did the new employee join the marketing department?

Directions for questions 24 and 25: Select the correct alternative from the given choices.

24. What was the age of the new employee, who joined the operations department, as on April 1, 2017?
(A) 24
(B) 21
(C) 23
(D) 22

25. What is the approximate average age of all the employees in the company on 1st April 2016?
(A) 41
(B) 40
(C) 42
(D) 39

Exercise – 4

Directions for questions 1 to 4: Answer these questions on the basis of the information given below.

Table-1 shows the number of ships that arrived at Mumbai port on different days of the week from October 9th to 15th (i.e., from Sunday to Saturday).

Table-1

Day	Oct 9th Sunday	Oct 10th Monday	Oct 11th Tuesday	Oct 12th Wednesday	Oct 13th Thursday	Oct 14th Friday	Oct 15th Saturday
Number of ships arrived	28	47	40	45	40	35	25

Each of the ships mentioned in Table-1 departs from the port in the next week, starting from October 16th to October 22nd (i.e., Sunday to Saturday). Table-2 shows the number of ships that departed from the port on different days.

Table-2

Day	Oct 16th Sunday	Oct 17th Monday	Oct 18th Tuesday	Oct 19th Wednesday	Oct 20th Thursday	Oct 21st Friday	Oct 22nd Saturday
Number of ships departed	37	43	50	45	35	30	20

Further, no ship arriving at the port can depart from the port on or before the 5th day after the day on which it arrived. Also, no ship can remain at the port after the 10th day after the day on which it arrived. For example, a ship which arrived on Wednesday cannot depart on or before the next Monday but it must definitely depart on or before the next Saturday.

1. If, of the ships that arrived on Monday, October 10th, 22 ships departed on the next Sunday then the number of ships that arrived on Sunday, October 9th, and departed after the next Sunday is
(A) 13 (B) 15 (C) 22 (D) 24

2. If in the above table, all the ships that arrived on or before Tuesday, left on or before next Tuesday, then the number of ships that arrived on Wednesday and departed on the next Tuesday is
(A) 10 (B) 15 (C) 20 (D) 25

3. If 20 ships that arrived on Wednesday departed on Friday, the number of ships that arrived on Friday and departed on Thursday is at least
(A) 5 (B) 10 (C) 25 (D) 30

4. The number of ships that arrived on Tuesday and departed on Monday is at least
(A) 0 (B) 3 (C) 5 (D) 10

***Directions for questions 5 to 9*:** Answer these questions on the basis of the information given below.

Six students of a class wrote Physics and Chemistry exams. Each exam had nine questions and in each exam, marks are given based on the number of questions attempted correctly as follows:

Number of correct attempts (n)	**Marks**
0, 1	$n \times 1$
2, 3, 4	$n \times 2$
5, 6, 7	$n \times 3$
8, 9	$n \times 4$

(Note: Assume that no marks are given for wrong answers or unattempted questions)
Further, the results of the exams are as follows:

Student	**Number of questions attempted correctly**			**Total marks**
	Physics	**Chemistry**	**Total**	
A				
B			7	
C			13	
D				24
E				39
F				51
Total	36	30	66	

It is also known that,
(1) The number of questions attempted correctly by D in Physics is the same as that of E in Chemistry.
(2) The number of questions attempted correctly by F in Physics and Chemistry are equal to the number of questions attempted correctly by B and C in Chemistry, not necessarily in the same order.

5. The total marks scored by A is
(A) 21 (B) 25 (C) 29 (D) 36

6. Who scored the second lowest total marks?
(A) A (B) B (C) C (D) D

7. In Physics, how many students scored more marks than E?
(A) 0 (B) 1 (C) 2 (D) 3

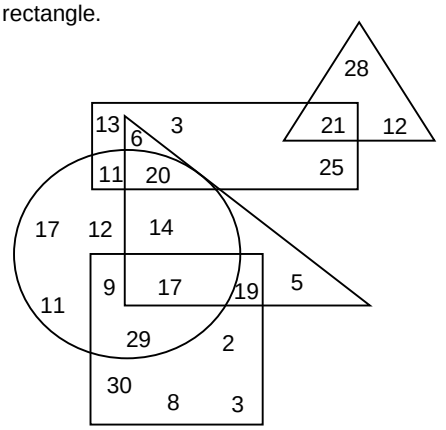
8. How many students scored more marks in Physics than in Chemistry?
(A) 4 (B) 3 (C) 2 (D) 5

9. The number of students who scored more than B in Physics but less than him in Chemistry is
(A) 0 (B) 1 (C) 2 (D) 3

Directions for questions 10 to 12: Answer these questions on the basis of the information given below.

On the basis of the diagram given below five terms – A, B, C, D and E – are defined as follows:
A → Sum of all the numbers inside the equilateral triangle.
B → Sum of all the numbers inside the rectangle.
C → Sum of all the numbers inside the rightangled triangle.
D → Sum of all the numbers inside the square.
E → Sum of all the numbers inside the circle.

The heights of five friends – Abhinav, Bindia, Chetan, Dravid and Enosh – are as follows.
1. Abhinav's height is 3D – 3A.
2. Bindia's height is E divided by the only number inside the rightangled triangle that is not part of any other figure, then multiplied by the smallest number in the square.
3. Chetan's height is the sum of all the numbers that are part of exactly three figures.
4. Dravid's height is the sum of all the numbers that are part of at least two figures.
5. Enosh's height is the sum of all the numbers which are greater than eight and lie inside the square or the rectangle.



10. What is the difference in the heights of the Bindia and Abhinav?
(A) 109 (B) 112
(C) 176 (D) 134

11. Who is the tallest among the five?
(A) Bindia (B) Chetan
(C) Enosh (D) Abhinav

12. If the height of Suman, Enosh's cousin, is the sum of all the numbers that are part of at least three figures, then what is the difference in the heights of Dravid and Suman?
(A) 90
(B) 83
(C) 72
(D) None of these

Directions for questions 13 to 16: Answer these questions on the basis of the information given below.

Company XYZ was trying out different proportions of Ethanol, Petrol, Biofuel and Diesel to make a fuel which leads to less emissions. The table below gives different combinations – Q, R, S and T, formed from these four fuels.

Solution	Composition			
	Petrol	Ethanol	Biofuel	Diesel
Q	30	40	10	20
R	50	10	20	20
S	10	20	30	40
T	30	35	25	10

The cost per litre of Petrol, Ethanol, Biofuel and Diesel are ₹50, ₹20, ₹40 and ₹30 respectively.

Directions for questions 13 and 14: Type in your answer in the input box provided below the question.

13. What is the cost per litre of Q?

14. What is the total cost incurred in making 20 litres of R and 30 litres of S?

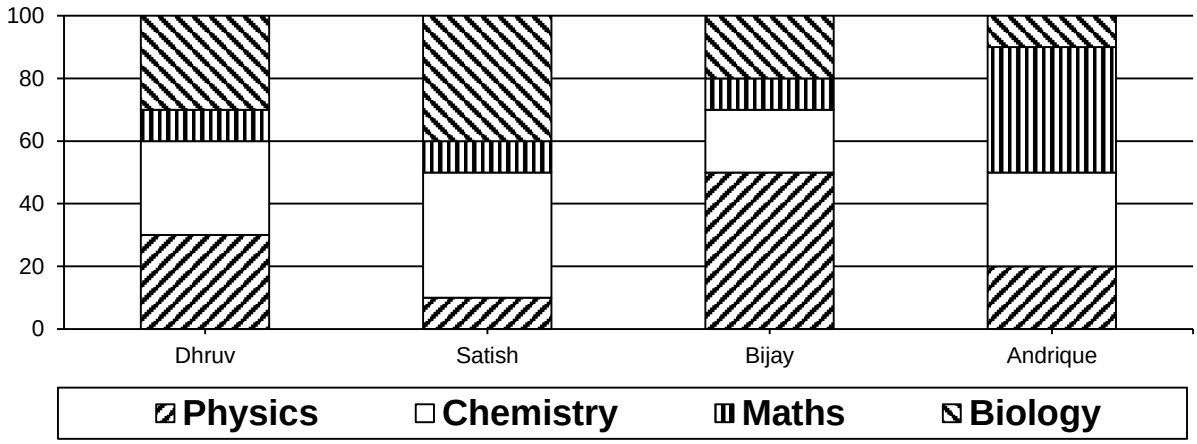
Directions for questions 15 and 16: Select the correct alternative from the given choices.

15. If the company decides to produce Q, R, S and T in the ratio of 1 : 2 : 3 : 4, then what is the average cost per litre of the company products?
(A) 34.2 (B) 35.4
(C) 36.1 (D) 36.8

16. What is the maximum difference between the cost per litre of any two solutions?
(A) 6 (B) 7
(C) 8 (D) 9

Directions for questions 17 to 20: Answer these questions on the basis of the information given below.

Distribution of marks scored by four candidates – Dhruv, Satish, Bijay and Andrique.
(As a percentage of their respective total marks)



17. If the total marks of Satish is less than the total marks of Bijay but more than the total marks of Dhruv, then which of the following statements is definitely true?
(A) The marks scored by Satish in Physics are less than the marks scored by Dhruv in Maths.
(B) The total marks scored by Bijay in Chemistry and Biology combined are more than the marks scored by Satish in Physics.
(C) The marks scored by Andrique in Chemistry are more than the marks scored by Dhruv in Maths.
(D) The total marks scored by Dhruv in Maths and Biology combined are more than the marks scored by Bijay in Chemistry.

18. If Andrique scored the same marks in Physics as Dhruv scored in Chemistry, then what is the ratio of the total marks scored by Andrique to the total marks scored by Dhruv?
(A) 2 : 3 (B) 1 : 2
(C) 1 : 3 (D) 3 : 2

19. By what percentage did Satish score less than Dhruv in Physics, if the marks scored by Dhruv in Chemistry are 50% more than the marks scored by Satish in Chemistry?
(A) $16^2/_3\%$
(B) 20%
(C) 25%
(D) None of these

20. Which of the following statements is false?
(A) Andrique scored more marks in Maths than in Biology
(B) Satish scored less marks in Maths than in Chemistry.
(C) Dhruv scored more marks in Physics than in Chemistry.
(D) Bijay scored less marks in Biology than in Physics.

Directions for questions 21 to 25: Answer these questions on the basis of the information given below.

The following table gives the details of the number of mock CATs conducted by different institutes in 2004 and the number of these mock CATs written by different students.

Student \ Institute	P (30)	Q (40)	R (32)	S (24)	T (26)
Akshay	12	21	23	10	22
Bobby	16	20	16	20	11
Chahat	18	33	17	15	8
Daram	14	16	28	16	13
Emran	21	18	18	9	15
Feroz	16	21	15	12	10
Govinda	10	30	20	11	20
Hrithik	20	22	19	17	19

The number given in the brackets is the total number of mock CATs conducted by the respective institute in 2004.

21. The number of students who wrote at least one mock CAT of each institute in common with Feroz is at least
(A) 0 (B) 1 (C) 2 (D) 3

22. Among the total mock CATs held, the number of mock CATs written by exactly one of Akshay and Hrithik is at least
(A) 18 (B) 20 (C) 23 (D) 26

23. Of the mock CATs conducted by institute R, the number of mock CATs which were written by more than one among Bobby, Emran and Govinda is at least
(A) 8 (B) 11
(C) 13 (D) 15

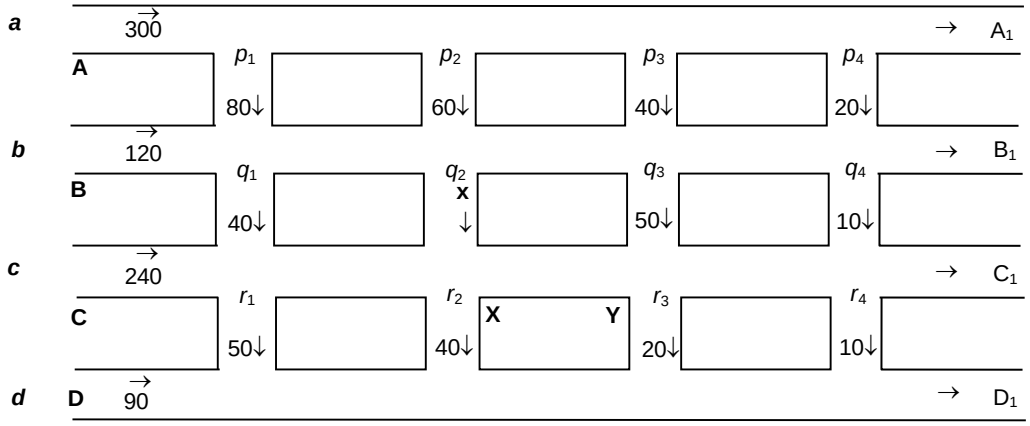
24. If Daram wrote all the mock CATs which were written by neither Chahat nor Feroz, then the number of mock CATs conducted by institute S and written by Daram, Chahat and Feroz is at most
(A) 6 (B) 7
(C) 8 (D) 9

25. Of the mock CATs conducted by institute Q, the number of common mock CATs written is the highest for
(A) Feroz and Akshay
(B) Hrithik and Chahat
(C) Chahat and Govinda
(D) Daram and Emran

Exercise – 5

Directions for questions 1 to 4: Answer these questions on the basis of the information given below.

Flow of water through a network of irrigation canals



a, b, c and ***d*** are four canals through which water flows for the purpose of irrigation. The water flows into the canals at points A, B, C and D, and is discharged at the points A_1, B_1, C_1 and D_1 respectively. p_1, p_2, p_3, p_4; q_1, q_2, q_3, q_4 and r_1, r_2, r_3, r_4 are three sets, of four pipes each, through which water flows from ***a*** to ***b***, ***b*** to ***c*** and ***c*** to ***d*** respectively.
The rates of flow of water (in units of water flowing per unit time) flowing through the pipes and canals are given at their respective positions. For example, 300 units of water enters canal ***a*** per unit time, 80 units of which enters into canal ***b*** per unit time through pipe p_1 and 60 units of water enters into canal ***b*** per unit time through pipe p_2 and so on. For each of the three canals ***a***, ***b*** and ***c***, the quantity of water flowing can never exceed 1.5 times the total quantity of water entering into the respective canal. Assume that in any canal, water flows in only one direction, i.e. from left to right, and at any junction, outflow precedes the inflow.

1. What is the minimum value of x (in units of water flowing per unit time)?
(A) 10 (B) 20 (C) 30 (D) 40

2. If pipes p_1 and q_2 are closed (blocked), what is the total quantity of water that flows per unit time out of canal ***c*** at point C_1?
(A) 140 (B) 180 (C) 220 (D) 240

3. What is the maximum possible amount of water that can flow per unit time between the points X and Y (shown in the diagram)?
(A) 330 units (B) 320 units
(C) 350 units (D) 360 units

4. If x = 40 units, from which of the following points is the rate of outflow of water the least?
(A) A_1 (B) B_1 (C) C_1 (D) D_1

Directions for questions 5 to 8: Answer these questions on the basis of the information given below.

The following table gives the findings of a survey among 120 men and women, employed in four different sectors – Manufacturing, IT, Medicine and Banking – regarding their monthly incomes.

Sector	Men	Women
Manufacturing	19 (8K, 12K)	5 (6K, 9K)
IT	17(10K, 15K)	16 (8K, 13K)
Medicine	15(12K, 20K)	18 (10K, 17K)
Banking	16 (7K, 20K)	14 (5K, 11K)

According to the representation used in the table, there were 19 men, among those surveyed, working in the manufacturing sector and the lowest salary of any of them was ₹8,000 p.m. (i.e., 8K) and the highest salary was ₹12,000 p.m. (i.e., 12K)

Directions for questions 5 and 6: Type in your answer in the input box provided in the question.

5. The maximum number of men or women among those surveyed, in manufacturing or IT, with an income of at most ₹10,000 p.m. is ☐

6. Among those surveyed, the number of women whose income is greater than the income of at least one of the men surveyed is at most ☐

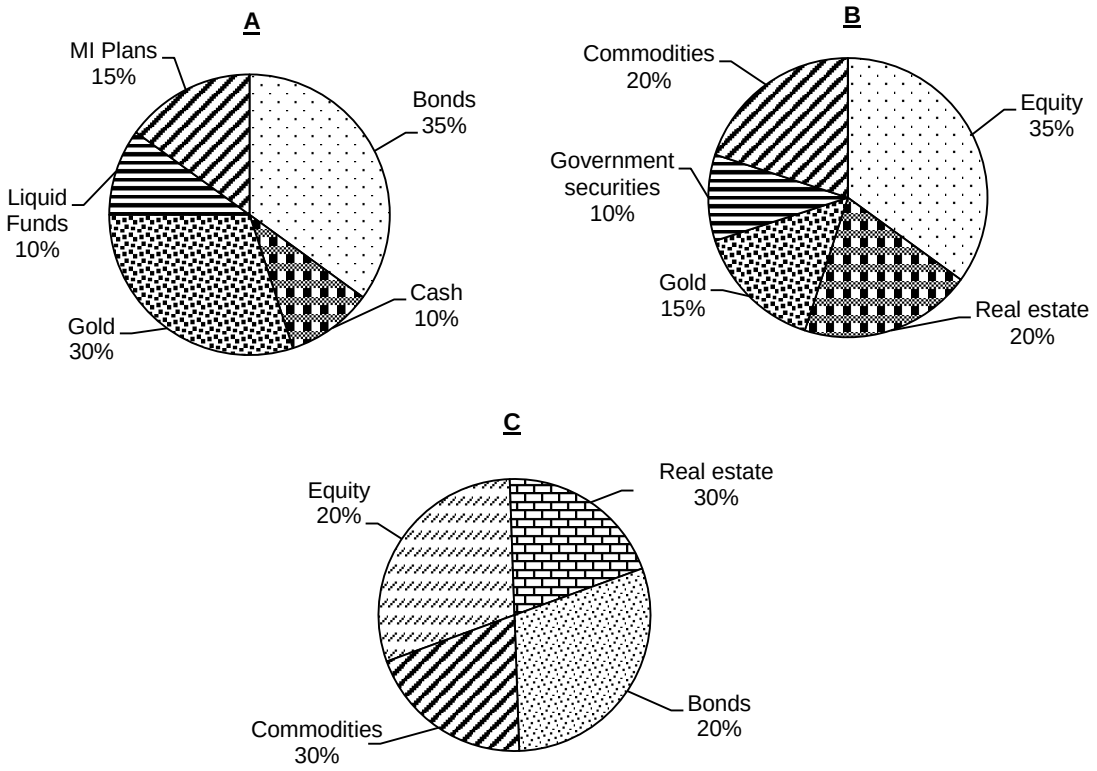
Directions for questions 7 and 8: Select the correct alternative from the given choices.

7. Among those surveyed, what is the minimum number of men whose income is more than ₹10,000 p.m. but less than ₹20,000 p.m.?
(A) 1 (B) 2
(C) 3 (D) 4

8. Among those surveyed, what is the maximum number of persons in banking who are earning more than at least one of the persons surveyed in medicine?
(A) 18 (B) 21
(C) 26 (D) 28

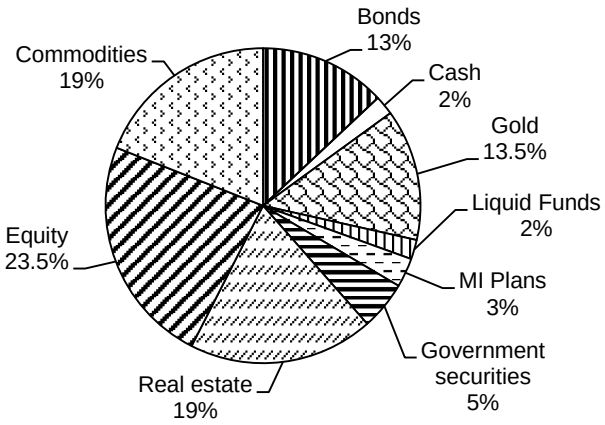
Directions for questions 9 to 11: Answer these questions on the basis of the information given below.

Quality management, a mutual fund house was managing three funds – A, B and C in which the breakup of assets were as follows.



As administration and other expenses were high, Quality management decided to merge all the three funds into a single one.

The following pie chart gives the breakup of assets under the single fund.



9. The ratio of amount under funds A, B and C was
(A) 3 : 4 : 2
(B) 2 : 5 : 4
(C) 2 : 7 : 3
(D) None of these

10. If the total amount in equities was ₹47 lakhs, then what was the amount in bonds in fund A.
(A) ₹14 lakhs
(B) ₹20 lakhs
(C) ₹28 lakhs
(D) None of these

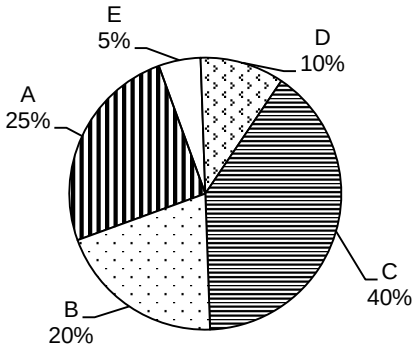
11. The amount under commodities in fund C was what percentage of the amount in gold in fund B.
(A) 3 : 5
(B) 5 : 7
(C) 6 : 5
(D) 5 : 4

Directions for questions 12 to 15: Answer these questions on the basis of the information given below.

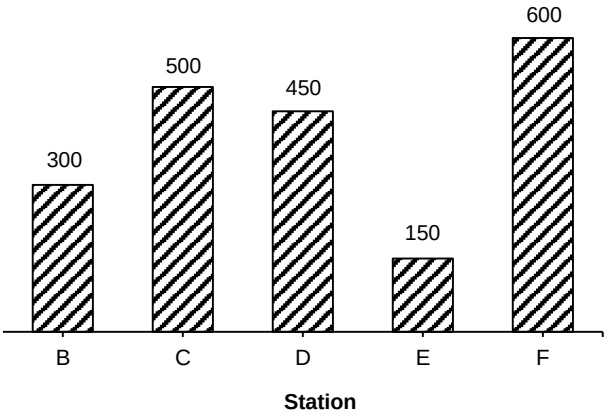
A local train started from station A at 10.00 a.m. in the morning and en route it stopped at exactly four intermediate stations, namely B, C, D and E, and finally at station F, which was the destination station. It is known that the total number of passengers who boarded the train at stations A, B, C, D and E put together is 2000.

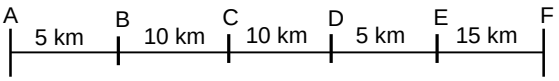
The pie chart given below shows the percentage distribution of the total number of passengers who boarded the train, according to the station at which they boarded the train. The bar chart shows the number of passengers who got down the train at different stations. The distance between any two adjacent stations is given in the line diagram.

Percentage distribution of passengers according to station boarded at



Distribution of passengers according to station got down at





12. A group of villagers boarded the train at one of the stations and all of them got down together at another station. What is the maximum possible number of persons in that group, if the group travelled more than 15 km?
(A) 400 (B) 450 (C) 800 (D) 500

13. What is the maximum possible number of passengers who travelled for not more than 15 km and also had station C as either their boarding or destination station?
(A) 500 (B) 600 (C) 800 (D) 1100

14. What is the maximum possible number of passengers who travelled for at least 30 km in the train?
(A) 100 (B) 300
(C) 150 (D) None of these

15. At 6:00 p.m. in the evening, the same train returns from station F to station A, with the condition that at each of the stations, the number of passengers who boarded the train in the evening is same as that of those who got down the train in the morning, while the number of passengers who got down the train in the evening is same as that of those who boarded the train in the morning. Which of the following statements is/are true?
(A) The number of passengers who travelled in the train between any two stations in the evening is same as that in the morning.
(B) In the evening, the train carried the maximum number of passengers while travelling between stations D and C.
(C) Maximum possible number of passengers who travelled for a distance of at least 30 km in the evening is the same as that in the morning.
(D) All the three

Directions for questions 16 to 18: Answer these questions on the basis of the information given below.

The table gives the details of the number of people (in the age group 30 to 50 years) in five different companies – A, B, C, D and E in the years 2014 and 2019. No employee joined or left these companies, or shifted to another company.

Company	2014	2019
A	27	38
B	46	39
C	50	60
D	74	82
E	110	110

16. What is the minimum possible number of employees who crossed the age of 50 years between 2014 and 2019?
(A) 7 (B) 29
(C) 22 (D) None of these

17. If the number of employees who crossed the age of 50 years between 2014 and 2019 in company C is the maximum possible then what is the number of employees who entered the age group of 30 to 50 years between 2014 and 2019?
(A) 50 (B) 10 (C) 60 (D) 40

18. What is the least possible number of employees who entered the 30 to 50 years of age group between 2014 and 2019?
(A) 20 (B) 29 (C) 22 (D) 7

Directions for questions 19 to 21: Answer these questions on the basis of the information given below.

Name of the Company	Total Exports in 2014-15 (₹ crore)	Change in Exports From 2013-14 to 2014-15 (%)	Total Imports in 2014-15 (₹ crore)	Change in Imports From 2013-14 to 2014-15 (%)	Value of Exports as a Percentage of Sales		Cost of Raw Material as a Percentage of Sales		Imports of Capital Goods as a Percentage of Total Imports	
					2014-15	2013-14	2014-15	2013-14	2014-15	2013-14
Radiant Industries	8231	50	2685	25	36	18	25	30	2.1	5.6
Zen Technologies	6134	35	3126	48	70	85	28	31	3.8	2.1
Dhanam Limited	5475	80	2163	64	75	75	27	25	0	0
Nithyam Computers	3520	32	1935	35	88	90	0	0	5.6	7.8
Indus Shipping	2875	135	1126	150	47	41	06	0	4.5	1.7
C.T.I	3946	80	1235	55	60	61	36	28	5.3	2.4
Dr. Varma's Labs	4750	45	1545	24	14	13	30	30	4.3	4.8
Hindustan Steels	5136	60	2236	73	92	96	41	38	6.1	3.8
ABD Ltd.	7536	20	3168	–24	20	15	32	36	7.2	2.6
Global Spinning	4160	70	2135	53	8	7	34	38	5.3	6.1

Net Forex Earnings = Total Exports − Total Imports

19. What is the cost of raw material of C.T.I. in 2013-14?
(A) ₹4,722 crore
(B) ₹1,006 crore
(C) ₹1,652 crore
(D) ₹1,848 crore

20. In 2014-15, for which of the following companies is the exports as a percentage of the cost of raw material the least?
(A) Zen Technologies
(B) Dr. Varma's Labs
(C) ABD Ltd.
(D) Global Spinning

21. For how many companies have the imports of capital goods increased from 2013-14 to 2014-15?
(A) 5 (B) 6
(C) 7 (D) 8

Directions for questions 22 to 25: Answer these questions on the basis of the information given below.

Intra-State Migration Trends in India, 1991

Migration Stream	X	Y
R → R	49·67%	76.71%
R → U	27·27%	11·95%
U → U	15·38%	7.04%
U → R	7·68%	4·3%

R = Rural; U = Urban

X = Male migrants in the stream as a percentage of total intra-state male migrants.
Y = Female migrants in the stream as a percentage of total intra-state female migrants.

% of total intra-state migrants	Male	Female
	24.89% (47.04)	75.11% (141.96)

Figures in brackets show absolute number of migrants in millions.

22. Which of the four migration streams mentioned alone, has the highest gender ratio? Gender ratio of a stream is defined as the ratio of the number of male migrants to the number of female migrants in that stream.
(A) R → U (B) R → R
(C) U → R (D) U → U

23. Male migrants from Urban to Urban form what percentage of the female migrants from Rural to Urban?
(A) 37.8% (B) 42.6%
(C) 48.7% (D) 53.7%

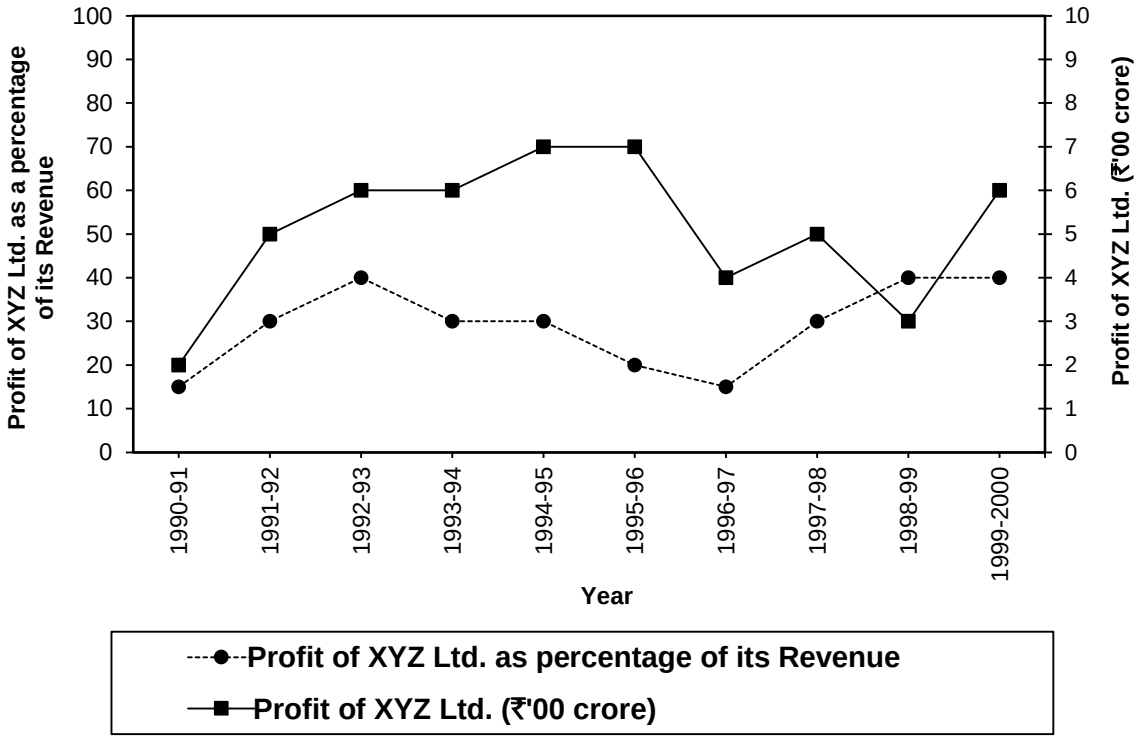
24. What is the percentage of male migrants from Urban to Rural out of the total migrant population?
(A) 1.9% (B) 2.1%
(C) 2.3% (D) 2.5%

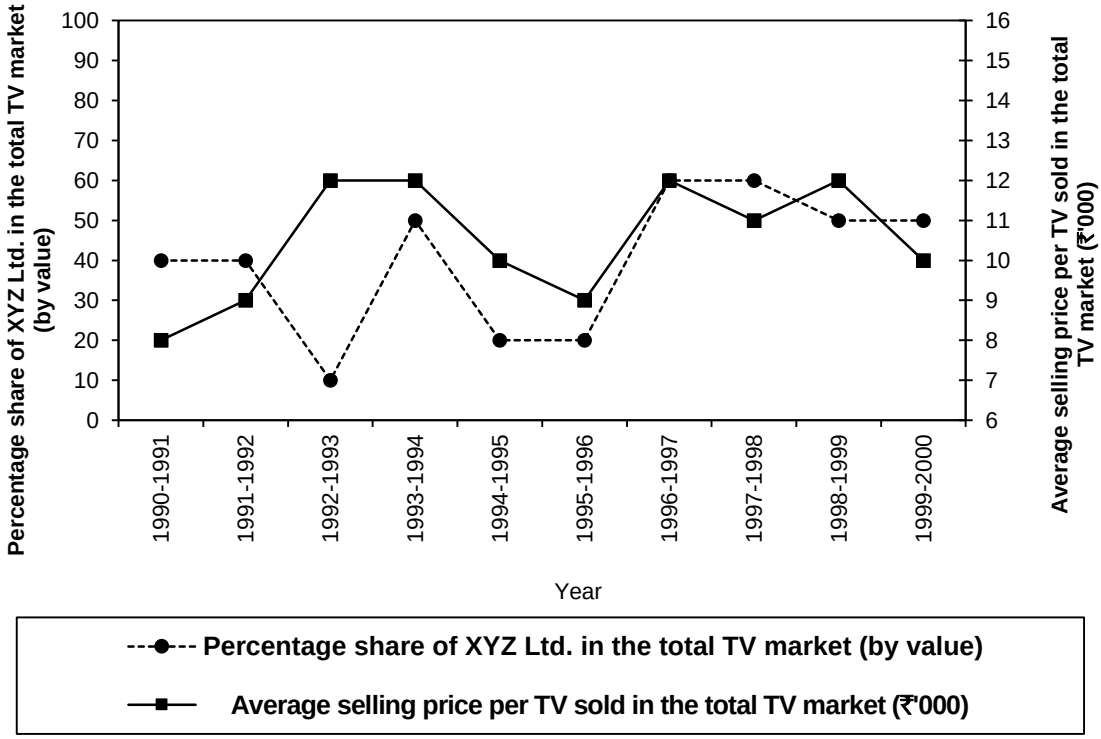
25. Total migrants from Rural to Rural areas form what percentage of total migrants in all the streams together?
(A) 55.62% (B) 54.89%
(C) 69.97% (D) 73.27%

Exercise – 6

Directions for questions 1 to 5: These questions are based on the graphs given below.

Details of the performance of company XYZ Ltd. that sells televisions





Note: The company XYZ Ltd. sells only televisions.

1. What was the maximum revenue (in ₹'00 crore) of the company XYZ Ltd. for any year from 1990-91 till 1999-2000?
(A) 30 (B) 35 (C) 40 (D) 45

2. Considering all the years mentioned above, for which year were the expenses of the company XYZ Ltd. the minimum? (Expenses = Revenue – Profit)
(A) 1994-95 (B) 1995-96
(C) 1998-99 (D) 1996-97

3. In how many of the years mentioned did the revenue of the company decrease/increase by 20% or more?
(A) 5 (B) 6 (C) 7 (D) 8

4. In which of the years mentioned was the total volume of TV's sold in the TV market the highest?
(A) 1994-95 (B) 1995-96 (C) 1996-97 (D) 1998-99

5. Which of the years mentioned witnessed the lowest total sales of TV's (by value)?
(A) 1990-91 (B) 1997-98 (C) 1998-99 (D) 1996-97

Directions for questions 6 to 9: Answer these questions on the basis of the information given below.

Details of the Indian widget industry

Ratio	Year					
	2014	**2015**	**2016**	**2017**	**2018**	**2019**
Profit Margin	0.27	0.3	0.24	0.3	0.33	0.36
DS Ratio	0.70	0.75	0.90	1.00	1.10	1.20
EXIM Ratio	0.60	0.64	0.72	0.50	0.60	0.68

$$\text{Profit Margin} = \frac{\text{Average selling price per widget}}{\text{Average cost price per widget}} - 1$$

$$\text{DS Ratio} = \frac{\text{Industry demand (by volume) for widgets}}{\text{Industry supply (by volume) for widgets}}$$

$$\text{EXIM Ratio} = \frac{\text{Volume of exports of widgets}}{\text{Volume of imports of widgets}}$$

Note:
(i) Industry demand includes domestic demand as well as export demand.
(ii) Industry supply includes domestic supply as well as imported supply.
(iii) The average export price per widget = The average selling price per widget.
(iv) The average import price per widget = The average cost price per widget.

6. In which of the given years was the average selling price per widget the lowest, given that there was a uniform increase of 20% in the average cost price per widget every year?
(A) 2014 (B) 2016 (C) 2017 (D) 2018

7. Find the volume of widgets exported in the year 2016 as a percentage of the industry demand for widgets in that year.
(A) 64% (B) 80%
(C) $83\frac{1}{3}\%$ (D) Cannot be determined

8. If the total value of widgets imported in the year 2017 was ₹200 crore, then what was the total value of the widgets exported in that year?
(A) ₹30 crore (B) ₹60 crore
(C) ₹130 crore (D) ₹220 crore

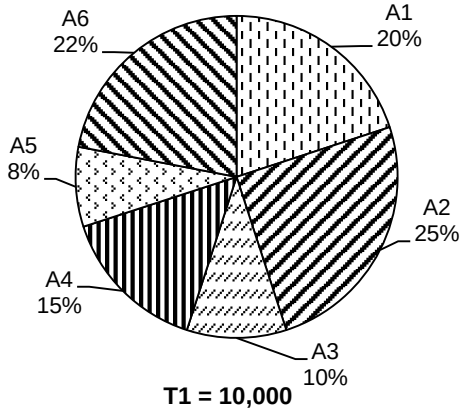
9. If the volume of widgets imported increased by a steady 16% every year, then during which of the following periods did the volume of widgets exported increase by the maximum percentage?
(A) From 2015 to 2016 (B) From 2017 to 2018
(C) From 2018 to 2019 (D) From 2014 to 2015

Directions for questions 10 to 12: Answer the questions on the basis of the information given below.

The following pie charts give the distribution of the people, according to their ages, for each of the six stages in the selection of INDIAN IDOL for the year 2008. The six different stages are

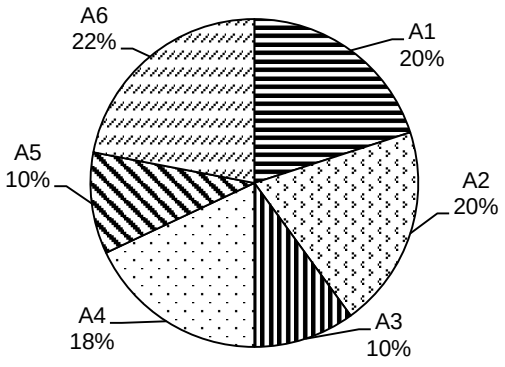
(S_1) Appeared for the contest.
(S_2) Qualified for the Pop round.
(S_3) Qualified for the Rock round.
(S_4) Qualified for the Ghazal round.
(S_5) Qualified for the Indo – Western round.
(S_6) Qualified for the public votes round.

Stage - S1



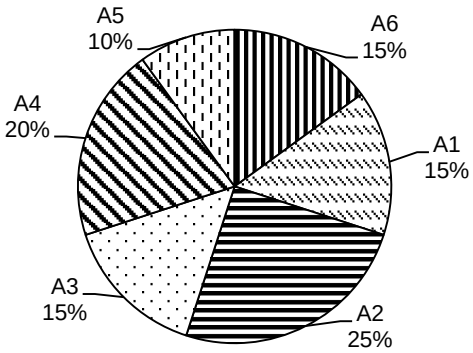
T1 = 10,000

Stage - S2



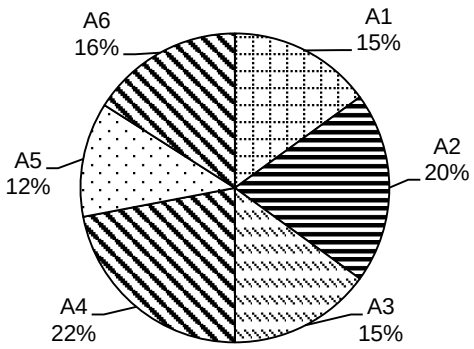
T2 = 8,000

Stage - S3



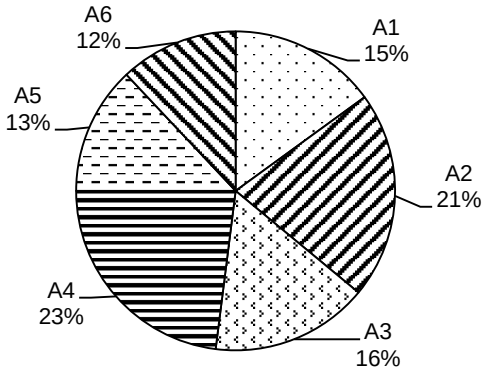
T3 = 4000

Stage - S4



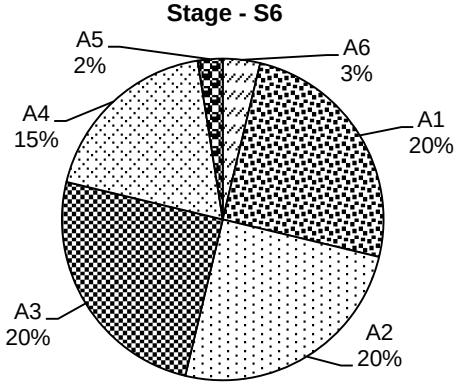
T4 = 2000

Stage - S5



T5 = 1000

Stage - S6



T6 = 100

A1 – $10 \le$ Age ≤ 15 A2 – $15 <$ Age ≤ 20 A3 – $20 <$ Age ≤ 25
A4 – $25 <$ Age ≤ 30 A5 – $30 <$ Age ≤ 35 A6 – $35 <$ Age ≤ 50

The values below the pie chart gives the number of people in contention in that stage.
The person who was selected as the Indian idol belonged to the age group A2.

10. How many instances are there in which the number of persons clearing any stage in an age group was more than 50% of the number of people in that age group in that stage?
(A) 18
(B) 15
(C) 17
(D) 16

11. In which age group was the number of persons qualifying for the rock round more than the number of persons qualifying for the Ghazal round, by the maximum percentage?
(A) A_1
(B) A_2
(C) A_3
(D) A_4

12. How many age groups are there in which no person was eliminated in a stage?
(A) 0
(B) 1
(C) 2
(D) 3

***Directions for questions 13 to 17*:** Answer these questions on the basis of the information given below.

The following table gives the percentage distribution of the runs scored by four cricketers in the first five matches of their career.

Match	Gaurav	Sheru	Tenchin	Drahul
1st	25	24	20	18
2nd	18	22	26	15
3rd	20	24	21	22
4th	25	14	26	23
5th	12	16	7	22

Further, it is known that,
(1) The runs scored by Gaurav in his 2nd match was not more than that scored by Drahul in his 2nd Match.
(2) The runs scored by Tenchin in his 3rd match was not less than that scored by Sheru in his 3rd match.
(3) In the fifth match, the runs scored by Tenchin was not more than half of that scored by Gaurav.

13. If the number of runs scored by the given players in their fourth matches are compared, then who had the highest score?
(A) Gaurav (B) Sheru (C) Tenchin (D) Drahul

14. If Drahul scored 126 runs in his first match, then the total runs scored by Tenchin in his first five matches is at most
(A) 350 (B) 400 (C) 450 (D) 500

15. The ratio of the runs scored by Gaurav in his second match to the runs scored by Sheru in his third match was at least
(A) 0.96 (B) 1
(C) 1.1 (D) 1.2

16. Among all the given players, the highest score made in a match in their first five matches was by
(A) Gaurav (B) Sheru
(C) Tenchin (D) Drahul

17. If the total runs scored by Sheru in his first five matches is 1000, the runs scored by Drahul in his 2nd match is at least
(A) 200 (B) 240
(C) 300 (D) 250

***Directions for questions 18 to 22*:** Answer these questions on the basis of the information given below.

Six friends, who are from six different cities, were asked about the cities to which each of them and their friends belong. Their replies were as follows.

	Bangalore	**Chennai**	**Delhi**	**Hyderabad**	**Kolkata**	**Mumbai**
Aman	Emma	Biswa	Dev	Aman	Charan	Fazal
Biswa	Aman	Fazal	Biswa	Emma	Charan	Dev
Charan	Emma	Fazal	Dev	Biswa	Aman	Charan
Dev	Charan	Biswa	Fazal	Dev	Aman	Emma
Emma	Emma	Biswa	Dev	Charan	Aman	Fazal
Fazal	Biswa	Dev	Fazal	Charan	Emma	Aman

It is known that no two persons gave an equal number of true replies, and that they all belong to a city from among, Bangalore, Chennai, Delhi, Hyderabd, Kolkatta and Mumbai and no two persons belong to the same city.

18. Which of the following persons gave the highest number of true replies?
(A) Emma (B) Biswa (C) Charan (D) Dev

19. The person who belong to Hyderabad is
(A) Aman (B) Biswa (C) Charan (D) Dev

Directions for questions 20 to 22: Type in your answer in the input box provided below the question.

20. How many persons gave more true replies than Biswa?

21. How many persons gave his/her city name correctly?

22. What is the difference in the number of true replies given by Charan and Fazal?

Directions for questions 23 to 25: Answer these questions on the basis of the information given below.

Table I

IQ	N_I
170	10
160	15
150	20
140	24
130	36
120	58
110	66
100	72
90	88
80	90
70	98

Table II

PQ	N_P
220	21
210	28
200	32
190	46
180	48
170	57
160	59
150	66
140	78
130	88
120	92

Table III

WQ	N_W
200	8
195	12
190	17
185	28
180	38
175	57
170	66
165	72
160	78
155	89
150	94

IQ, PQ and WQ represent intelligence quotient, popularity quotient and wealth quotient.

N_I represents the number of persons whose IQ is more than or equal to the specified level. For e.g., 24 persons have IQ more than or equal to 140.

Similarly, N_P represents the number of persons whose PQ is more than or equal to the specified level. The same holds true for WQ.

Any person X with a higher IQ than another person Y, also has a higher PQ and a higher WQ than Y.

The tables shown are drawn for a group of 100 people.

23. How many persons have an IQ more than or equal to 130 but a PQ less than 210?
(A) 7
(B) 8
(C) 28
(D) 36

24. How many persons have an IQ more than or equal to 110, a PQ less than 200 and WQ more than or equal to 180?
(A) 6
(B) 5
(C) 38
(D) 33

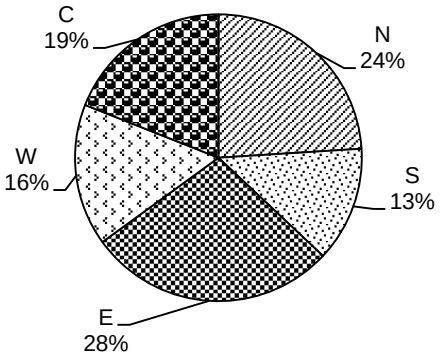
25. At least 50 persons have an IQ more than or equal to x and a PQ less than y, where x and y represent the IQ and PQ levels as mentioned in the tables. How many pairs of (x, y) exist if IQ, PQ and WQ values are only in multiples of ten as given in the table?
(A) 0
(B) 1
(C) 10
(D) 12

Exercise – 7

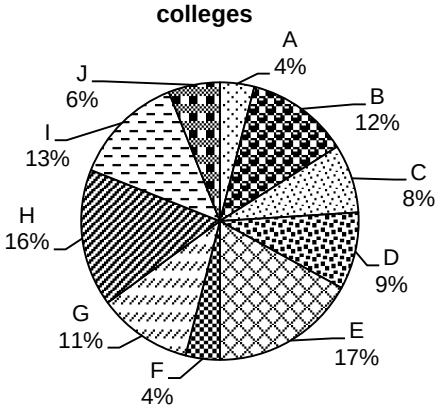
***Directions for questions 1 to 5*:** Answer these questions on the basis of the information given below.

The first pie chart gives the percentage share of the five zones-North (N), South (S), East (E), West (W) and Central (C) – in the number of students who cleared CAT. The second pie chart gives the percentage break up of these student joining different colleges.

Zone wise break up of students clearing CAT



Break up of students joining different colleges



Note: All the colleges admit only students who clear CAT.

Directions for questions 1 to 3: Type in your answer in the input box provided below the question.

1. If none of the colleges had more than 50% students from a single zone, then in at least how many colleges did students from the East zone join?

2. Students from at least how many zones joined in more than two of the given colleges?

3. If in all colleges in which students from the West zone joined, they constituted at least 30% of the total students joining that college, then in at most how many colleges did students from the West zone join?

Directions for questions 4 and 5: Select the correct alternative from the given choices.

4. The students from at least how many zones joined more than a single college?
(A) 2 (B) 3
(C) 4 (D) 1

5. If students from no single zone was more than 40% of the students in any colleges then in at least how many of the given colleges did students from the North zone join?
(A) 3 (B) 4
(C) 5 (D) 6

Directions for questions 6 to 9: Answer these questions on the basis of the information given below.

The following table gives the distance (in kms) between 10 cities which Mr. Anand plans to visit. The cities A to J, not necessarily in that order are in a straight line and he plans, to start his journey from his home in city G. The distances given are the distances from the southern most city C.

	A	B	C	D	E
F	160	280	65	190	305
G	105	225	120	135	250
H	180	60	405	150	35
I	30	150	195	60	175
J	65	55	290	35	80

6. What is the distance between cities G and I (in kms)?
(A) 45 (B) 195
(C) 75 (D) 90

7. The northernmost city among the given ten cities is
(A) D (B) B
(C) E (D) H

8. If Mr. Anand has to visit all the ten cities, the total distance he has to travel is (in kms)
(A) 505 (B) 525
(C) 645 (D) 680

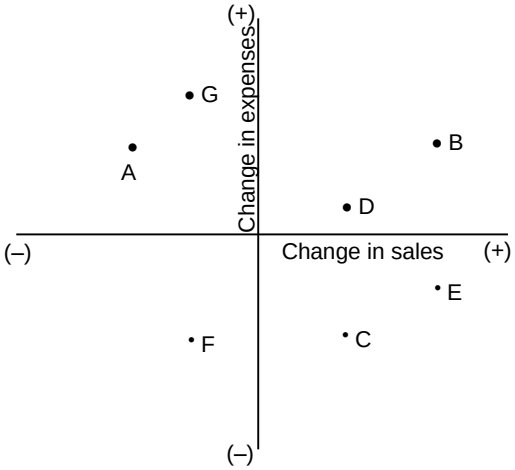
9. What is the least distance between any two of the given ten cities (in kms) is?
(A) 25 (B) 30
(C) 35 (D) 50

Directions for questions 10 to 12: Answer these questions on the basis of the information given below.

The following graph gives details of change in both sales expenses of few companies in the year 2017 when compared to the previous year.

Sales = Expenses + Profit

Profitability = $\frac{\text{Profit}}{\text{Sales}}$



10. How many of the given companies definitely had an increase in profit in 2017, when compared to 2016?
(A) 0 (B) 1 (C) 4 (D) 2

11. At most for how many of the given companies was the profitability in 2017 higher than that in 2016?
(A) 6 (B) 5 (C) 4 (D) 3

12. At most how many of the given companies showed a positive correlation between expenses and profit (i.e., an increase in both expenses and increase in profits or decrease in both)
(A) 3 (B) 2
(C) 1 (D) 4

Directions for questions 13 to 15: Answer these questions on the basis of the information given below.

The following table gives the percentage share of incomes of the highest paid and the lowest paid employee in a section of a company, as a percentage of the total salary paid to all the employees in that section along with the number of employees and the total salary paid to the employees in that section.

Section	No. of employees	Total salary	Highest paid (%)	Lowest paid (%)
Accounts	6	100000	22	9
Marketing	5	100000	28	12
Operations	5	150000	27	10
Typists	4	60000	35	15
Receptionists	4	30000	43	14
Production	7	140000	21	8
Warehouse	8	120000	19	7

The company had only these seven sections and the percentage share of the salary of each employee as a percentage of the total salary of employees in that section was an integer and no two employees in a section had the same salary.

Directions for questions 13 and 14: Type in your answer in the input box provided below the question.

13. At least how many of the employees in the company were paid a salary which was 20% or more than the salary paid to all the employees in his/her section?

14. What can be the maximum salary of the employee with the second lowest salary in the warehouse section?

Directions for question 15: Select the correct alternative from the given choices.

15. At most how many employees in the company have a salary more than ₹25000?
(A) 9
(B) 8
(C) 7
(D) 10

Directions for questions 16 to 19: Answer these questions on the basis of the information given below.

The following tables give the distribution of the cars sold, of different companies, by an used car dealer, according to their prices. The first table gives the complete data regarding the distribution of cars sold, according to their price range for each company and in the second table complete information regarding the company wise distribution of cars sold is given.

Price wise distribution of cars sold

(all values in percentages)

Price (P) (in ₹)	Maruti	Tata	Hyundai	GM
P ≤ 2 lac	20%	26.67%	20%	20%
2 lac < P ≤ 3 lac	35%	13.33%	28%	25%
3 lac < p ≤ 4 lac	25%	26.67%	40%	10%
4 lac < P ≤ 5 lac	20%	33.33%	12%	45%
Total	100%	100%	100%	100%

Company wise distribution of cars sold

(all values in percentages)

Company	P ≤ 2 lac	2 lac < P ≤ 3 lac	3 lac < P ≤ 4 lac	4 lac < P ≤ 5 lac
Maruti	32	46.67	33.33	26.67
Tata	32	13.33	26.67	33.33
Hyundai	20	23.33	33.33	10.0
GM	16	16.67	6.66	30
Total	100	100	100	100

16. Approximately, what percentage of the total cars sold by the dealer were Maruti cars?
(A) 35 (B) 28 (C) 22 (D) 40

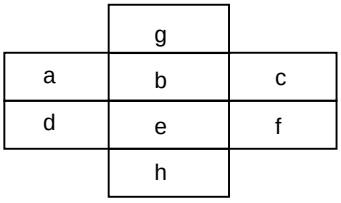
17. What is the ratio of the number of Hyundai cars and cars with a price less than or equal to ₹3 lakhs, that were sold by the dealer?
(A) 1 : 1 (B) 5 : 6
(C) 6 : 5 (D) None of these

18. The ratio of Tata and GM cars sold by the dealer was
(A) 2 : 3 (B) 3 : 2 (C) 4 : 3 (D) 3 : 4

19. If a total of 230 cars were sold by the dealer, then what is the maximum possible value of all the cars sold (in crores)?
(A) 7.2 (B) 7.6 (C) 8.2 (D) 8.8

Directions for questions 20 to 22: Answer these questions on the basis of the information given below.

The diagram gives eight boxes which are marked a, b --- h. All boxes are to be filled with one each of numbers 1 to 8 such that all number are used exactly once. So also any two numbers in adjacent boxes (either diagonally or along a straight line) must not be adjacent numbers.



20. The number in box g is
(A) 1 (B) 3
(C) 7 (D) Cannot be determined

21. Which of the following can be the number is box c?
(A) 1 (B) 7
(C) 8 (D) 5

22. How many of the eight numbers can be in box e?
(A) 1 (B) 2
(C) 3 (D) 4

Directions for questions 23 and 25: Answer these questions on the basis of the information given below.

The following table gives the rate of income tax at various levels of income for the year 2008-09.

Income	**Tax%**
Upto ₹1,50,000	0
1,51,000 – 3,00,000	10% of income above 1,50,000
3,00,001 – 5,00,000	15,000 + 20% of income above 3,00,000
5,00,001 and above	55,000 + 30% of income above 5,00,000.

In addition to the above there is an education cess which is to be paid at the rate of 3% of the tax calculated as above. Total income tax = Applicable tax + Education cess.

23. What is the total income tax to be paid for a person with an annual income of ₹3,60,000.
(A) 28,000
(B) 27,000
(C) 27,810
(D) 28,840

24. If a person has paid ₹72,000 as total taxes, then his annual income would be approximately.
(A) 4,60,000
(B) 5,50,000
(C) 5,56,000
(D) 5,90,000

25. If a person pays at least 25% of his income as total taxes, then his income is at least
(A) 12,00,000
(B) 16,50,000
(C) 22,00,000
(D) 27,50,000

Exercise – 8

Directions for questions 1 to 4: Answer these questions on the basis of the information given below.

The table gives details of the applicants in a recruitment camp held in the city of Bangalore by a software company for their new production unit.

Stream of Education	Male applicants selected as a percentage of female applicants selected	Male applicants as a percentage of total applicants	Applicants selected as a percentage of total applicants	Number of applicants rejected	Total applicants with work experience as a percentage of male applicants with work experience
MBA	150%	50%	10%	900	250%
B.Tech	200%	60%	30%	1400	150%
MCA	150%	60%	25%	1200	175%
PGDCA	300%	75%	20%	1200	125%
M.Sc.	100%	70%	40%	300	100%

1. From which stream were the maximum number of female applicants selected?
(A) MCA
(B) B.Tech
(C) MBA
(D) PGDCA

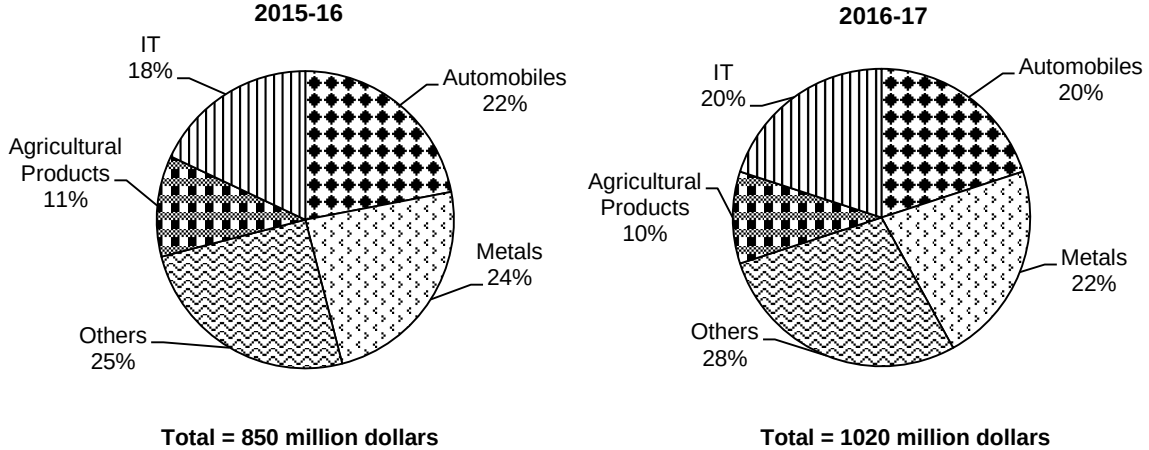
2. How many female applicants who applied from the M.Sc. stream did not have any work experience?
(A) 0 (B) 150
(C) 200 (D) 300

3. For how many streams were the number of applicants selected more than the average number of applicants selected for all five steams together?
(A) 2 (B) 1
(C) 3 (D) 4

4. If the number of female applicants with work experience from the B.Tech stream was 30, then what was the total number of applicants without any work experience from the B.Tech stream?
(A) 90 (B) 60
(C) 1710 (D) None of these

Directions for questions 5 to 8: Answer these questions on the basis of the information given below.

Product wise break-up of the exports from a country



Total = 850 million dollars

Total = 1020 million dollars

The contribution of the five biggest companies (by value) in the country's exports (in percentage).

Year / Company	2012-13	2013-14	2014-15	2015-16	2016-17
P	22	20	16	20	18
Q	18	10	14	17	21
R	17	18	15	15	20
S	15	22	20	10	14
T	12	15	14	13	17

The percentage growth in exports from 2015-16 to 2016-17 was the average of the annual growth rate of exports from 2012-13 to 2016-17.

5. If IT had a 15% share in the country's exports in 2012-13, then by approximately what percentage did IT exports from the country grow from 2012-13 to 2015-16?
(A) 80 (B) 96
(C) 107 (D) 124

6. How many of the given five companies had more than 100% growth in exports from 2012-13 to 2016-17?
(A) 2 (B) 3
(C) 4 (D) 5

7. The percentage growth in exports by company R from 2012-13 to 2015-16 was
(A) 53 (B) 45
(C) 62 (D) 58

8. What was the percentage growth of automobiles exported by the country in 2012-13 given that automobiles had a 25% growth in the share of the country's exports from 2012-13 to 2016-17?
(A) 145 (B) 150
(C) 180 (D) None of these

Directions for questions 9 to 12: Answer these questions on the basis of the information given below.

The table given below represents a collection of databases by Pielsen Market Survey Ltd., which is a company that is into the business of selling databases. Each database contains details regarding a group of people under a common category and each database can hold the details of upto six features of each person included in that category. Also, the price at which each database is available is mentioned. For example, Database A, which costs ₹8,000, contains the details of 60,000 Online Share Traders, such that the addresses of 70% of them are known.

Database	Category	Details						Number of Entries	Price (₹)
		Name	Age	Address	Telephone Number	Fax Number	E-Mail		
A	Online Share Traders	100%	80%	70%	85%	55%	90%	60,000	8,000
B	GRE-2005 Applicants	100%	85%	95%	90%	10%	100%	9000	1500
C	Credit Cardholders	100%	45%	90%	90%	20%	70%	20,000	60,000
D	RBI 9% Bondholders	100%	20%	85%	95%	40%	80%	8,00,000	100,000
E	Film Personalities	100%	40%	80%	80%	50%	80%	15,000	1,700
F	CEOs	100%	70%	100%	75%	75%	90%	5500	6000
G	NSDL Data of Demat Investors of 100 Companies	100%	30%	50%	60%	20%	80%	20,00,000	2,00,000
H	Indian Investors	100%	30%	70%	60%	10%	70%	1,00,000	15,000
I	Indian Hotmail and Yahoo Users	80%	70%	75%	70%	5%	100%	2,00,000	5,000
J	Income Tax Payers, Mumbai	100%	80%	85%	75%	10%	40%	10,00,000	70,000
K	Class XIIth Students, CBSE Board	100%	80%	100%	85%	1%	30%	10,00,000	80,000
L	Mobile Users, India	100%	10%	80%	100%	5%	20%	20,00,000	1,00,00
M	Faculties, Maths	100%	100%	80%	75%	20%	90%	11,000	6,000

9. In Database H, a maximum of how many Indian Investors can be there such that for each of them, the data on exactly five of the six features is available?
(A) 10,000 (B) 30,000 (C) 40,000 (D) 70,000

10 In database E, the number of Film Personalities, each of whose name, fax number as well as telephone number are available, is at least
(A) 1,500 (B) 4,500 (C) 3,000 (D) 6000

11. In database J, it was found that there were a few Income Tax Payers in Mumbai for whom the data on no other detail except name was available. If for such cases, it will cost Pielsen Market Survey Ltd. at most ₹6 per person for further investigation, then what is the maximum possible amount that may be required to be spent to investigate all such cases?
(A) ₹3 lakh (B) ₹6 lakh
(C) ₹9 lakh (D) ₹16 lakh

12. In which of the given databases is the number of people for each of whom the data on their E-mail is available the least?
(A) F (B) M
(C) B (D) C

Directions for questions 13 to 16: Answer these questions on the basis of the information given below.

Five prospective car buyers were quizzed on the relative importance of five different factors considered when purchasing a car. The factors considered are Reliability (R), After sales service (AS), Fuel efficiency (FE), Value for money (VFM), and Resale value (RV). The level of dissimilarity in the preferences between any two buyers is the sum of the difference in ranks allotted by the two persons to all the five factors.

Factor →	1	2	3	4	5
RV	(C, D)		(A)		(B, E)
VFM	(A)	(B, D)	(E)		(C)
FE	(B, E)		(C, D)	(A)	
AS		(A)		(B, C, E)	(D)
R		(C, E)	(B)	(D)	(A)

Rank →

In the diagram given above, the name/s (given in brackets) in any of the cells give/s the buyer/s who allotted the respective rank (i.e., the column) to the respective factor (i.e., the row). For example both B and D allotted a rank of 2 to the factor VFM, while A was the only buyer who allotted a rank of 4 to the factor FE.

13. The buyer who is most dissimilar in his preferences to C is
(A) A (B) B (C) D (D) E

14. Which of the following pairs of buyers are most dissimilar in their preferences?
(A) D and E (B) A and B
(C) C and E (D) A and C

15. The dissimilarity in the preferences of D is the least with
(A) A (B) B (C) C (D) E

16. Among the following pairs of buyers, the pair which is identical in its level of dissimilarity in preferences with the pair A and D is
(A) B and C (B) D and E
(C) B and D (D) A and B

Directions for questions 17 to 20: Answer these questions on the basis of the information given below.

Profile of students who wrote CAT 2019

Boys Vs Girls	3 : 2
Freshers Vs Experienced	1 : 1
Engineering Vs Others	2 : 1
First Vs Second attempt or higher	2 : 3
Attended coaching Vs Self preparation	3 : 5

Assume that the given ratios hold across all the categories:

The total number of students who wrote CAT in 2019 was 2,00,000.

Directions for questions 17 and 18: Type in your answer in the input box provided in the question.

17. The number of girls who wrote CAT in 2019 after attending coaching was ☐

18. Among girls who wrote CAT in 2019, the number of people who had an engineering background and were freshers exceeded those with other than an engineering background and had done self preparation by ☐

Directions for questions 19 and 20: Select the correct alternative from the given choices.

19. What percentage of the boys who wrote CAT in 2019 had an engineering background?
(A) 55.0 (B) 62.5
(C) 66.7 (D) 70.0

20. Among people who wrote CAT in 2019, the number of experienced engineers who were making their first attempt is how much more than the number of girls who were freshers and were making their second or higher attempt?
(A) 2360 (B) 2420
(C) 2500 (D) 2667

Directions for questions 21 to 25: Answer these questions on the basis of the information given below.

The following table gives only partial information about the production, sales and profit (in ₹crore) of XYZ Pvt. ltd., in five different years – from 2015 through 2019.

Year	Production	Sales/Production	Expenses	Profit = Sales – Expenses
2015	700			322
2016	800	0.50		
2017	900		144	
2018	1000			
2019	1100	0.20		

It is also known that,
(i) The expenses for any year were equal to the sum of 10% of the sales for that year and 20% of the production that was left unsold for that year.
(ii) The total sales of XYZ Pvt. Ltd. for the five years were ₹1700 crore.

21. By what percentage were the sales in the year 2018 more or less than that in the year 2015?
(A) $28^4/_7$% less (B) 40% more
(C) 350% less (D) 350% more

22. What were the total expenses of XYZ Pvt. Ltd. for the five years put together?
(A) ₹970 crore (B) ₹730 crore
(C) ₹700 crore (D) ₹900 crore

23. What were the sales in the year 2017?
(A) ₹400 crore (B) ₹300 crore
(C) ₹360 crore (D) ₹420 crore

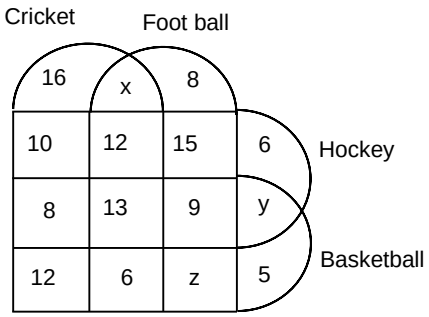
24. What was the difference in the profits for the years 2016 and 2018?
(A) ₹150 crore
(B) ₹100 crore
(C) ₹108 crore
(D) ₹258 crore

25. What is the ratio of the sales to production in the year 2018?
(A) 0.2
(B) 0.3
(C) 0.4
(D) 0.5

Exercise – 9

Directions for questions 1 to 3: Answer these questions on the basis of the information given below.

The following diagram gives the results of a poll among 150 students regarding the number of games they play.



A few values were accidentally removed from the figure and are marked by x, y and z

1. If it is was known that the number of students playing basketball was the highest, then what is the maximum number of people who play cricket
(A) 77 (B) 78 (C) 79 (D) 80

2. If it is known that the number of students playing football was the highest, then the number of students who play exactly two games is at least
(A) 50 (B) 52 (C) 55 (D) 57

3. If x > y > z, then which game was played by the maximum number of students?
(A) Cricket (B) Football
(C) Hockey (D) Basketball

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

A cricket tournament had three teams – India, Australia and Sri Lanka taking part in it. The format of the tournament was such that in the preliminary stage each of these teams, would play the other teams four times. Four points are awarded for a win and in case a team beats another team by a huge margin, it is given a bonus point in addition to the four points. At the end of the preliminary stage, the top two teams, in terms of the points scored, reaches the finals. No match in the tournament ends in a tie and if two teams end up with the same number of points at the end of the preliminary stage, the team with the better net run rate is placed higher.

Directions for questions 4 to 6: Type in your answer in the input box provided below the question.

4. If India reached the finals, then what is the minimum number of points it would have scored in the preliminary stage?

5. If Sri Lanka was eliminated in the preliminary stage, then what is the maximum number of points it could have scored?

6. If Australia had the highest number of points at the end of the preliminary stage, then at least how many points did it have?

Directions for questions 7 to 10: Answer these questions on the basis of the information given below.

The table gives the breakup of total costs incurred by a company in the last five years to produce a particular product.

	2013	2014	2015	2016	2017
Volume of production and sales (units)	500	700	800	1100	900
Costs (₹)					
Raw material	35000	49000	56000	77000	63000
Labour	15000	21000	24000	33000	27000
Rent	5000	5000	5000	5000	5000
Interest	7000	7000	7000	7000	7000
Taxes	4000	4000	4000	4000	4000
Maintenance	6000	6000	6000	6000	6000
Operating cost	12000	16800	19200	26400	21600
Marketing expenses	6000	6000	6000	6000	6000

The production capacity of the company is 2000 units. The selling price for the year 2017 was ₹200 per unit. Among the costs given, some costs change almost in direct proportion to the change in volume of production, while others do not follow any pattern with respect to volume and are considered fixed.
Use the information provided for the year 2017 as the basis for projecting the figures for 2018, and answer the following questions.
In all questions, assume that all the units produced are sold.

Directions for questions 7 and 8: Type in your answer in the input box provided below the question.

7. What is the approximate minimum number of units that the company needs to produce to avoid any loss in 2017?

8. What is the approximate cost per unit in rupees, if the company produces and sells 1400 in the year 2018?

Directions for questions 9 and 10: Select the correct alternative from the given choices.

9. If the company reduces the selling price by 10% from 2017 to 2018, it can sell as many units as it desires in 2018. How many units should the company produce to maximize its profit?
(A) 1820 (B) 1900
(C) 2000 (D) None of these

10. Approximately what is the maximum number of units that the company can produce with the total cost not exceeding ₹2,00,000.
(A) 1386 (B) 1362 (C) 1402 (D) 1318

Directions for questions 11 to 14: Answer these questions on the basis of the information given below.

Six cities – New Delhi, Tehran, Beijing, Tokyo, Seoul and Jakarta were in contention to host the Asian games. The Asian Olympic committee decided to select the host city by polls. A delegate can vote for at most two cities – called primary and secondary choices. Delegates who vote for only one city are called core supporters and delegates who vote for two cities are called non core supporters. All votes of core supporters and first preference votes of non core supporters have equal weightage while secondary votes of non core supporters have half the weightage of their first preference votes.

The table below gives the number of votes cast by all the delegates.

City	New Delhi	Tehran	Beijing	Tokyo	Seoul	Jakarta
New Delhi	6	15	22	18	15	12
Tehran	5	8	7	6	7	13
Beijing	12	10	18	10	10	7
Tokyo	10	12	15	14	14	9
Seoul	14	14	12	13	12	8
Jakarta	8	16	10	12	16	5

Row, column 1 of the table shows that there are 5 delegates whose first preference is Tehran and second preference is New Delhi while row 2, column 2 means there are 8 delegates who are core supporters of Tehran

11. The total number of delegates who are core supporters is
(A) 76 (B) 63
(C) 88 (D) 93

12. The city which got the second highest number of total votes (core + primary) x 2 + (secondary) x 1) is
(A) New Delhi (B) Beijing
(C) Tokyo (D) Seoul

13. If each delegate in the committee voted in the poll, the total number of delegates in the committee is
(A) 415 (B) 586 (C) 680 (D) 767

14. What is the difference between the number of delegates whose second preference was either Beijing or Tokyo and the number of delegates whose first preference was New Delhi or Tehran
(A) 12 (B) 7 (C) 5 (D) 18

Directions for questions 15 to 18: Answer these questions on the basis of the information given below.

CAT 2018 paper had three sections – Quantitative (Q) Verbal (V) and Data Interpretation (DI) with the maximum marks in each section being 100. Each section had questions with 1, 2 and 3 marks. Each section had the same number of total questions and in each section had the number of one mark questions was one more than the number of two mark questions which in turn was one more than the number of three mark questions. The penalty for each wrong answer was one fourth of the marks for that question.

15. The number of three mark questions in the paper was
(A) 45 (B) 48 (C) 54 (D) 60

16. The total number of questions in the paper was
(A) 135 (B) 144 (C) 153 (D) 162

17. What is the maximum score possible if a person attempts less than half of the total questions in the paper with an accuracy of less than 80%?
(A) 108 (B) 120 (C) 146 (D) 164

18. What is the maximum possible score of a person with an accuracy of exactly 50%?
(A) 108 (B) 114.5 (C) 138.0 (D) 175.5

Directions for questions 19 to 21: Answer these questions on the basis of the information given below.

In a class, each student has an option of taking up one or more of the three subjects, among Maths, Physics and Chemistry.

19. If the number of students taking up each subject is distinct and the number of students taking up Chemistry, which is the least, is 45, then the total number of students in the class is at least
(A) 138 (B) 92 (C) 48 (D) 47

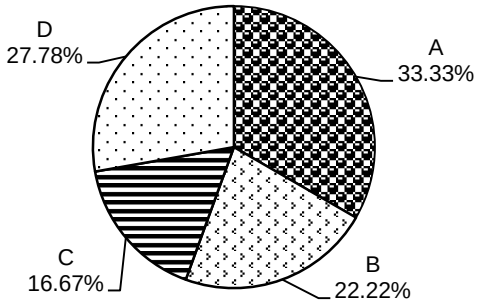
20. If the total number of students in the class is 85, then what can be the maximum number of students who take up the subject which is taken up by the least number of students?
(A) 85 (B) 84 (C) 29 (D) 28

21. If there is at least one student who takes up more than one subject, what can be the maximum number of students in the class, if the number of students who take up Physics is the maximum and is 36?
(A) 106 (B) 104
(C) 98 (D) None of these

Directions for questions 22 to 25: Answer these questions on the basis of the information given below.

The following pie chart gives the breakup of runs scored by four batsmen in a match. The table below gives the number of fours and sixes scored by the batsmen as a percentage of the runs scored by them. Only these four batsmen batted in the innings and ten percentage of the teams total score was due to extras (which are not attributed to any player). It is also known that the teams total score was less than 250.

Percentage of runs scored



Percentage of fours and sixes

Player	Fours	Sixes
A	6.67	60
B	0	75
C	13.33	80
D	16	36

22. What was the total score of the team?
(A) 80 (B) 108
(C) 150 (D) None of these

23. How many sixes did player B score?
(A) 3 (B) 4
(C) 5 (D) 6

24. What was the total number of fours scored by the team?
(A) 2 (B) 4
(C) 6 (D) 8

25. What percentage of the runs scored by the four players were not scored through fours or sixes?
(A) 16.66% (B) 20%
(C) 25% (D) 31.11%

Exercise – 10

***Directions for questions 1 to 4*:** Answer these questions on the basis of the information given below.

145 people who visited a bakery on a certain day ordered at least one and at most three items among burgers, pastries and bread. 103 customers ordered exactly two items. The number of customers who ordered only one item is six times the number of customers who ordered all the three. The number of customers who ordered only pastries and bread is two times the number of customers who ordered only burgers and pastries. The number of customers who ordered only bread is four more than those who ordered only burger and four less than those who ordered only pastries. The number of customers who ordered bread is 25 more than those who ordered burger.

The following table gives information about the average amount paid by customers who ordered different number of items.

Customers ordering	Average amount (in ₹)
Only one item	170
Only two items	290
Three items	?
All customers	266

Directions for questions 1 and 2: Type in your answer in the input box provided below the question.

1. How many customers ordered only pastries?

2. How many customers ordered both pastries and bread?

Directions for questions 3 and 4: Select the correct alternative from the given choices.

3 What is the average amount paid by customers who ordered all the three items?
(A) ₹430 (B) ₹415
(C) ₹410 (D) ₹390

4. Among customers who ordered only one item, the average amount paid by customers who ordered burgers, pastries and bread are in the ratio 1:2:3. What is the average amount paid by customers who ordered only pastries?
(A) ₹155 (B) ₹161
(C) ₹168 (D) ₹172

***Directions for questions 5 to 8*:** Answer these questions on the basis of the information given below.

Four experts – Anand, Babu, Charan and David – were asked to rate three features–expressions, dialogue delivery and body language-of two artists–A_1 and A_2.

Table 1 gives the minimum, average and maximum rating given by the four experts on a scale of (0 to 10) where 0, 1, ... are integers.

	Expressions	Dialogue delivery	Body language
A_1	(5, 7.75, 10)	(6, 7.25, 8)	(6,7.5,9)
A_2	(5, 6.75, 8)	(2, 4, 8)	(4, 5.5, 7)

Table 2 gives the minimum and maximum rating across the three features for each expert artist combination

	A_1	A_2
Anand	(5, 9)	(7, 8)
Babu	(6, 8)	(3, 6)
Charan	(6, 10)	(2, 7)
David	(8, 9)	(3, 8)

Table 3 given the average rating by experts features separately with average being compared across artists.

Expert	Expressions	Dialogue delivery	Body Language
Anand	6	7.5	8
Babu	6	5.5	6
Charan	8.5	4	6
David	8.5	5.5	6

5. The rating given by Babu for 'Expressions' for A_1 is
(A) 5 (B) 6 (C) 7 (D) 8

6. The rating given by Charan for 'body language' for A_2 is
(A) 4 (B) 5 (C) 6 (D) 7

7. The rating given by Charan for 'Expressions' for A_2 is
(A) 7 (B) 6 (C) 8 (D) 9

8. The rating given by Anand for 'dialogue delivery' for A_2 is
(A) 5 (B) 6 (C) 7 (D) 8

Directions for questions 9 to 11: These questions are based on the information given below.

The following table gives the maximum, minimum and the average marks scored by four students - Ram, Shyam, Ramesh, Arun in five different subjects - Maths, Social, Physics, English and Biology.

Subject	Minimum	Maximum	Average
Maths	57	75	64
Social	54	64	59
Physics	62	66	64
English	44	56	51
Biology	51	59	57

Note: Marks obtained by each of the students in each subject is an integer.

9. If Ram scored the maximum marks in Maths and Ramesh scored the minimum in Maths, which of the following cannot be the marks scored by Shyam in Maths?
(A) 69 (B) 66
(C) 64 (D) 62

10. Which of the following cannot be the marks scored by Ramesh in English?
(A) 44 (B) 43
(C) 50 (D) 56

11. If Arun got 54 marks in Social and Ramesh got 64 marks in Social, how many different possible marks would Shyam and Ram get in Social?
(A) 11 (B) 5
(C) 10 (D) 12

Directions for questions 12 to 16: Answer these questions on the basis of the information given below.

In a school of 5500 students, each student plays at least one of the four games among Cricket, Tennis, Football and Chess. The ratio of the number of boys to that of girls in the school is 5 : 6. 330 boys play only Cricket. 18% of the girls play only Football and Chess. 20% of the total students play only Tennis. The number of boys playing only Cricket is 110% of the girls playing the same. The number of girls playing only Tennis is 540. The number of boys playing only Football and Chess is 120% of the number of girls playing the same. One–tenth of the boys play only Chess. 300 boys play only Chess and Tennis. The remaining boys play only Cricket, Tennis and Football. 600 girls play only Chess and 720 girls play only Football and Cricket. The remaining girls play only Chess, Cricket and Tennis.

12. What is the total number of students who play Cricket?
(A) 1842 (B) 1942
(C) 2062 (D) 2182

13. How many girls do not play Tennis?
(A) 2060 (B) 2160
(C) 2360 (D) 2200

14. What is the total number of students who do not play Football?
(A) 3180 (B) 3240
(C) 3380 (D) 3040

Directions for questions 15 and 16: Type in your answer in the input box provided below the question.

15. What is the total number of girls playing exactly two games?

16. How many students play at least two of the given games?

Directions for questions 17 to 20: Answer these questions on the basis of the information given below.

The following table gives the number of people getting in and out at different stops, from a bus travelling from A to B. The only stops in between A (the starting point) and B (the last stop) are P, Q, R, S and T. The first set of passengers got into the bus at A and all the people got down at B.

Stop	Getting in	Getting out
A	18	
P	12	10
Q	8	10
R	15	13
S	11	8
T	12	14
B		21

17. What could be the maximum number of people who travelled from A to B?
(A) 9 (B) 5
(C) 6 (D) 8

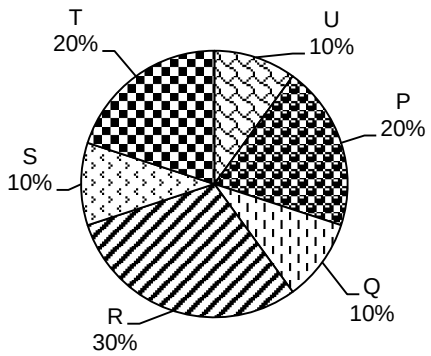
18. The number of people who got in at P and got down at T is at least
(A) 1 (B) 2
(C) 3 (D) None of these

19. What could be the maximum number of passengers who got down at exactly the third stop from where they got in?
(A) 24 (B) 22
(C) 19 (D) 16

20. Among the people who got down at T or B, the number of people who got in at P or R was at least
(A) 12 (B) 10
(C) 8 (D) 7

Directions for questions 21 to 25: Answer these questions on the basis of the information given below.

Break-up of production cost of six products - P through U



Each of the six products is produced in two qualities, grade A and grade B. The ratio of the units produced for

each product and the profit percentages is given in the table below.

Ratio of production			Profit percentage	
Product	**Grade A**	**Grade B**	**Grade A**	**Grade B**
P	6	5	20	15
Q	1	2	30	15
R	3	4	20	25
S	4	5	15	20
T	2	3	20	25
U	1	1	10	15

Assume that for each item, the cost of production of grade A and grade B items are in the ratio 5 : 4.

21. What is the total profit made on product R (in ₹ lakhs)?
(A) 135 (B) 152 (C) 170 (D) 190

22. For which product is the ratio of total profit to total cost, the highest?
(A) R (B) T (C) P (D) S

23. What is the total approximate cost (in ₹ cr) incurred in producing items P, R and S of grade A?
(A) 7.9
(B) 8.6
(C) 9.2
(D) 7.1

24. For how many of the given companies is the profit obtained on items of grade A more than that obtained on items of grade B?
(A) 1
(B) 2
(C) 3
(D) 4

25. What is the ratio of the total quantity of grade A and grade B items produced?
(A) 17 : 20
(B) 3 : 2
(C) 4 : 5
(D) Cannot be determined