

Number of Questions : 37

WSP-0016/18

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

Aman, Varun, Tarun, Ruchi and KD are chef, teacher, businessman, politician and lawyer, not necessarily in the same order. They made two statements, each out of which one is true and one is false.

Aman: Either me or Ruchi is businessman. I am a chef.

Tarun: Either me or Varun is a lawyer. KD is not a politician.

Varun: Tarun is the businessman. KD is a lawyer.

KD: Neither Ruchi nor Varun is a chef. Tarun is the teacher.

Ruchi: Aman is not a politician. Tarun is not a politician.

1. If Varun is the chef, then who is the Politician?  
(1) Varun                      (2) Aman                      (3) Tarun                      (4) Cannot be determined
2. If Aman is the politician, then the chef is  
(1) Aman                      (2) Varun  
(3) Either Varun or Aman                      (4) Either Tarun or Varun
3. If Aman is the chef, then Ruchi is a  
(1) Politician                      (2) Teacher                      (3) Lawyer                      (4) Chef
4. Who is definitely a lawyer?  
(1) KD                      (2) Aman                      (3) Varun                      (4) Tarun

**Directions for questions 5 to 8:** Answer the following questions based on the information given below.

In the table shown below is the listing of players, seeded from highest (#1) to lowest (#32), who are due to play in an Association of Tennis Players (ATP) tournament for women. This tournament has four knockout rounds before the final, i.e., first round, second round, quarterfinals, and semi-finals. In the first round, the highest seeded (seed #1) player plays with the lowest seeded player (seed #32) which is designated as match number 1 of first round; the 2nd seeded player plays with the 31st seeded player which is designated as match number 2 of the first round, and so on. Thus, for instance, match number 16 i.e last match of first round is to be played between the 16th seeded player and the 17th seeded player.

In the second round, the winner of match number 1 of first round plays with the winner of match number 16 of first round and is designated as match number 1 of second round. Similarly, the winner of match number 2 of first round plays with the winner of match number 15 of first round, and is designated as match number 2 of second round. Thus, for instance, match number 8 of the second round is to be played between the winner of match number 8 of first round and the winner of match number 9 of first round. The same pattern is followed for later rounds as well.

Seed#	Name of the player	Seed#	Name of the player	Seed#	Name of the player
1	Maria Sharapova	12	Mary Pierce	23	Silvia Farina Elia
2	Lindsay Davenport	13	Anastasia Myskina	24	Tatiana Golovin
3	Amelie Mauresmo	14	Alicia Molik	25	Shinobu Asagoe
4	Kim Clijsters	15	Nathalie Dechy	26	Francesca Schiavone
5	Svetlana Kuznetsova	16	Elena Bovina	27	Nicole Pietrangeli
6	Elena Dementieva	17	Jelena Jankovic	28	Gisela Dulko
7	Justine Henin	18	Ana Ivanovic	29	Flavia Pennetta
8	Serena Williams	19	Vera Zvonareva	30	Anna Chakvetadze
9	Nadia Petrova	20	Elena Likhovtseva	31	Ai Sugiyama
10	Venus Williams	21	Daniela Hantuchova	32	Anna-lena Groenefeld
11	Patty Schnyder	22	Dinara Safina		

5. There are no upsets i.e, a lower seeded player beating a higher seeded player, in the first round; only two matches of the second round result in upsets; and only one match of the quarterfinals result in upset.  
What is the lowest possible seed number to play in the finals, if one upsets happened in the semifinals?  
(1) 4                      (2) 6                      (3) 16                      (4) 8
6. Exactly 5 of the even numbered matches in round 1 and exactly 3 matches in round 2 were ended in upsets. If Lindsay Davenport and Elena Dementieva lost in round 2 and Elena Bovina won in round 3, then who could possibly play with Anastasia Myskina in finals, in the event Anastasia reaches finals?  
(1) Nathalie Dechy      (2) Amelie Mauresmo      (3) Patty Schnyder      (4) All of the above
7. If, in the first round, all even numbered matches (and none of the odd numbered ones) result in upsets, and there are no upsets in the second round, then who could be the lowest seeded player facing Maria Sharapova in semi-finals, in case Maria Sharapova reaches in semi-finals?  
(1) Anastasia Myskina                      (2) Flavia Pennetta  
(3) Nadia Petrova                      (4) Svetlana Kuznetsova
8. If it is known that no match in round 1 is an upset, and all the matches of round 2 ended in upsets. Also, if in quarterfinals and semifinals number of upsets is half of number of matches played in that round, then how many different combinations of seed numbers of players playing finals are possible?  
(1) 7                      (2) 10                      (3) 8                      (4) 12

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

Saksham, a CAT aspirant, needs to study some topics to do well in the CAT exam. Out of all the topics, he needs to study, there are a few topics which have some pre-requisite topics i.e. topic 'A' is a pre-requisite to topic 'B' means topic A needs to be completed before starting topic 'B'. Following table gives information about the topics he needs to cover, the time duration required to cover the topic, and the pre-requisites topic for that topic, if any.

Time required to study (in days)	Topics to study	Pre-requisite(s)
4	Logic Basics	X
3	Venn Diagram	Logic Basics
4	Data Interpretation	Percentage
2	Percentage	X
1	Profit/Loss	Percentage
1	Ratio	X
2	Average	Ratio
1	Mixture	Ratio, Average, Percentage
1	Proportion	Ratio
3	Time and Speed	Proportion
2	Time and Work	Proportion
2	Linear Equation	X
2	Quadratic Equation	X
1	Inequalities	Linear Equation, Quadratic Equation
2	Logarithm	X
5	Geometry	X
3	Mensuration	Geometry
4	Permutation and Combination	Logic Basics
3	Probability	Permutation and Combination
2	Modulus	X
4	Functions	Logarithm, Modulus

'X' indicates that there are no pre-requisite(s) for that topic.

Any number of topics can be done simultaneously, subject to the only condition that the pre-requisite(s) for that topic is/are already done.

9. How many topics cannot be completed within the first 6 days?  
 (1) 3                      (2) 5                      (3) 4                      (4) 2
10. What is the minimum number of days required for completing all but 1 topic?  
 (1) 6                      (2) 8                      (3) 11                      (4) 5
11. If Geometry can be started only after completing both Time and speed, and mixture, then Geometry can be completed earliest in  
 (1) 5 days                      (2) 11 days                      (3) 10 days                      (4) 14 days
12. Which of the following topic(s) cannot be completed in the first 4 days?  
 (1) Time and Work                      (2) Data Interpretation                      (3) Time and Speed                      (4) Both (2) and (3)

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

In a school there were 900 students in Class XII. They belonged to one of the four streams - Science, Medical, Arts and Commerce. No two streams had the same number of students. The tables given below show partial information about the sets of books bought by the students of class XII. A set of books contains all subject's books corresponding to the stream of the student. Two different books were available for each subject and a student could choose any one of the two, but not both. Table - 1 shows the percentage of students buying different books (e.g. 'p' percent of students in the Science stream bought book A1 for Maths). Table - 2 shows the total number of the sets of books bought by the students of each stream.

	Maths		Physics		Chemistry		English	
	A1	B1	C2	D2	E3	F3	G4	H4
<b>Science</b>	p	q	n	s	o	r	m	t
<b>Medical</b>	XX	XX	p	r	n	t	o	s
<b>Arts</b>	XX	XX	XX	XX	q	r	p	s
<b>Commerce</b>	XX	XX	XX	XX	XX	XX	q	s

**Table - 1**

Total sets of books bought in various streams			
Science	Medical	Arts	Commerce
324	216	126	54

**Table - 2**

**Additional Information:**

- The number of students in each stream was a multiple of 10.
  - At least one student in each stream did not buy the set of books.
  - The percentage of students in each stream who bought the set of books was a multiple of 10. This percentage was distinct for all the 4 streams.
  - 'XX' indicates that the subject was not studied in that stream.
- What was the total number of Chemistry books bought by the students of Class XII?  
(1) 666                      (2) 810                      (3) 720                      (4) Cannot be determined
  - How many students were there in the Arts stream of Class XII?  
(1) 270                      (2) 180                      (3) 90                      (4) Cannot be determined
  - Which book was bought by the maximum number of students in the Science stream of Class XII?  
(1) A1                      (2) G4                      (3) C2                      (4) Cannot be determined
  - What was the difference between the number of students of Class XII who buy G4 and that of those who buy E3?  
(1) 94                      (b)104                      (3) 99                      (4) Cannot be determined

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

Eight persons - A, B, C, D, E, F, G and H— attended a written test for a job, where each person was asked 14 questions. Scores obtained by each of them are in decreasing order in the same sequence of their names as written in the given table i.e. A got the highest score, B got the second highest score and so on. For each correct answer a person was awarded '2' points and for every incorrect answer, he/she got '0' points. If a person answered something but not completely correct or we can say answered partially, then he/she got '1' point. The following table shows the partial information of the scores obtained by the eight persons, where each person answered at least one question correctly and no person left any question unanswered.

Persons	Questions Answered Correctly	Questions Answered Incorrectly	Questions Answered Partially	Total Score
A				22
B	8			
C				
D		8		
E				
F			1	
G				
H			1	

Further, the following is known:

- (i) All the persons except A, ended up answering at most one partial answer.
  - (ii) C got double the score of what F got.
  - (iii) Only F and G answered equal number of questions correctly.
  - (iv) Only E and F answered equal number of questions incorrectly.
  - (v) No three persons in consecutive positions, in the table, got either even total score or odd total score.
  - (vi) D answered odd number of questions correctly and scored more than 10 points.
  - (vii) No two persons have scored same total points.
17. If the total number of partially answered questions by A is equal to the total number of partially answered questions by the rest seven persons taken together, then how many questions were answered partially in total by the eight persons?  
 (1) 4                      (2) 6                      (3) 8                      (4) 10
  18. What is D's score?  
 (1) 11                      (2) 12                      (3) 13                      (4) 16
  19. If number of partial answers given by A are less than or equal to 6, then which of the following can be the number of questions that A answered correctly?  
 (1) 8                      (2) 9                      (3) Both (1) and (2)                      (4) None of these
  20. How many questions did H answer incorrect?  
 (1) 10                      (2) 11                      (3) 12                      (4) Cannot be determined

**Directions for questions 21 to 24:** Answer the questions on the basis of the information given below.

Every year, Athletics World Championship takes place where each participated country represents itself by performing well in the race. This year also, four athletes from each of the five different countries – India, Nepal, Bhutan, Pakistan and Myanmar- participated in a 400 meters relay race. Each athlete had to run a lap of 100 meters. Once an athlete finished the first lap, another athlete from the same team had to continue from there for the second lap and so on following the same pattern until the team finished 400 meters race. Team which finishes the race first will be the team acquiring first position and will be awarded with gold medal. Similarly the team which finishes the race second and third will acquire 2nd and 3rd position respectively and will be awarded silver and bronze medal respectively.

The following was the comparison between the speeds of the runners of each country in each lap:

Lap 1: India > Nepal > Bhutan > Pakistan > Myanmar

Lap 2: Nepal > Pakistan > India > Myanmar > Bhutan

Lap 3: Pakistan > Myanmar > Nepal > Bhutan > India

Lap 4: Bhutan > India > Myanmar > Nepal > Pakistan

The following was observed at the end of the event:

- (a) The fastest runner of a lap gained at least one position, with respect to the previous lap; and the second fastest runner either gained at least one position or retained the same position, with respect to the previous lap.
- (b) The third and the fourth fastest runner can gain a maximum of one position or lose a maximum of one position or can retain the same position, all with respect to the previous lap.
- (c) The slowest runner lost at least one position with respect to the previous lap, unless he is the last person to finish in the previous lap.
- (d) Bhutan finished in the third position in the third lap and also did not win the race.
- (e) No team finished at the same position in more than two laps.
- (f) Indian team finished the race before Pakistan team.

21. Which of the following country ended at the last position in race?

- (1) India                      (2) Pakistan                      (3) Myanmar                      (4) Nepal

22. If Nepal did not win the race, which country won the race?

- (1) India                      (2) Pakistan                      (3) Myanmar                      (4) Cannot be determined

23. Which of the following is definitely true?

- (1) India finished the race before Myanmar.  
(2) Myanmar finished the race before Nepal.  
(3) Pakistan lost the maximum number of positions in any two consecutive laps.  
(4) India won the race.

24. Who was at the fourth position in the third lap?

- (1) India                      (2) Nepal                      (3) Pakistan                      (4) Myanmar

**Directions for questions 25 to 28:** Answer the questions on the basis of the information given below.

TCS conducted a quiz on 25th April, 2018. The quiz consisted of three rounds. Three questions were asked in each round except Round 2. In Round 2, four questions were asked.

In Round 1, each correct answer carried 10 points and incorrect answer carried no point. If at least 2 questions were answered correctly, then 10 bonus points were awarded.

Round 2 is the same as Round 1 for the first three questions. But after these three questions being asked in Round 2, an additional question was asked. If this question was answered correctly, then 10 points were awarded, otherwise 10 points were deducted from the current score in that round.

Round 3 has different scheme than that of Round 1 and Round 2. If a question was answered correctly in this round, then next question would carry twice the points carried by the previous question. If a question was answered wrongly, then next question would carry half the points carried by the previous question. The first question of round 3 carried 20 points.

**Note:** In a round, if points to be deducted was more than the present score in that round, then the score will be taken as zero after that question.

25. What was the maximum number of points scored by a participant who answered exactly one question correctly in each of the three rounds?
26. A participant scored a, b and c marks in Round 1, Round 2 and Round 3 respectively. If a, b and c are distinct and  $a + b + c = 100$ , then how many ordered triplet (a, b, c) are possible?
27. If X, Y and Z are the sum of all the distinct possible points that could be scored in Round 1, Round 2 and Round 3, respectively, then what is the sum of X, Y and Z?
28. Find the absolute difference between the total maximum and the total minimum possible scores of a participant who answered exactly 2 questions correctly in each of the three rounds.

**Directions for questions 29 to 33:** Answer the questions on the basis of the information given below.

A car manufacturing company hired Mr. X to conduct a survey in six major cities of India to find the number of cars owned by the people living in the respective cities. Mr. X conducted the survey and gave the results to the company. In each of the cities Mr. X surveyed a random group of persons. The following table provides information about the results submitted by him to the company.

Assume that until the completion of the survey, no one changed the city of his/her residence.

		Number of Persons				
		Less than One Car	Less than Three Cars	Less than Seven Cars	More than Two Cars	More than Four Cars
Cities	New Delhi	5	11	31	28	17
	Bangalore	9	21	47	34	10
	Mumbai	3	22	39	31	15
	Kolkata	13	31	47	21	14
	Chandigarh	4	19	51	34	18
	Hyderabad	11	21	49	37	16

29. If the number of persons having at least eight cars in Kolkata is zero, then find the number of persons in Kolkata having exactly seven cars.  
 (1) 5                                      (2) 4                                      (3) 6                                      (4) 7
30. In which city the number of persons having more than four cars and less than seven cars is the least?  
 (1) Mumbai                              (2) Bangalore                              (3) Chandigarh                              (4) Kolkata

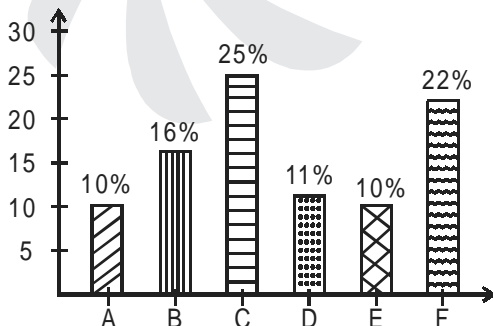


31. Find the total number of persons surveyed by Mr. X across all the cities.  
(1) 360 (2) 350 (3) 330 (4) 310
32. Out of the persons surveyed by Mr. X, in how many cities the number of persons having at least one car is lesser than the number of persons having at least one car in New Delhi?  
(1) 4 (2) 3 (3) 0 (4) 1
33. Out of the persons surveyed by Mr. X across all the cities, how many persons have exactly one car?  
(1) 7  
(2) 8  
(3) 9  
(4) Cannot be determined

**Directions for questions 34 to 37:** Answer the questions on the basis of the information given below.

Six companies - A, B, C, D, E and F - recruited some students from each of the colleges- P, Q, R, S, T and V. The package (in Rs. lakh per annum) per student offered by two or more companies may be different but each company offered the same package in all the colleges, in 2017. The package per student offered by company B was less than that offered by company C but more than that offered by company A. The sum of the packages of all the recruited students from college P was Rs. 21 lakh, and the same for colleges Q, R, S, T and V was Rs. 41 lakh, Rs. 40 lakh, Rs. 42 lakh, Rs. 36 lakh and Rs. 48 lakh respectively.

The bar graph given below shows the total amount of package offered by each of the companies as a percentage of their revenue in 2017.



The table given below shows the details about the number of students recruited from each college by each of the given companies in 2017.

Company College	A	B	C	D	E	F
P	1	2	1	1	3	1
Q	5	3	2	1	2	3
R	2	4	3	2	5	1
S	3	1	4	3	4	2
T	5	1	2	2	1	3
V	3	5	4	2	5	1

**Note:** The package (in Rs. lakh per annum) per student offered by each company was always an integer.

Also, each company had a positive revenue in 2017.

34. Which company offered the maximum package per student?  
(1) A (2) C  
(3) E (4) F
35. The lowest value of package per student was offered by  
(1) Company A  
(2) Company D  
(3) Both company A and company E  
(4) Both company A and company D
36. The sum of the total packages offered by the companies B, D and E was what approximate percentage of the sum of the revenues of other three companies?  
(1) 14 (2) 12.93  
(3) 11.11 (4) 12.50
37. What was the revenue (in lakhs) of Company B?  
(1) 300 (2) 256  
(3) 250 (4) 200



1	2	2	4	3	2	4	1	5	3	6	4	7	1	8	3	9	3	10	2
11	3	12	4	13	1	14	2	15	2	16	3	17	3	18	1	19	2	20	3
21	2	22	1	23	3	24	4	25	40	26	7	27	535	28	30	29	1	30	1
31	4	32	3	33	4	34	4	35	3	36	2	37	1						

**For questions 1 to 4:**

One of Ruchi's statements must be correct so one of Aman and Tarun is definitely a politician. So, Tarun's statement that KD is not a politician must be correct and hence neither of Tarun or Varun should be a lawyer.

**Case 1:** Now let Aman's second statement is correct that he is a chef. In that case Tarun will be a politician. Hence, Varun's first statement will be wrong and KD will be a lawyer. Hence Varun becomes the businessman and Ruchi becomes the teacher.

**Case 2:** Let Aman's first statement is correct so Aman is not the chef and one of Aman or Ruchi is the businessman.

**Case (2a):** So by Ruchi's statement, let Aman be the politician. And hence Ruchi must be the businessman. So, Varun's first statement is false, and hence KD must be the lawyer. Either Varun or Tarun can be a teacher and chef, as both are possible.

**Case (2b):** So by Ruchi's statement, let Tarun be the politician. Hence by Varun's statement KD is a lawyer. Also Varun must be a chef, and Aman must be a teacher but in that case KD's both statements will be wrong.

Hence the final conclusion is:

- Aman - Chef, Tarun - Politician, Varun - Businessman, KD - Lawyer and Ruchi - Teacher.
- Aman - Politician, Varun - Teacher, Tarun - Chef, KD - Lawyer, Ruchi - Businessman
- Aman - Politician, Varun - Chef, Tarun - Teacher, KD - Lawyer, Ruchi - Businessman

1. 2

2. 4

3. 2

4. 1

**5. 3 Matches played in Round 2**

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

Since two upsets happened in Round 2, remove the maximum seeds #1 and #2, and then matches played in quarter finals are

16	8
15	7
3	6
4	5

Now, one match in quarter finals results in an upset. So possibilities of semi-finals

16	4
7	3

As one upset happened in semi-finals, therefore, 16 is the lowest seed number possible to play in finals.

6. 4 Lindsay Davenport → seed#2  
Elena Dementieva → seed#6  
and Elena Bovina → seed#16 played even numbered matches. These will be matches to be played in Round 2.

1	16
2	15
3	19
29	13
5	21
6	11
7	23
25	9

Matches in quarterfinals can be as follows:

16	9
15	7
3	11
13	5

Cases for semi-finals are as follows:

16	13	16	5	16	13	16	5
15	3/11	15	3/11	7	11/3	7	11/3

All the given options are possible.

7. 1 Since all even numbered matches ended in upset in first round, all players with odd seed numbers only reaches to the second round  
Then, the winners of first rounds would be:  
1, 31, 3, 29, 5, 27, 7, 25, 9, 23, 11, 21, 13, 19, 15 and 17.

So for the next round, table would look like:

1	17
31	15
3	19
29	13
5	21
27	11
7	23
25	9

Since there was no upset in the second round, the table in the next round would look like:

1	9
15	7
3	11
13	5

It is given that Maria is in the semi-finals. As we are not sure what is the result of other games, table for the next round can be drawn as follows:

1	5/13
7/15	3/11

Hence, Anastasia will be the lowest seeded player to play with Maria Sharapova.

8. 3 Since number match in round 1 is an upset. Therefore, in round 2.

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

In round 2, all matches end in upset.  
So, in round 3,

16	9
15	10
14	11
13	12

Since number of matches = 4  
Therefore, number of upsets = 2.

16	12	16	12	16	13	9	12
15	11	10	14	10	11	15	14

9	13	9	13
15	11	10	14

(16, 11), (15, 12), (16, 10), (12, 14), (9, 15), (13, 11), (9, 14), (13, 10) are possible for finals given that in semifinals out of two possible matches, that in semifinals out of two possible matches, 1 was an upset.

**For questions 9 to 12:**

Topic	Days Required (Considering Pre requisite (s))
Logic Basics	4
Venn-diagram	$3 + 4^* = 7$
Data Interpretation	$4 + 2^* = 6$
Percentage	2
Profit/Loss	$1 + 2^* = 3$
Ratio	1
Average	$2 + 1^* = 3$
Mixture	$1 + 2^* + 1^* = 4$
Proportion	$1 + 1^* = 2$
Time and Speed	$3 + 2^* = 5$
Time and Work	$2 + 2^* = 4$
Linear Equation	2
Quadratic Equation	2
Inequalities	$1 + 2^* = 3$
Logarithm	2
Geometry	5
Mensuration	$3 + 5^* = 8$
Permutation and Combination	$4 + 4^* = 8$
Probability	$3 + 8^* = 11$
Modulus	2
Functions	$4 + 2^* = 6$

\* indicates the time required for pre-requisite(s)

9. 3 Following topics cannot be completed in the first 6 days:  
Venn-diagram, Mensuration, Probability, Permutation and combination.
10. 2 Barring Probability, rest of the topics can be done in the first 8 days
11. 3 For completing both Mixture, and Time and Speed, a minimum of 5 days are required. Then Geometry will take another 5 days. So Geometry can be completed at earliest in 10 days.
12. 4 As can be seen from the table, Time and Speed and Data Interpretation requires a minimum of 5 and 6 days respectively.

**For questions 13 to 16:**

Since at least one student from each stream does not buy the set of books, the percentage of students buying the set of books can never be 100 in any stream.

If the percentage of students in Science stream buying the set of books is less than or equal to 60 then the total number of students in Science stream will have to be equal to or more than 540. This is not possible because then the number of students from the remaining 3 streams will be less than or equal to 360, which in turn will be less than the number of students buying the sets of books from the other three streams.

If the percentage of students in Science stream buying the set of books is either 70 or 80, then the total number of students in Science stream is not an integral multiple of 10.

Hence, the percentage of students buying the set of books in Science stream must be 90 and the total number of students in Science stream must be 360.

Similarly, the percentage and the total number of students in the other streams can be found out:

	Number of Students	Percentage of students buying the set of books
<b>Science</b>	360	90
<b>Medical</b>	270	80
<b>Arts</b>	180	70
<b>Commerce</b>	90	60

$$\begin{aligned}
 p + q &= n + s = o + r = m + t = 90 \\
 p + r &= n + t = o + s = 80 \\
 q + r &= p + s = 70 \\
 q + s &= 60
 \end{aligned}$$

Solving above equations, we get:

$$\begin{aligned}
 m &= 80 \quad q = 40 \\
 n &= 70 \quad r = 30 \\
 o &= 60 \quad s = 20 \\
 p &= 50 \quad t = 10.
 \end{aligned}$$

13. 1 Since Chemistry books are purchased by the students of Science, Medical and Arts stream only, the total number of Chemistry books bought by the students of Class XII =  $324 + 216 + 126 = 666$ .
14. 2 180 students were in the Arts stream.
15. 2 From the table it can be observed that the required book is G4, as m has the highest value
16. 3 The total number of students who buy G4  
 $= 288 + 162 + 90 + 36 = 576$   
 The total number of students who buy E3  
 $= 216 + 189 + 72 = 477$   
 Hence the required difference is  $576 - 477 = 99$ .

**For questions 17 to 20:**

From (ii), we can say that C score is an even number. Therefore, B score has to be an odd number i.e. B answered one question partially, as no three consecutive scores can be even. Therefore, B's score is 17. C can answer a maximum of seven question correctly. So, C's score has to be either 14 or 10, because F answered one question partially, therefore, F score can be either 7 or 5. But from (vi), D scored more than 10 points, therefore C has to score 14 points and F's score is 7 (three correct and one partially correct). F answered three questions correctly and 10 questions incorrectly. From (iii) and (iv), we can say that G answered three questions correctly and E answered 10 questions incorrectly. E's score is therefore 8, as he answered four questions correctly. D's score is an odd number as C and E's scores are even numbers. Therefore, D answered five questions correctly, as from (vi), D answered odd number of questions correctly. G's score is 6. H's score has to be three, as each person answers at least one question correctly. The final arrangement is as follows:

Persons	Answered Correctly	Answered Incorrectly	Answered Partially	Score
A				22
B	8	5	1	17
C	7	7	0	14
D	5	8	1	11
E	4	10	0	08
F	3	10	1	07
G	3	11	0	06
H	1	12	1	03

17. 3 We can saw that A answered four questions which are partially correct and therefore, he/she answered nine questions correctly. So, total eight questions were partially answered by the eight persons together.

18. 1 D's score is 11.

19. 2 Since A can answer maximum of 6 question partially, and his total points are 22, which is an even number, so possible number of questions answered by him correctly is 8, 9 and 10. But only F and G answered equal number of questions correctly, therefore, only 9 and 10 are possible.

20. 3 H answered 12 questions incorrectly.

**For questions 21 to 24:**

The speed of the athletes in the first lap will determine their positions at the end of lap 1. Hence, the position at the end of first lap from first to last in that order is India, Nepal, Bhutan, Pakistan and Myanmar. In lap 3, Bhutan finished in the third position and the Bhutan was the fourth fastest in that lap. From (b), the fourth fastest runner can gain a maximum of one position. Therefore, in the second lap, Bhutan finished either in the third or in the fourth position, but from (e), we can say that Bhutan cannot finish in the third position either in the second or in the fourth lap. So, Bhutan must have definitely finished in the fourth position in the second lap. In lap 4,

Bhutan being the fastest runner, can finish the race either at the first position or at the second position. But from (d), we can definitely say that Bhutan finished the race in the second position. In lap 2, Myanmar must have finished in the last position, from (b). From (a), Nepal finished at the top in the second lap. From (b), India finished at the second position in the second lap. Therefore, Pakistan finished at the third position in the second lap. In the third lap, as Pakistan is the fastest, so, it finished either at the first or at the second position. From (b), Nepal either finished at the second position or at the first position in the third lap respectively. From (e), Myanmar cannot finish in the fifth position in the third lap. Therefore, Myanmar finished at the fourth position in the third lap. Therefore, India finished last in the third lap. The partial arrangements of the position of the athletes is as follows:

Case(i):

	Lap 1	Lap 2	Lap 3	Lap 4
1 <sup>st</sup>	India	Nepal	Pakistan	
2 <sup>nd</sup>	Nepal	India	Nepal	Bhutan
3 <sup>rd</sup>	Bhutan	Pakistan	Bhutan	
4 <sup>th</sup>	Pakistan	Bhutan	Myanmar	
5 <sup>th</sup>	Myanmar	Myanmar	India	

Case (ii):

	Lap 1	Lap 2	Lap 3	Lap 4
1 <sup>st</sup>	India	Nepal	Nepal	
2 <sup>nd</sup>	Nepal	India	Pakistan	Bhutan
3 <sup>rd</sup>	Bhutan	Pakistan	Bhutan	
4 <sup>th</sup>	Pakistan	Bhutan	Myanmar	
5 <sup>th</sup>	Myanmar	Myanmar	India	

In case (ii), we can see that Nepal remained at the first position in lap 2 and lap 3. Therefore, Nepal definitely cannot win the race. Hence, this case is eliminated, as Nepal cannot take any other position from (b). In case (i), Nepal finished either at the top or at the third position in the race. If Nepal finished at the top, Myanmar can finish either in the third position or in the fourth position. Therefore, from (f), India and Pakistan finished the race according the following sub-cases:

Case (ia):

	Lap 1	Lap 2	Lap 3	Lap 4
1 <sup>st</sup>	India	Nepal	Pakistan	Nepal
2 <sup>nd</sup>	Nepal	India	Nepal	Bhutan
3 <sup>rd</sup>	Bhutan	Pakistan	Bhutan	Myanmar
4 <sup>th</sup>	Pakistan	Bhutan	Myanmar	India
5 <sup>th</sup>	Myanmar	Myanmar	India	Pakistan

Case (ib):

	Lap 1	Lap 2	Lap 3	Lap 4
1 <sup>st</sup>	India	Nepal	Pakistan	Nepal
2 <sup>nd</sup>	Nepal	India	Nepal	Bhutan
3 <sup>rd</sup>	Bhutan	Pakistan	Bhutan	India
4 <sup>th</sup>	Pakistan	Bhutan	Myanmar	Myanmar
5 <sup>th</sup>	Myanmar	Myanmar	India	Pakistan

Case (ic):

If Nepal finished at the third position, Myanmar definitely finished at the fourth position. Therefore, India finished at the top and Pakistan at the last position in the race. The arrangement is as follows:

	Lap 1	Lap 2	Lap 3	Lap 4
1 <sup>st</sup>	India	Nepal	Pakistan	India
2 <sup>nd</sup>	Nepal	India	Nepal	Bhutan
3 <sup>rd</sup>	Bhutan	Pakistan	Bhutan	Nepal
4 <sup>th</sup>	Pakistan	Bhutan	Myanmar	Myanmar
5 <sup>th</sup>	Myanmar	Myanmar	India	Pakistan

21. 2 Pakistan finished last in the race.

22. 1 India won the race.

23. 3 Choice (3) is definitely true.

24. 4 Myanmar was at the fourth position in the third lap.

**For questions 25 to 28:**

Information given in the question can be tabulated as following:

**Round 1**

Number of correct answer(s)	Number of incorrect answer(s)	Net score
3	0	40
2	1	30
1	2	10
0	3	0

**Round 2**

Number of correct answer(s)	Number of incorrect answer(s)	Score	Additional question	Net score
3	0	40	Correct	50
			Incorrect	30
2	1	30	Correct	40
			Incorrect	20
1	2	10	Correct	20
			Incorrect	0
0	3	0	Correct	10
			Incorrect	0

**Round 3**

Ist question	IInd question	IIInd question	Net Score
C(correct)	C(correct)	C(correct)	140
C(correct)	C(correct)	I(incorrect)	60
C(correct)	I(incorrect)	C(correct)	40
C(correct)	I(incorrect)	I(incorrect)	20
I(incorrect)	C(correct)	C(correct)	30
I(incorrect)	C(correct)	I(incorrect)	10
I(incorrect)	I(incorrect)	C(correct)	5
I(incorrect)	I(incorrect)	I(incorrect)	0

25. Required score =  $10 + 10 + 20 = 40$ .

26. The possible cases are tabulated below:

Round 1	Round 2	Round 3	Total Score
40	50	10	100
40	0	60	100
30	50	20	100
30	10	60	100
10	50	40	100
10	30	60	100
0	40	60	100

Hence, the number of required triplets is 7.

27. Required sum =  $(40 + 30 + 10 + 0) + (50 + 30 + 40 + 20 + 10 + 0) + (140 + 60 + 40 + 20 + 30 + 10 + 5 + 0) = 535$ .

28. Total maximum possible score if exactly two questions answered correctly in each of the three rounds =  $30 + 20 + 60 = 110$

Total minimum possible score if exactly two questions answered correctly in each of the three rounds =  $30 + 20 + 30 = 80$

Therefore, the required difference =  $110 - 80 = 30$ .

29. 1 Aggregate number of persons having exactly three and exactly four cars =  $x = 21 - 14 = 7$ .  
Aggregate number of persons having exactly five and exactly six cars =  $y = 47 - (31 + x) = 9$   
Number of persons having exactly seven cars =  $14 - y = 5$ .

30. 1 For New Delhi:  
Aggregate number of persons having exactly three cars and exactly four cars =  $28 - 17 = 11$ .  
Aggregate number of persons having exactly five cars and exactly six cars =  $31 - (11 + (28 - 17)) = 9$   
Similarly for Bangalore:  $(47 - (21 + (34 - 10))) = 2$   
Mumbai:  $(39 - (22 + (31 - 15))) = 1$   
Kolkata:  $(47 - (31 + 21 - 14)) = 9$   
Chandigarh:  $(51 - (19 + 34 - 18)) = 16$   
Hyderabad:  $(49 - (37 - 16 + 21)) = 7$   
Hence in the city of Mumbai, the number of persons having more than four cars and less than seven cars is the least.

31. 4 We need to add the number of persons in the column "Less than 3 cars" and "More than 2 cars" to get the total number of persons surveyed by Mr. X across all the cities.  
Therefore, total number of persons surveyed across all the cities  
= 11 + 21 + 22 + 31 + 19 + 21 + 28 + 34 + 31 + 21 + 34 + 37 = 310.

32. 3 Number of persons in New Delhi having at least one car =  $(28 + 11) - 5 = 34$ .  
Number of persons in Bangalore having at least one car =  $(34 + 21) - 9 = 46$ .  
Number of persons in Mumbai having at least one car =  $(31 + 22) - 3 = 50$ .  
Number of persons in Kolkata having at least one car =  $(21 + 31) - 13 = 39$ .  
Number of persons in Chandigarh having at least one car =  $(34 + 19) - 4 = 49$ .  
Number of persons in Hyderabad having at least one car =  $(37 + 21) - 11 = 47$ .  
Hence the number of cities in which the number of persons having at least one car is lesser than the number of persons having at least one car in New Delhi is 0.

33. 4 The total number of persons having exactly one car across all the cities cannot be uniquely determined.  
Hence, option (4) is the correct choice.

#### For questions 34 to 37:

Let the package (in Rs. lakh per annum) per student offered by company A, B, C, D, E and F be a, b, c, d, e and f respectively.  
According to the question,

$$\begin{aligned} a + 2b + c + d + 3e + f &= 21 && \text{..... (i)} \\ 5a + 3b + 2c + d + 2e + 3f &= 41 && \text{..... (ii)} \\ 2a + 4b + 3c + 2d + 5e + f &= 40 && \text{..... (iii)} \\ 3a + b + 4c + 3d + 4e + 2f &= 42 && \text{..... (iv)} \\ 5a + b + 2c + 2d + e + 3f &= 36 && \text{..... (v)} \\ 3a + 5b + 4c + 2d + 5e + f &= 48 && \text{..... (vi)} \end{aligned}$$

By subtracting equation (iii) from equation (vi), we get  
 $a + b + c = 8$ .

It is given in the question that  $a < b < c$ .

Now, there are two possibilities.

**Case I:** Put  $a = 1$ ,  $b = 2$ ,  $c = 5$  in equations (i), (ii) and (iii), we get

$$\begin{aligned} d + 3e + f &= 11 \\ d + 2e + 3f &= 20 \\ 2d + 5e + f &= 15 \end{aligned}$$

From above three equations, we would not get integral values for d, e and f. Hence, this case is not possible.

**Case II:** Put  $a = 1$ ,  $b = 3$  and  $c = 4$  in equations (i), (ii) and (iii) we get;

$$\begin{aligned} d + 3e + f &= 10 \\ d + 2e + 3f &= 19 \\ 2d + 5e + f &= 14 \end{aligned}$$

After solving above equation, we have  $d = 2$ ,  $e = 1$  and  $f = 5$ .

$$\begin{aligned} \text{Hence, } a &= 1 \\ b &= 3 \\ c &= 4 \\ d &= 2 \\ e &= 1 \\ f &= 5 \end{aligned}$$

The total package offered by company A =  $19 \times 1 = \text{Rs. 19 lakh}$   
The total package offered by company B =  $16 \times 3 = \text{Rs. 48 lakh}$   
The total package offered by company C =  $16 \times 4 = \text{Rs. 64 lakh}$   
The total package offered by company D =  $11 \times 2 = \text{Rs. 22 lakh}$   
The total package offered by company E =  $20 \times 1 = \text{Rs. 20 lakh}$   
The total package offered by company F =  $11 \times 5 = \text{Rs. 55 lakh}$

$$\text{Revenue of company A} = 19 \times \frac{100}{10} = \text{Rs. 190 lakh}$$

$$\text{Revenue of company B} = 48 \times \frac{100}{16} = \text{Rs. 300 lakh}$$

$$\text{Revenue of company C} = 64 \times \frac{100}{25} = \text{Rs. 256 lakh}$$

$$\text{Revenue of company D} = 22 \times \frac{100}{11} = \text{Rs. 200 lakh}$$

$$\text{Revenue of company E} = 20 \times \frac{100}{10} = \text{Rs. 200 lakh}$$

$$\text{Revenue of company F} = 55 \times \frac{100}{22} = \text{Rs. 250 lakh.}$$

34. 4 Company F offered the maximum package per student.

35. 3 Company A and E both offered the lowest package.

36. 2 Sum of the total package of B, D and E =  $48 + 22 + 20 = \text{Rs. 90 lakh}$   
Sum of the revenue of A, C and F =  $190 + 256 + 250 = \text{Rs. 696 lakh}$

$$\text{Required percentage} = \frac{90}{696} \times 100 = 12.93\%$$

37. 1 The revenue of Company B = Rs. 300 lakhs.