CHAPTER 13

Foundation Exercises

PRACTICE EXERCISES

Exercise 1

Directions for questions 1 to 3: ***Read the following passage and solve the questions based on it.***

Ten coins are distributed among four people P, Q, R and S such that one of them gets one coin, another gets two coins, the third gets three coins and the fourth gets four coins. It is known that Q gets more coins than P, and S gets fewer coins than R.

Q.1 If the number of coins distributed to Q is twice the number distributed to P, then which one of the following is necessarily true?
(a) R gets an even number of coins
(b) R gets an odd number of coins
(c) S gets an even number of coins
(d) S gets an odd number of coins

Q.2 If R gets at least two more coins than S, then which one of the following is necessarily true?
(a) Q gets at least two more coins than P.
(b) Q gets more coins than S
(c) P gets more coins than S
(d) P and Q together get at least five coins

Q.3 If Q gets fewer coins than R, then which one of the following is not necessarily true?
(a) P and Q together get at least four coins than P
(b) Q and S together get at least four coins
(c) R and S together get at least five coins
(d) P and R together get at least five coins

Directions for questions 4 to 7: ***Read the following passage and solve the questions based on it.***

To make the non-technical background new joiners understand the process of manufacturing colour TVs better, LG has hired the services of Due North Inc. consultants. Due North is a consultancy firm which provides technical training of all the household equipment to the non- tech background new joiners at LG. To facilitate the training process, it has been decided that there will be six groups of new joiners namely A, B, C, D, E and F and each of the groups is scheduled at least once a week. All the groups will start their training on the same day and will also end their training on the same day.

Following points are to be taken into consideration while making the training schedule:

(i) Sunday is a holiday.
(ii) B group is scheduled all days except Friday and Saturday.
(iii) C group meets four days in succession.
(iv) F group meets only from Monday to Thursday.
(v) E group is scheduled everyday, but not on Thursday and Saturday.
(vi) A group is scheduled on alternate days.
(vii) C group does not meet on Monday and Tuesday only.
(viii) A and D groups never meet on the same days.
(ix) D group is scheduled only once a week on either Wednesday or Friday.

Q.4. Which groups are scheduled for the same number of classes during the week?
(a) B, A, F only (b) E, B, C only
(c) E, F, A only (d) None of these

Q.5 If a certain class of D is scheduled on the same day as that of the B group, then how many groups are scheduled on Friday?
(a) 2 (b) 3
(c) 4 (d) 5

Q.6 For how many groups do we have a definite training schedule, for the whole week?
(a) 4 (b) 2
(c) 3 (d) 5

Q.7 Which two groups can never be scheduled on the same day?
(a) C and D (b) C and E
(c) A and D (d) None of these

Directions for questions 8 to 11: ***Read the following passage below and solve the questions based on it.***

There are five identical looking boxes containing different objects in each of them and every box has a label indicating its contents. The following is the correct description of the contents and the label of each box:

Contents	Label
Two Pins	PP
Two Balls	BB
Two Clips	CC
One Pin and one Clip	PC
One Ball and one Clip	BC

Somebody has mischievously interchanged these labels in such a way that no box carries the label describing its contents correctly.

Q.8 The first box which was opened contained the label PP and the second box opened contained the label PC. It is also known that out of the four items in the two boxes, one item was definitely a ball. Then which of the following has to be true?
(a) Other three items will not contain two balls
(b) Other three items will not contain any clip
(c) Other three items will contain at least one clip
(d) None of these

Q.9 Box PP contained two clips, box CC contained two pins and the box BB contained one ball. Then which of the following will definitely be false?
(a) The box BC contains one pin and one clip
(b) The box BB contains one ball and one clip
(c) The box BC contains two balls
(d) The box PC contains two balls

Q.10 If the first box containing the label BC was opened and it was found that one item is a ball, then which of the following is definitely true?
(a) The other item may be either a ball or a clip
(b) The other box with the BB label contains one ball and one clip
(c) The other item will not be a ball
(d) The other item will also be a ball

Q.11 If the information is available that the box PC does not contain either any pin or any clip, box PP does not contain any pin and box and CC contains one clip and one ball. Which of the following will definitely be true if only one of the remaining boxes is opened?
(a) The box will have one pin and one clip
(b) The box will have at least one clip
(c) The box will have at least one pin
(d) None of these

Directions for questions 12 to 16: ***Read the following passage and solve the questions based on it.***

There are various rides available at the annual *Lucknow Mahotsav*. One of the rides that is available is the roller coaster ride, comprising five cars, numbered 1 through 5 from the front to back. Each car can accommodate up to two riders, seated side by side. Six persons—T, G, L, M, P and J, are taking the ride simultaneously. The Following information is available regarding their seating pattern:

(i) L is sharing a car.
(ii) M is not sharing a car and is seated immediately behind an empty car.
(iii) T is not sharing a car with either G or P.
(iv) G is in either the third or the fourth car.

Q.12 Which of the following people definitely occupy the second car?
(a) L only (b) T and G
(c) L and M (d) None of these

Q.13 If G is immediately behind L's car and immediately ahead of T's car, all of the following must be true except
(a) G is in the fourth car
(b) P is in the third car
(c) T is in the fifth car
(d) L is in the third car

Q.14 Which one of the following statements cannot be true?
(a) Neither T nor G is sharing a car with anybody else
(b) Neither M nor J is sharing a car with anybody else
(c) T is sharing a car and J is sharing a car
(d) G is sharing a car and P is sharing a car

Q.15 If P is in the second car, how many different combinations of riders are possible for the third car?
(a) 1 (b) 2
(c) 4 (d) None of these

Q.16 Assume that a 7th person is in with J in the first car and all the other conditions remain the same. Which of the following is a complete list of persons who might be in the fifth car?
(a) M (b) G, P
(c) T, L, P (d) T, L, M

Directions for questions 17 to 20: ***Read the following passage and solve the questions based on it.***

'*Vaastu-shastra*' says that the dining table should not be rectangular, rather it should be hexagonal, as it helps in reducing the conflict. Accordingly, Mr Verma bought a hexagonal dining table for his six office employees A, B, C, D, E and F.

One day while taking lunch they were sitting along the sides of the hexagonal table. The following information is given regarding their seating postions:

(i) F, who is sitting exactly opposite A, is to the immediate right of B.
(ii) D is between A and B and is exactly opposite C.

Q.17 A is sitting between which of the following pairs of persons?
(a) D and E (b) B and E
(c) B and C (d) E and C

Q.18 Four of the following pairs are alike on the basis of sitting positions and so form a group. Which is the one that does not belong to the group?
(a) A, D (b) B, C
(c) B, F (d) C, E

Q.19 Who is sitting opposite B?
(a) C
(b) A
(c) E
(d) Cannot be determined

Q.20 Who is sitting to the left of F?
(a) B (b) C
(c) A (d) None of these

Directions for questions 21 to 23: ***Read the following passage and solve the questions based on it.***

There are nine judges—G, H, I, K, L, M, N and O, who have to appear on a series of three benches. Each bench will consist of three judges and each judge will appear in exactly one bench. The benches must be arranged according to the following conditions:

(i) I and N must be on the same bench.
(ii) K and L must be on the same bench.
(iii) O and J cannot be on the same bench.
(iv) M must appear on the second bench.
(v) Either J or M or both must appear on the bench with H.

Q.21 Which of the following judges could appear on a bench together?
(a) G L O (b) G J M
(c) K I M (d) N I J

Q.22 Which of the following cannot be true?
(a) I appears on the second bench
(b) H appears on the third bench
(c) O appears on the third bench
(d) J appears on the first bench, and H appears on the third

Q.23 The third bench could consist of all of the following except
(a) K, L, O (b) K, I, J
(c) G, H, J (d) G, I, N

Exercise 2

Directions for questions 1 to 4: ***Read the following passage and solve the questions based on it.***

Under a special arrangement at FBI, telephone numbers of the employees are to be coded in the following way:

Digit	7	3	5	0	2	1	6	4	9	8
Code	N	H	L	T	F	D	R	Q	G	P

Following conditions are to be maintained:

(i) If the first digit is even and the last digit is odd, then they are to be coded as $ and @ respectively.
(ii) If the first digit is odd and the last digit is even, then they are to be coded as # and γ respectively.
(iii) If 0 is preceded as well as followed by an odd digit, then 0 is to be coded as *.
(iv) If 0 is preceded as well as followed by an even digit, then 0 is to be coded as ↑.
(v) Zero (0) is considered neither even nor odd.

Q.1 What is the code for 1375490?
(a) DHNLQGT (b) #HNLQGE
(c) DHNLQG* (d) γHNLQG#

Q.2 Which of the following numbers will be coded as $ Q R L * H @?
(a) 8456037
(b) 8465032
(c) 6475031
(d) cannot be determined

Q.3 Which of the following numbers will be coded like—Q L P ↑ R N T?
(a) 4570680 (b) 4780650
(c) 6580470 (d) None of these

Q.4 What will be the code for 36250084?
(a) #RFL**Gγ (b) #RFLG**γ
(c) #RF**LG* (d) none of these

Directions for questions 5 to 7: ***Read the following passage and solve the questions based on it.***

"Lets be God" is an organization imparting training to people to touch the different dimensions of life and be like God. It was planning to organize series of eight lectures A, B, C, D, E, F, G and H (not necessarily in the same order) for three subjects 'Purpose of God', 'Alignment of Purpose' and 'Touching Lives' on three successive days.

For the sake of convenience, these three subjects are coded as X, Y and Z respectively. Subject X was to be covered first in three lecturers followed by Z and then subject Y in two lectures.

(i) Lectures A, C and D have to be on separate days.
(ii) Lectures B and F have to be kept on separate days. Lecture B cannot be clubbed with A or G or D.
(iii) Lectures G and H should happen on one day.
(iv) Only one lecture will happen everyday.

5. Which of the following pairs of lectures can go along with lecture A on subject X?
(a) B, C (b) G, H
(c) D, E (d) data inadequate

6. Which combination of lecturers was arranged on the second day of the series?

(a) C, G, H (b) B, D, E
(c) C, A, G (d) data inadequate

7. Which of the following lectures were for subject Y?
(a) D, F (b) G, H
(c) B, C (d) data inadequate

Directions for questions 8 to 12: ***Read the following passage and solve the questions based on it.***

Pankaj, Qureshi, Rajesh and Sudhir live together in a house.

(i) Pankaj lives with his (or her) parents.
(ii) Qureshi lives with at least three persons younger than him (or her).
(iii) Sudhir lives with his mother, and is older than at least two persons living with him.
(iv) Rajesh lives with his (or her) son and is not older than Sudhir.

Q.8 Out of the given names, how many people's gender can be identified?
(a) 3 (b) 4
(c) 2 (d) 1

Q.9 Qureshi is Pankaj's ___.
(a) father (b) mother
(c) son (d) grandmother

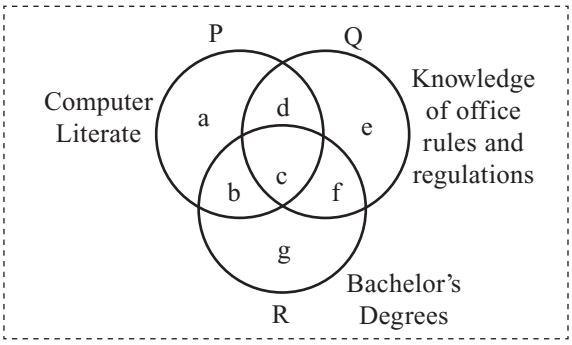
Q.10 Sudhir is Pankaj's ___.
(a) brother (b) father
(c) mother (d) sister

Q.11 Rajesh is Qureshi's ___.
(a) daughter (b) son
(c) grandson (d) daughter-in-law

Q.12 Rajesh is Sudhir's ___.
(a) wife (b) husband
(c) son (d) daughter

Directions for questions 13 to 17: ***Read the following passage and solve the questions based on it.***

The figure given below consists of three intersecting circles which represent the applicants for the post of PA who are computer literate; who have knowledge of office rules and regulations; and who have a bachelor's degree.



Q.13 Find the letter that represents all the applicants who are computer literate and have knowledge of office, rules and regulations but do not have a bachelor's degree.
(a) b (b) c
(c) d (d) f

Q.14 Find the letter that represents all the applicants who are computer literate but do not have a bachelor's degree or any knowledge of office, rules and regulations.
(a) a (b) b
(c) c (d) d

Q.15 Find the letter that represents the applicants who are computer literate and have a bachelor's degree but do not have knowledge of office, rules and regulations.
(a) g (b) e
(c) c (d) b

Q.16 Find the letter that represents the applicants who are computer literate, know office, rules and regulations and have bachelor's degree.
(a) b (b) c
(c) f (d) g

Q.17 Find the letter that represents the maximum number of applicants?
(a) b
(b) c
(c) f
(d) Cannot be determined

Directions for questions 18 to 22: ***Read the following passage and solve the questions based on it.***

Mr Manoj is a medical representative and he is supposed to visit six doctors—M, N, P, Q, R and S, exactly once every week. To visit the doctors, Mr Manoj has set up a schedule to visit each of the six doctors during the course of one week according to the following conditions:

(i) He must visit Dr M before Dr N and Dr R.
(ii) He must visit Dr N before Dr Q.
(iii) The third doctor he visits must be Dr P.

Q.18 Which of the following must be true of Mr Manoj's schedule?
(a) He visits Dr M before Dr Q
(b) He visits Dr N before Dr R
(c) He visits Dr P before Dr M
(d) He visits Dr P before Dr S

Q.19 If he visits Dr S first, which doctor must he visit second?
(a) Dr M (b) Dr N
(c) Dr P (d) Dr Q

Q.20 Mr Manoj could visit any of the following doctors immediately after Dr P except
(a) Dr S (b) Dr R
(c) Dr Q (d) Dr M

Q.21 If he visits Dr Q immediately before Dr R and immediately after Dr S he must visit Dr Q
(a) First (b) Second
(c) Fourth (d) Fifth

Q.22 Which of the following could be the order in which he visits the six doctors?
(a) Dr M, Dr S, Dr P, Dr N, Dr R, Dr Q
(b) Dr Q, Dr N, Dr P, Dr R, Dr S, Dr M
(c) Dr M, Dr R, Dr N, Dr Q, Dr P, Dr S
(d) Dr P, Dr S, Dr M, Dr R, Dr Q, Dr N

Directions for questions 23 and 24: ***Read the following passage and solve the questions based on it.***

In the famous movie—*Hum Saat Aath Hain* there were six persons A, B, C, D, E and F in the family. C is the sister of F. B is the brother of E's husband. D is the father of A and grandfather of F. There are 2 fathers, 3 brothers and a mother in the family and only these six people were the members of the family.

Q.23 What is the name of husband of E?
(a) B (b) C
(c) D (d) None of these

Q.24 Who is the mother?
(a) A (b) B
(c) E (d) D

Exercise 3

Directions for questions 1 to 4: ***Read the following passage and solve the questions based on it.***

Five friends—Umesh, Vishnu, Xinhua, Yogesh and Zeta collected pebbles on the sea shore. They collected a total of 100 pebbles.

None of them collected less than 10 pebbles each. No two among them collected the same number of pebbles. Following information is given regarding the number of pebbles with each one of them:

(i) Umesh collected the same number of pebbles as Vishnu and Xinhua put together.
(ii) Xinhua collected 3 more pebbles than the cube of an integer.
(iii) The number of pebbles collected by Umesh was the square of an integer.
(iv) The number of pebbles collected by Vishnu was either the square or the cube of an integer.
(v) The number of pebbles collected by Yogesh and Zeta are in the ratio 4 : 3.

Q.1 What was the number of pebbles collected by Umesh?
(a) 19 (b) 36
(c) 52 (d) 64

Q.2 What was the number of pebbles collected by Vishnu?
(a) 16 (b) 25
(c) 46 (d) 64

Q.3 What was the difference in the number of pebbles collected by Xinhua and Yogesh?
(a) 5 (b) 7
(c) 9 (d) 11

Q.4 How many of the individual collection(s) of pebbles was/were prime numbers?
(a) 0 (b) 1
(c) 2 (d) 3

Directions for questions 5 to 9: ***Read the following passage and solve the questions based on it.***

Each of the alphabets given below represents a digit (from 1–9). No digit is represented by more than one alphabet and vice versa.

$$\begin{array}{cccccc} & & A & B & C & D \\ + & C & A & B & E & B \\ \hline & B & F & D & F & C \end{array}$$

Q.5 Find the value of B + C + D.
(a) 12 (b) 14
(c) 16 (d) 19

Q.6 What is the value of A × B × C?
(a) 72 (b) 108
(c) 24 (d) 36

Q.7 What is the value of (BF) × (FC)?
(a) 966 (b) 865
(c) 826 (d) 735

Q.8 How many digits from A to F is/are prime numbers?
(a) 1 (b) 2
(c) 3 (d) 4

Q.9 What is the sum of the three largest digits out of the given digits from A to F?
(a) 24 (b) 23
(c) 21 (d) 22

Directions for questions 10 to 13: ***Read the following passage and solve the questions based on it.***

(i) A group of five boys A, B, C, D and E and a group of five girls P, Q, R, S and T are standing in a row facing each other (not necessarily in the same order). The group of girls is facing north.
(ii) E is not at any of the ends. C is to the immediate right of B and D is to the immediate left of A, who is facing P. There are as many girls between P and Q as between R and S. A is second to the left of B, S and R are not facing either B or D.

Q.10 Which of the following indicates the pair of students standing at the ends of the row?
(a) CB
(b) DB
(c) CD
(d) Cannot be determined

Q.11 Which of the following is definitely true on the basis of the given information?
(a) C is second to the right of D
(b) P is third to the right of Q
(c) S is to the immediate right of P
(d) None of these

Q.12 Who is standing to the immediate right of A?
(a) E
(b) C
(c) B
(d) Cannot be determined

Q.13 Who is facing A?
(a) R (b) S
(c) P (d) None of these

Directions for questions 14 to 17: ***Read the following passage and solve the questions based on it.***

There are six students—A, B, C, D, E and F, participating in an evaluation test for Language and Science.

(i) A's total marks in language were just above C and in Science just above F.
(ii) B was just above C in Science but scored less than D in Language.
(iii) F got more marks than D and E in science, but didn't perform as well as D in Language.
(iv) No one scored in between C and D in Language and C and A in Science.

Q.14 Who got the highest marks in Science?
(a) A
(b) B
(c) C
(d) Cannot be determined

Q.15 Which of the following students has scored the least in Science?
(a) only D (b) only E
(c) either D or E (d) A

Q.16 Who scored just below D in Language?
(a) B
(b) F
(c) C
(d) Cannot be determined

Q.17 Which of the given statements is not necessary to answer the questions?
(a) ii (b) iii
(c) iv (d) All are necessary

Directions for questions 18 to 22: ***Read the following passage and solve the questions based on it.***

In the annual performance appraisal, all employees were placed in three categories—average, good and excellent. To execute the appraisal plan more effectively, a software called 'Appraise Well' is being used. But somehow the computer got infected with a virus and some information was lost.

While trying to recover the data, only the following could be recovered:

	Average	Good	Excellent	Total
Male			12	
Female				36
Total		33		

(i) An employee can be placed in only one category.
(ii) Half the employees are either excellent or good.
(iii) 40% of the employees were females.
(iv) One-third of the males were average.

Q.18 How many employees are both females and excellent?
(a) 2 (b) 4
(c) 8 (d) 0

Q.19 What proportion of the good employees are males?
(a) 0.4 (b) 0.5
(c) 0.6 (d) None of these

Q.20 What proportion of the good employees are females?
(a) 0.4 (b) 0.5
(c) 0.6 (d) 0.27

Q.21 What proportion of the females are good employees?
(a) 0.4 (b) 0.5
(c) 0.6 (d) None of these

Q.22 How many employees are neither excellent nor males?
(a) 36 (b) 12
(c) 24 (d) 0

Directions for questions 23 to 25: ***Read the following passage and solve the questions based on it.***

A quiz has three rounds of two questions each. However, the scoring scheme is different in all the three rounds as per the following:

In the first round, each correct answer carries 20 points and each incorrect answer carries a penalty of 10 points. If both the questions in the 1st round are answered correctly a bonus of 10 points is awarded.

In the second round, each correct and incorrect answer gets the same points as in the first round. However, an additional penalty of 10 points is awarded if both the questions are answered incorrectly.

In the third round, each right answer fetches 40 points and an incorrect one fetches a penalty of 20 points.

Q.23 In how many ways can a score of 40 be achieved?
(a) 0 (b) 1
(c) 2 (d) 3

Q.24 If only two answers are incorrect in the whole quiz, what is the minimum possible score that a contestant can achieve?
(a) 20 (b) 30
(c) 40 (d) None of these

Q.25 If only two answers are incorrect in the whole quiz, what is the maximum possible score that a contestant can achieve?

(a) 100 (b) 130
(c) 120 (d) None of these

Exercise 4

Directions for questions 1 to 3: ***Read the following passage and solve the questions based on it.***

A, B, C, D and E are five cities out of which two are hill stations and the rest are in the plains. Two cities, which are in the plains, are ports. Four cities out of five are state capitals and two are industrial cities. The Population of two cities is less than 5 lacs. The population of one city is 20 lacs and the more than 50 lacs of. Two cities are situated on the same latitudes and other two are on same longitude and the other two are on the same longitude. Latitudes and longitudes of both ports are different and out of these one is an industrial town. The population of both the industrial cities is more than 50 lacs. The longitude of one hill station and one of the industrial cities is the same. The latitudes and longitudes of the other hill station and the other port are different. One industrial town is neither a hill station nor a port. None of the hill stations is an industrial town. The hill station has the which same longitude as the port, is a capital. B is a hill station while the longitudes of A and E are the same. E is a port. The latitudes of D and C are the same and the population of D is 20 lacs. Both the ports are capitals and one of them is an industrial town.

Q.1 Which of the following two cities have a population less than 5 lacs?
(a) B and C (b) A and B
(c) A and D (d) D and B

Q.2 Which of the following cities is not a capital?
(a) A (b) C
(c) B (d) E

Q.3 Which one of the following cities is a hill station as well as a capital?
(a) A (b) B
(c) C (d) D

Directions for questions 4 to 5: ***Read the following passage and solve the questions based on it.***

To smoothen the procedure of grievances reprisal, a team of five members is being constituted by the top management. As per the procedures established, it has to provide representation to both the workers and the middle management. The team must have two representatives of the middle management, two representatives of the workers and one representative of the top management.

As per the availability of persons, we know that

(i) The middle management's representatives must be chosen from X, Y and Z.
(ii) The workers' representatives must be chosen from A, B and C.
(iii) The top management's representative must be chosen from either J or K.

Owing to some geographical constraints, we know that

(iv) A cannot serve with C.
(v) Z cannot serve together with A.
(vi) Y cannot serve unless K is also in the team.

Q.4 Which of the following persons must be chosen?
(a) J (b) X
(c) Y (d) B

Q.5 If A and B are chosen to be the workers representatives, then which of the following statement(s) is/are true?
I. K is chosen
II. Both X and Y are chosen to represent middle managers
III. J is chosen
(a) I only (b) II only
(c) III only (d) Both I and II

Directions for questions 6 to 9: ***Read the following passage and solve the questions based on it.***

There are five islands A, B, C, D and E in Nicobar. Two of these have post offices, three have schools and three are accessible by bridge. Two have a population of more than 5000 each, two have a population between 2000 and 5000 each, and one has a population of less than 2000. Two of these islands have electricity in addition to certain other facilities such as a school and accessibility by bridge. The island with a population of less than 2000 has a school but does not have a post office nor is it accessible by bridge; while each of the islands with a population of more than 5000 has a school. Of the two islands having a population between 2000 and 5000, only one has a post office and is accessible by bridge. Island A is accessible by bridge. Island B has a population of more than 5000, island D has a school and is accessible by bridge but does not have a post office, while island E has a school but is not accessible by bridge.

Q.6 Which island has a school and a post office?
(a) A (b) B
(c) C (d) D

Q.7 Which island does not have any of the facilities available to other islands?
(a) A (b) B
(c) C (d) D

Q.8 Which two islands have electricity?
(a) A, B (b) B, C
(c) B, D (d) C, D

Q.9 Which three islands can be accessed by bridge?
(a) A, B, D (b) A, B, E
(c) A, D, E (d) B, D, E

Directions for questions 10 to 13: ***Read the following passage and solve the questions based on it.***

P, Q, R, S, T and U are six lecturers in a college each teaching a different subject Mathematics, Physics, Sociology, Biology, Geography and History not necessarily in the same order. There are only four female lecturers. Following is the information regarding who teaches what:

(i) Q teaches History.
(ii) No female lecturer teaches Biology or Mathematics.
(iii) S, who teaches Sociology, is the oldest.
(iv) P is older than R and teaches Physics.
(v) The youngest teaches Biology and U is not the youngest.
(vi) T teaches Mathematics and is older than P but younger than Q and U.

Q.10 Which of the following group comprises only of females?
(a) RPSU (b) RSTQ
(c) PQTU (d) PQSU

Q.11 Which subject does U teach?
(a) Geography
(b) Sociology
(c) Geography or Sociology
(d) Cannot be determined

Q.12 Who teaches Biology?
(a) P (b) S
(c) R (d) None of these

Q.13 If all the lecturers are arranged in descending order of their ages, what will be the position of the two male lecturers?
(a) 2nd and 6th
(b) 4th and 6th
(c) 3rd and 6th
(d) Cannot be determined

Q.14 Who is the youngest out of the six lecturers?
(a) Q (b) T
(c) P (d) None of these

Directions for questions 15 to 19: ***Read the following passage and solve the questions based on it.***

(i) Five students S, R, N, M and V have a total of five books on various subjects like—Physics, Chemistry, Maths, Biology and English written by authors Gupta, Khanna, Harish, D'Souza and Edgar. Each student has only one book on any one of the five subjects.
(ii) Gupta is the author of the physics book, which is not owned by V or S.
(iii) M owns the book written by Edgar.
(iv) N owns the Maths book. V has the English book which is not written by Khanna. The Biology book is written by D'Souza.

Q.15 Which of the following is the correct combination of subject, student and author?
(a) Maths – N – Harish
(b) Physics – M – Gupta
(c) English – V – Edgar
(d) Biology – S – D'Souza

Q.16 Who is the author of the Chemistry book?
(a) Harish
(b) Edgar
(c) Khanna or Harish
(d) Edgar or Khanna

Q.17 Who is the owner of the book written by Harish?
(a) V
(b) S
(c) R
(d) Cannot be determined

Q.18 For how many authors, is it possible to uniquely determine the subject on which they have written a book?
(a) 2 (b) 3
(c) 4 (d) 5

Q.19 For how many students is it possible to uniquely determine the books owned by them?
(a) 2 (b) 3
(c) 4 (d) 5

Directions for questions 20 to 24: ***Read the following passage and solve the questions based on it.***

There are seven students—A, B, C, D, E, F and G – in a batch at Prep-Well Coaching institute. All these students sit on three benches 1st, 2nd and 3rd in such way that:

(i) There are at least two students sitting on each bench
(ii) There is at least one girl on each bench.
(iii) C, a girl student, does not sit with A, E and D.
(iv) F, a boy student sits with only B. A sits with his best friend on bench I.
(v) G sits on the 3rd bench. E is the brother of C.

Q.20 How many girl students are there?
(a) 3 (b) 4
(c) 2 (d) Data inadequate

Q.21 Who sits with C?
(a) B (b) G
(c) D (d) E

Q.22 Which of the following is a group of girls?
(a) BAC (b) BFC
(c) CDF (d) BCD

Q.23 On which bench do three students sit?
(a) 2nd (b) 3rd
(c) 1st (d) 1st or 2nd

Q.24 The sex of how many students is known?
(a) 4 (b) 5
(c) 6 (d) 7

Exercise 5

Directions for questions 1 to 4: ***Read the following passage and solve the questions based on it.***

In a state, there are seven cities—A, B, C, D, E, F and G. The following cities have a two way connection between them: D and F, E and H, A and B, B and C, G and E, C and E and G and F. There is a one-way connection from F to B. (Two way connection means people can move in both the Directions whereas in a one way connection, people can move only in one way.)

Q.1 If the connection between E and C is cut, then which route is not possible?
(a) D to E (b) A to G
(c) F to B (d) D to G

Q.2 If a person wishes to travel from D to E, then what is the minimum number of cities that he needs to cross enroute?
(a) 2 (b) 4
(c) 3 (d) 5

Q.3 If a person wants to go to city F from city A, how many cities will he be required to cross (excluding A and F)?
(a) 2 (b) 4
(c) 3 (d) 5

Q.4 In the above question, which of the following will minimize the number of cities?
(a) make F – B a two way connection
(b) connect F – C with a two way connection
(c) connect A – D with a one way connection from D to A
(d) connect C – G with a two-way connection

Directions for questions 5 to 7: ***Read the following passage and solve the questions based on it.***

There are two groups namely Left and Right. Persons A, B, C and D are in the Left group and E, F and G are in the Right group. A committee is to be formed of 3 persons, at least one from each group. B and C will never be together. If G is there in the committee then E will also be there. F and C will be always together. The co-ordinator has to be from the minority group.

Q.5 Which one of them cannot be a valid committee?
(a) BDE (b) FGB
(c) AGC (d) EFG

Q.6 Which one of them cannot be a coordinator?
(a) F (b) B
(c) G (d) D

Q.7 Which one is a false statement?
(a) FBA is a possible group
(b) FCD is a possible group
(c) FCE is a possible group
(d) GEA is a possible group

Directions for questions 8 to 12: ***Read the following passage and solve the questions based on it.***

P, Q, R, S, T, V and W are seven friends who left for seven different places—Delhi, Chennai, Hyderabad, Bangalore, Kolkata, Chandigarh and Patna–each one on a different day of the week. R left for Patna on Monday. On the last day of the week one person left for Bangalore. T left the next day after P, who left for Chandigarh and a day previous to W's departure. S left for Kolkata on Friday. Q did not leave for either Hyderabad or Bangalore and W left for Delhi.

It is also given that the week starts on Sunday and ends on Saturday.

Q.8 On which day of the week did Q leave?
(a) Sunday
(b) Saturday
(c) Wednesday
(d) Cannot be determined

Q.9 Who left for Bangalore?
(a) T
(b) P
(c) V
(d) Cannot be determined

Q.10 On which day of the week did T leave?
(a) Tuesday (b) Thursday
(c) Sunday (d) Wednesday

Q.11 Which of the following combinations of person-place is not correct?
(a) R—Patna (b) P—Chandigarh
(c) T—Hyderabad (d) All are correct

Q.12 Who left on Tuesday?
(a) P (b) W
(c) Q (d) V

Directions for questions 13 to 16: ***Read the following passage and solve the questions based on it.***

Manoj is a medical representative (M R) with Nicholas Piramal. He has to meet seven doctors M, N, O, P, Q, R and S on a particular day between 9 a.m. and 4 p.m. Following details are available regarding his schedule:

(i) He takes 30 minutes with each doctor and keeps a gap of 25 minutes between two appointments for travel and preparation except after the 5th visit, when he takes a 50 minutes break for lunch, travel and preparation.
(ii) He has to meet doctor M immediately before Q but immediately after R, who is the third doctor to be met.
(iii) Dr S does not give any time for a meeting before 9.30 a.m. and after 10.30 a.m. Dr P and Dr N meet Manoj between 2 p.m. and 3.30 p.m. only.

Q.13 Who among the following is likely to be the first doctor that day?

(a) S (b) O
(c) R (d) Q

Q.14 Who will be the last doctor to be visited by him that day?
(a) N
(b) P
(c) R
(d) Cannot be determined

Q.15 At what time is he likely to meet Dr S?
(a) 9.55 a.m. (b) 9:30 a.m.
(c) 9 a.m. (d) None of these

Q.16 If Dr R asks him to visit again 25 minutes after his scheduled seventh visit is over, then at what time is Dr R asking him to meet?
(a) 3.55 P.M. (b) 3.40 P.M.
(c) 3.25 P.M. (d) None of these

Directions for questions 17 to 21: ***Read the following passage and solve the questions based on it.***

B, C, D, F, G, H and J are seven students studying in three colleges P, Q and R. Among them are three boys and four girls. There is at least one boy and one girl in each college. Three of them are in the Commerce discipline and two each in Arts and Science. B and her sister G are in the Science discipline but in different colleges. F studies Arts in college Q and he does not study with either J or C. D is not in the Commerce discipline and he studies in college R, only with B. All the three from the Commerce discipline do not study in the same college. H studies in the same college with her friend G.

Q.17 In which college do only the Commerce students (from the given seven) study?
(a) P (b) Q
(c) R (d) P or Q

Q.18 If B and C can interchange their colleges satisfying all other conditions, which of the following will definitely represent the girls?
(a) BCHD (b) BCHG
(c) BFHG (d) DCHF

Q.19 Which of the following represents the three students in the Commerce discipline?
(a) HJC
(b) HDC
(c) HFG
(d) Cannot be determined

Q.20 In which college do three of the students study?
(a) P (b) R
(c) Q (d) None of these

Q.21 Which of the following represents the three boys?
(a) DFJ
(b) DFC
(c) JFC
(d) Cannot be determined

Q.22. Pointing towards a man in the photograph, a woman said, "He is the father of the brother of my father". How is the man related to the woman?
(a) father (b) uncle
(c) grandfather (d) uncle or father

Q.23 To number the pages of a large book, the printer used a total of 1890 digits. How many pages are there in the book?
(a) 655 (b) 667
(c) 666 (d) 668

Q.24 Five men A, B, C, D and E read a novel. The one who reads it first gives it to C. The one who reads it last had taken it from A. E was not the first or the last to read the novel. Also, it is known that there were two readers between B and A. Who read the novel last?
(a) E (b) B
(c) D (d) C

Q.25 In the above question, who read the novel in the middle?
(a) E (b) B
(c) D (d) C

Exercise 6

Directions for questions 1 to 4: ***Read the passage given below and solve the questions based on it.***

Five persons—Yamini, Nitika, Monica, Rehana and Pragya are students of five different areas Medical, Engineering, Architecture, Arts and Management in no particular order. Each of them plays a different musical instrument from Sitar, Tabla, Sarod, Guitar and Violin, not given respectively.

Monica, a medical student, does not play Sarod or Sitar or Guitar.

Pragya is neither a student of Engineering nor of Management.

Rehana, who plays tabla, is an Arts student.

Neither Pragya nor Yamini plays Sarod.

Q.1 Who among the following plays Sarod?
(a) Yamini (b) Nitika
(c) Pragya (d) Data inadequate
(e) None of these

Q.2 The guitarist is a student of which of the following disciplines?
(a) Engineering
(b) Either Engineering or Management
(c) Architecture
(d) Data inadequate
(e) None of these

Q.3 Who among the following plays Sitar?
(a) Yamini
(b) Nitika

(c) Pragya
(d) Data inadequate
(e) None of these

Q.4 For how many of the given five students is it possible to find the exact discipline and the musical instrument the person plays?
(a) 0 (b) 1
(c) 2 (d) 3
(e) 4

Directions for questions 5 to 10: ***Read the passage given below and solve the questions based on it.***

During their stint at IIM Shillong, ten students have opted for various electives named from A to F. In these electives, students are given the points on a scale of 1 to 5 points. Points obtained by the students can be integral points only.

It is also known that not all the electives are taken by all the students and not all the students are taking at least an elective.

The range of scores indicates the maximum and minimum scores in that elective by the students who have chosen that elective. However, if the range of the scores is 1–4, then at least one of students must have got 1 point and at least one student must have got 4 points in that elective.

The number of elective takers out of the 10 students is given in the last column.

Elective	Range of scores of all the elective takers (Minimum and maximum scored)	Average score of the elective takers	Number of elective takers
A	1–4	3.5	6
B	2–4	3	3
C	1–5	4	7
D	1–2	4/3	3
E	2–5	4	4
F	3–5	11/3	6

Q.5 How many students have scored more than 4 points in at least 2 electives?
(a) 4 (b) 7
(c) 2 (d) 3
(e) Cannot be determined

Q.6 What is the minimum number of students who must have scored less than 2 points in at least one elective?
(a) 3 (b) 4
(c) 2 (d) 3
(e) Cannot be determined

Q.7 What is the maximum number of students who have scored more than 3 points in at least one elective?
(a) 5 (b) 6
(c) 7 (d) 3
(e) Cannot be determined

Q.8 What is the minimum number of students who have scored more than 3 points in at least one elective?
(a) 5 (b) 6
(c) 7 (d) 0
(e) None of these

Q.9 Elective A and elective B are merged to form a new elective H. This new elective H will be having all those students who have opted elective A and elective B and the scores of each of these electives have been taken into consideration while finding the average of elective H. If none of the students of elective A and elective B are common, then what will be the average score of elective H?
(a) 10/3 (b) 3
(c) 3.5 (d) None of these
(e) Cannot be determined

Q.10. Elective C and elective E are merged to form a new elective N. This new elective N will be having all those students who have opted elective C and elective E and the scores of each of these electives have been taken into consideration while finding the average of elective N. What is the average score of elective N?
(a) 4 (b) 3
(c) 3.5 (d) 2
(e) Cannot be determined

Directions for questions 11 to 13: ***Read the passage given below and solve the questions based on it.***

There are six movies—A, B, C, D, E and F–to be showed in a film festival. B, C and E are art movies and others are commercial movies. Only F and D are Hindi movies and the remaining movies are English movies. Movies A, C and D are made by Jagmohan Mundhra and movies B, E and F are made by Steven Spielberg.

Q.11 Which English movie is a commercial movie?
(a) A (b) B
(c) C (d) D
(e) None of these

Q.12 Which Hindi movie is made by Jagmohan Mundhra?
(a) A (b) B
(c) C (d) D
(e) None of these

Q.13 Which of the English movies is/are art movies made by Steven Spielberg?
(a) B (b) B and C
(c) C (d) B and E
(e) None of these

Directions for questions 14 to 18: ***Read the passage given below and solve the questions based on it.***

Bus route no. 761 has exactly six stops on its route. Any bus plying on this route starts from the initial position, then stops first at stop one and then at stops two, three, four, five, and six respectively. After the bus reaches stop six, the bus

turns and returns to its initial position and repeats the cycle. Buses are not allowed to carry people on its return journey.

Following are the six stops—L, M, N, O, P, and Q in no particular order. Further, following observations have been made regarding the stops on this route:

Observation 1 – P is the third stop.

Observation 2 – M is the sixth stop.

Observation 3 – The stop Q is the stop immediately after O.

Observation 4 – N is the stop immediately before L.

Q.14 If N is the fourth stop on this route, which among the following must be the stop immediately before stop P?
(a) N (b) Q
(c) O (d) M
(e) L

Q.15. If L is the second stop on this route, which among the following must be the stop immediately before M?
(a) N (b) Q
(c) O (d) P
(e) L

Q.16. A passenger boards a bus on this route at O, rides past one of the stops, and alights at P. Which of the following must be true?
(a) O is stop one (b) P is stop four.
(c) N is stop five (d) L is stop six
(e) None of these

Q.17. In how many different ways the stops can be fixed on this route?
(a) 1 (b) 2
(c) 3 (d) 4
(e) None of these

Q.18. If we relax the observation 3, then in how many different ways the stops can be fixed on this route?
(a) 1 (b) 2
(c) 3 (d) 4
(e) None of these

Directions for questions 19 to 20: ***Read the passage given below and solve the questions based on it.***

During the Indian film festival at Goa, movies from five countries—Austria, Bhutan, China, Denmark, and England are to be shown. Movies from these countries have to follow a particular order as given follows:

Movie from Austria must be shown before the movie from China.

Movie from England should be the fifth movie to be shown.

Movie from Bhutan must be shown before the movie from Denmark.

Q.19 Which of the following is the correct order for showing all the movies?
(a) Austria, China, Bhutan, Denmark, England
(b) Austria, China, Denmark, England, Bhutan
(c) Bhutan, Denmark, China, Austria, England
(d) Bhutan, Denmark, England, Austria, China
(e) England, Bhutan, China, Austria, Denmark

Q.20 Movies from Denmark and England are shown at the farthest gap possible. Which among the following would be true?
(a) Movie from Austria is shown earlier than Movie from Bhutan.
(b) Movie from England is shown earlier than Movie from China.
(c) Movie from Denmark is shown earlier than Movie from Austria.
(d) Movie from England is shown earlier than Movie from Bhutan.
(e) Movie from China is shown earlier than Movie from Denmark.

Exercise 7

Directions for questions 1 to 3: ***Read the passage given below and solve the questions based on it.***

Six sides of a cube are painted by six different colours—Black, blue, brown, green, red and white—one colour on one side. Following observations are made regarding the sides and the colour on it:

1. The side coloured red is opposite the side coloured black.
2. The green side is between the red side and the black side.
3. The blue side is adjacent to the white side.
4. The brown side is adjacent to the blue side.
5. The red side is the bottom face.

Q.1 The four colours adjacent to the green side are
(a) Black, blue, brown, red
(b) Black, blue, brown, white
(c) Black, blue, red, white
(d) Black, white, brown, red

Q.2 Which of the following can be deduced using the observation 1 and observation 5?
(a) Black is on the top
(b) Brown is on the top
(c) Blue is on the top
(d) Brown is opposite to black.

Q.3 If the red side is exchanged for the green side and the blue is swapped for black, then which of the following is false?

(a) Red side is opposite to black side.
(b) White side is adjacent to the brown side.
(c) Green side is opposite to the blue side.
(d) White side is adjacent to the blue side.

Directions for questions 4 to 8: ***Read the passage given below and solve the questions based on it.***

In the latest *Rajshri* films *Hum aapke hain saath saath*, there are six generations in a family however total members in this family is 5. Names of the members of this family are Atul, Binod, Charu, Deepak and Faisal.

Following observations have been made regarding them:

1. Charu is the only unmarried child whose grand parents have passed away.
2. Deepak, a widow, is the daughter of Faisal who is a widower.
3. None of the family members is an adopted son or an adopted daughter.
4. One generation has at most one family member.
5. Every couple has only one child and the first generation did not have any siblings.

Q.4 If Atul is the grandson of Binod, then which member is in the second last generation?
(a) a male (b) Atul
(c) Either (a) or (b) (d) Both (a) and (b)

Q.5 If Binod is the eldest member in the family, then how is Deepak related to Atul?
(a) Grandmother (b) Grandfather
(c) Either (a) or (b) (d) None of these

Q.6 If Binod is the eldest member in the family, then how is Atul related to Charu?
(a) Father
(b) Mother
(c) Uncle
(d) Cannot be determined

Q.7 If Atul is Charu's father and Binod's grandson, then how many possible combinations of the family exist?
(a) 1 (b) 2
(c) 3 (d) 4

Q.8 If grandfather of Charu were alive, he would have definitely belonged to which generation?
(a) 4th last (b) 3rd
(c) 2nd last (d) 3rd last

Directions for questions 9 to 12: ***Read the passage given below and solve the questions based on it.***

There are six classes to be held everyday by six different teachers—A, B, C, D, E, and F in a school. Three of these classes will take place in the morning session before the lunch break whereas the other three classes will be held in the afternoon session after the lunch break.

The scheme of the classes should follow the following restrictions

Class by B should be immediately before the class by C and their presentations cannot be separated by the lunch break.

Class by D must be either the first or the last class.

Q.9 If class by C is the fifth class of the day, then class by B is the …….class of the day.
(a) first (b) second
(c) third (d) fourth

Q.10 Class by B can be placed at any of the following places in the order of presenters EXCEPT
(a) first (b) second
(c) third (d) fifth

Q.11 Class by F is to be scheduled immediately after the class by D, then class by C could be slated for which class of the day?
(a) First (b) Third
(c) Fourth (d) Fifth

Q.12 In case class by F and class by E are the fifth and sixth classes of the day respectively, then which of the following must be true?
(a) Class by A is first class of the day
(b) Class by A is third class of the day
(c) Class by A is fourth class of the day
(d) None of these

Directions for questions 13 to 20: ***Read the passage given below and solve the questions based on it.***

There are three projects—P1, P2 and P3. A student can select either one project or two projects or all the three projects subject to the conditions given below:

Condition 1: Both P1 and P2 have to be selected.
Condition 2: Either P1 or P3, but not both, has to be selected.
Condition 3: P2 can be selected only if P3 has been selected.
Condition 4: P1 is selected only if P3 is selected.

Q.13 How many different selections can be made if no conditions are imposed?
(a) 5 (b) 6
(c) 7 (d) 8

Q.14 How many selections can be made to meet condition 1 as given above?
(a) 1 (b) 2
(c) 3 (d) 4

Q.15 How many selections can be made to meet condition 2 as given above?
(a) 2 (b) 3
(c) 4 (d) 5

Q.16 How many selections can be made to meet condition 3 as given above?
(a) 5 (b) 6
(c) 7 (d) 8

Q.17 How many selections can be made to meet condition 4 as given above?
(a) 5 (b) 6
(c) 7 (d) 8

Q.18 How many selections can be made meeting both the conditions 1 and 2 as given above?
(a) 0 (b) 1
(c) 2 (d) None of these

Q.19 How many selections can be made meeting both the conditions 2 and 3 as given above?
(a) 0 (b) 1
(c) 2 (d) None of these

Q.20 How many selections can be made meeting the conditions 1, 2 and 3 as given above?
(a) 0 (b) 1
(c) 2 (d) None of these

Directions for questions 21 to 26: ***Read the passage given below and solve the questions based on it.***

Five universities—A, B, C, L and K participated in the last year inter-university athlete event. Each of the universities were represented by three members. According to the rules, the race-track maker gets wild card entry making the total number of athletes participating in the race equal to 16. The rank obtained by the individual will be the points obtained. And similarly the points obtained by an individual university will be equal to the sum of the ranks of the member athletes of the team. Lower the points, better the team and the best team wins the trophy.

The five universities tied for the trophy, their sum being equal, however no two athletes tied for the same position. In order to determine the order in which the universities will hold the trophy (they agreed to hold it for 73 days each), they multiplied the athletes positions together in each university. The university with the smallest product – K– will hold the trophy first and so on the university with the largest product – A – will hold the cup last. Unfortunately, universities B and C were still tied and had to be separated by a toss of coin.

It was also found that the no two athletes of a university finish at the consecutive positions. Had the race-track maker did not come in between two athletes of university B, university B would have achieved this feat of two athletes being at consecutive positions.

Q.21 Which of the following is the position of the race-track maker?
(a) 6 (b) 11
(c) Either 6 or 11 (d) Neither 6 nor 11
(e) Cannot be determined

Q.22 What is the product of the university A?
(a) 360 (b) 455
(c) 450 (d) 390
(e) None of these

Q.23 What is the smallest point obtained by an individual of university L?
(a) 1 (b) 2
(c) 3 (d) 4
(e) 5

Q.24 What is the product of the ranks obtained by all the athletes of university K?
(a) 120 (b) 150
(c) 128 (d) 144
(e) None of these

Q.25 Which of the following is not a rank obtained by the athletes of university C?
(a) 15 (b) 6
(c) 4 (d) 2
(e) 4 and 2

Q.26 Which of the following is a rank obtained by the athletes of university B?
(a) 14 (b) 6
(c) 4 (d) 5
(e) 3

ANSWER KEYS

Exercise 1

1. (d)	**2.** (b)	**3.** (a)	**4.** (b)	**5.** (a)	**6.** (d)	**7.** (c)	**8.** (d).	**9.** (c).	**10.** (d)
11. (c)	**12.** (d)	**13.** (b)	**14.** (a)	**15.** (d)	**16.** (d)	**17.** (a)	**18.** (b)	**19.** (c)	**20.** (a)
21. (d)	**22.** (d)	**23.** (b)							

Exercise 2

1. (a)	**2.** (d)	**3.** (d)	**4.** (d)	**5.** (b)	**6.** (d)	**7.** (d)	**8.** (b)	**9.** (d)	**10.** (b)
11. (d)	**12.** (a)	**13.** (c)	**14.** (a)	**15.** (d)	**16.** (b)	**17.** (d)	**18.** (a)	**19.** (a)	**20.** (d)
21. (d)	**22.** (a)	**23.** (d)	**24.** (c)						

Exercise 3

1. (b)	**2.** (b)	**3.** (a)	**4.** (b)	**5.** (c)	**6.** (a)	**7.** (a)	**8.** (b)	**9.** (b)	**10.** (c)
11. (d)	**12.** (a)	**13.** (c)	**14.** (b)	**15.** (c)	**16.** (d)	**17.** (d)	**18.** (d)	**19.** (d)	**20.** (d)
21. (d)	**22.** (a)	**23.** (c)	**24.** (d)	**25.** (a)					

Exercise 4

1. (b)	**2.** (c)	**3.** (a)	**4.** (d)	**5.** (d)	**6.** (b)	**7.** (c)	**8.** (c)	**9.** (a)	**10.** (d)
11. (a)	**12.** (c)	**13.** (b)	**14.** (d)	**15.** (d)	**16.** (b)	**17.** (a)	**18.** (d)	**19.** (d)	**20.** (d)
21. (b)	**22.** (d)	**23.** (c)	**24.** (c)						

Exercise 5

1. (b)	**2.** (a)	**3.** (b)	**4.** (a)	**5.** (a)	**6.** (c)	**7.** (a)	**8.** (b)	**9.** (c)	**10.** (d)
11. (d)	**12.** (a)	**13.** (b)	**14.** (d)	**15.** (a)	**16.** (d)	**17.** (a)	**18.** (b)	**19.** (a)	**20.** (c)
21. (d)	**22.** (c)	**23.** (c)	**24.** (c)	**25.** (a)					

Exercise 6

1. (b)	**2.** (d)	**3.** (d)	**4.** (c)	**5.** (e)	**6.** (c)	**7.** (e)	**8.** (e)	**9.** (a)	**10.** (e)
11. (a)	**12.** (d)	**13.** (d)	**14.** (b)	**15.** (b)	**16.** (a)	**17.** (b)	**18.** (d)	**19.** (a)	**20.** (c)

Exercise 7

1. (d)	**2.** (a)	**3.** (b)	**4.** (d)	**5.** (a)	**6.** (d)	**7.** (a)	**8.** (d)	**9.** (d)	**10.** (c)
11. (d)	**12.** (c)	**13.** (c)	**14.** (b)	**15.** (c)	**16.** (a)	**17.** (a)	**18.** (b)	**19.** (d)	**20.** (a)
21. (b)	**22.** (b)	**23.** (b)	**24.** (c)	**25.** (d)	**26.** (e)				

EXERCISE 1

Answers to Q.1 to 3:

1. It is given that Q > P and R > S.

Q	P	R	S
4	2	3	1
2	1	4	3

The distribution of coins can be of two types; in both the cases, S gets an odd number.

Hence, option (d) is the correct answer.

2. The possible arrangements are:

R	S	Q	P
3	1	4	2
4	1	3	2
4	2	3	1

Hence, option (b) is the correct answer.

3.

R	S	Q	P
4	2	3	1
4	1	3	2
4	3	2	1

Looking at the possible distribution of coins, we find that option (a) is not always true.

Hence, option (a) is the correct answer.

Answers to Q.4 to 7:

Using the statements given above, we have the following diagram for the training schedule:

Group	Mon	Tue	Wed	Thu	Fri	Sat
A	X	√	X	√	X	√
B	√	√	√	√	X	X
C	X	X	√	√	√	√
D	X	X		X		X
E	√	√	√	X	√	X
F	3	3	√	√	X	X

Here, group D meets either on Wednesday or on Friday.

Answers to Q.8 to 11:

8. Content combinations PP in 1st box and PC in the 2nd box are eliminated as no label indicates the contents of the boxes correctly. Now if one of the four items is a ball then one of the combinations is either BC or BB.

Option (a) is wrong when the combinations are BC and BB.

Option (b) is wrong when the combinations are (i) BC along with PC or CC, (ii) BB along with CC, PC or BC.

Option (c) is wrong because the combination in box PP is BB and in box PC is PP.

Hence, option (d) is the correct answer.

9. Label PP – CC

Label CC – PP

Label PP – BC

Now if the box with the label BC has contents BB, then the box with the label PC will have the contents PC and this is not allowed. Hence option (c) is definitely wrong.

Hence, option (c) is the correct answer.

10. The box containing the label BC has one ball and one clip. After the interchange, it will not contain the same combination. Now, there are only two boxes which have the ball as one of the items, so the other item will also be a ball.

Hence, option (d) is the correct answer.

11. The box with the label PC contains two balls; the box with the label PP contains two clips and the box with the label CC contains one ball and one clip. The remaining two boxes contain two pins and one pin and one clip. Hence if only one of the remaining boxes is opened, it will have at least one pin.

Hence, option (c) is the correct answer.

Answers to Q.12 to 16:

12. G is either in 3rd or 4th car. So, option (b) is not possible. L is sharing a car. So, (a) is not correct. M is not sharing a car. So (c) is not correct.

Hence, option (d) is the correct answer.

13. Let us take two possible scenarios:

Scenario 1: L, G and T would occupy the second, third and fourth cars, respectively. But this arrangement would not accommodate M, seated alone, immediately behind an empty car. Hence this scenario is eliminated.

Scenario 2: Given the additional information, L must occupy the third car while T occupies the fifth car. Accordingly, M must occupy the second car and the first car must be empty.

However, P may occupy either the third or the fourth car. Thus, statement (b) is not necessarily true.

Hence, option (b) is the correct answer.

14. Total number of persons = 6

Total number of seats = 10

Number of vacant seats = 4. Out of these 4 seats, 3 seats are vacant because of M. So, only one out of remaining people can sit alone.

Hence, option (a) is the correct answer.

15. If P is in 2nd car, then we have 2 possibilities:

G is in 3rd or 4th car. If G is in 4th car, we cannot accomodate M in any car. So, G must be in 3rd car. T is not sharing car with G. So, there are 3 possibilities for 3rd car, which are:

(1) G alone
(2) G & J
(3) G & P

Hence, option (d) is the correct answer.

16. Again, consider two basic scenarios.

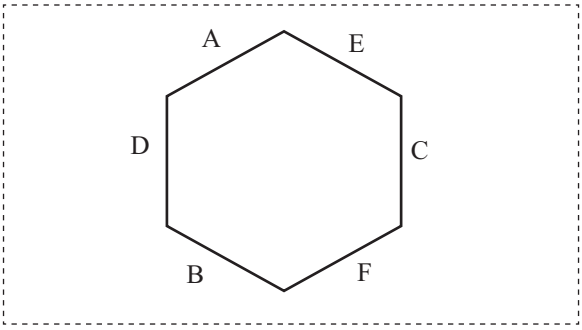
In Scenario 1: G is in the 3rd car, Given that J and the 7th person occupy the first car, M must occupy the fifth car alone.

Scenario 2: G is in the 4th car. It is given than J and the 7th person occupy the 1st car, M must occupy the 3rd car (while the 2nd car is empty). Since T cannot share a car with G, T must occupy the 5th car. Again T cannot share a car with P, hence P must share the 4th car with G.

Accordingly, L should share the 5th car with T.

Hence, option (d) is the correct answer.

Answers to Q.17 to 20:



18. The rest are sitting adjacent to each other

Hence, option (b) is the correct answer.

Answers to Q.21 to 23:

21. Eliminating the options. I must appear with N so, we can eliminate option (c). Also K must appear with L so, we can eliminate option (a). Finally, J or M must be with H, so we can eliminate option (b).

Hence, option (d) is the correct answer.

22. The last condition requires that either J or M or both appear with H. M is on bench two. If J is assigned to bench one and H to bench three, then neither J nor M appears with H.

Hence, option (d) is the correct answer.

23. I cannot be assigned to a bench without N so, option (b) violates one of the initial conditions.

Hence, option (b) is the correct answer.

Exercise 2

Answers to Q.1 to 4:

1.

1	3	7	5	4	9	0
D	H	N	L	Q	G	T

Hence, option (a) is the correct answer.

2. From (i) $ and @ can be replaced by the combination of 2,4,6,8 and 1,3,5,7,9 respectively.

Hence, option (d) is the correct answer.

3. Using (iv)

Q	L	P	↑	R	N	T
4	5	8	0	6	7	0

Hence, option (d) is the correct answer.

4. Obviously, the answer is (d) None of these

Hence, option (d) is the correct answer.

Answers to Q.5 to 7:

5. There are 3 possibilities:

Day 1: X	AGH	AGH	AEF
Day 2: Z	CBE	DEF	DGH
Day 3: Y	DF	CB	CB

Hence, option (b) is the correct answer.

6. There are multiple possibilities, so data is inadequate to give answer.

Hence, option (d) is the correct answer.

7. There are multiple possibilities, so data is inadequate to give answer.

Hence, option (d) is the correct answer.

Solutions to Q.8 to 12:

Following diagram can be drawn:

Statement 1:

Parents

↑

Pankaj

Statement 2:

Qureshi

↑

Three persons

Statement 3:

Mother

↑

Sudhir (male)

↑

Two persons

Statement 4:
Sudhir

↑

Rajesh

↑

Son

Using all the statements together:

Qureshi (grandmother)

↑

Sudhir (male) ⟷ Rajesh (Female)

↓

Pankaj (Son)

Pair of husband and wife

Now all the questions can be answered.
Qureshi — Mother of Sudhir ....(ii) and (iii)
Sudhir — Son of Qureshi ....(ii) and (iii)
Rajesh — Wife of Sudhir .....(iv)
Pankaj — Son of Rajesh and Sudhir ......(i) and (iv)

8. Gender of all the four persons is identified.

Hence, option (b) is the correct answer.

9. Qureshi is Pankaj's grandmother.

Hence, option (d) is the correct answer.

10. Sudhir is Pankaj's father.

Hence, option (b) is the correct answer.

11. Rajesh is Qureshi's daughter in law.

Hence, option (d) is the correct answer.

12. Rajesh is Sudhir's wife.

Hence, option (a) is the correct answer.

Answers to Q.13 to 17:

13–16. These can be solved by directly observing the figure.

17. The provided figure do not give any numerical data. So, we cannot solve the given question.

Hence, option (d) is the correct answer.

Answers to Q.18 to 22:

18. He visits Dr M before Dr N and Dr N before Dr Q. Hence, he must visit Dr M before Dr Q.

Hence, option (a) is the correct answer.

19. Out of the six doctors if Dr S is first, Dr P is third and the order Dr M, Dr N, Dr Q and Dr M, Dr R is followed. Hence, Dr M must be visited second.

Hence, option (a) is the correct answer.

20. Since Dr P is at the third place and order Dr M, Dr N, Dr Q and Dr M, Dr R is to be followed, so, immediately after Dr P he can visit any doctor except Dr M and which may occupy first or second place because Dr Q, Dr R and Dr N cannot precede him/her.

Hence, option (d) is the correct answer.

21. The order is M, N, P, S, Q, R.

Hence, option (d) is the correct answer.

22. According to the given conditions, Dr P must be in third place and the order Dr M, Dr N, Dr Q must not be violated.

Hence, option (a) is the correct answer.

Answers to Q.23 and 24:

D has 2 sons A & B. E is wife of A. C & F are daughter and son of E & A.

23. A is E's husband.

Hence, option (d) is the correct answer.

24. E is the mother of F and C.

Hence, option (c) is the correct answer.

Exercise 3

Answers to Q.1 to 4:

U – Umesh   V – Vishnu
X – Xinhua   Y – Yogesh
Z – Zeta

We have

$$U + V + X + Y + Z = 100$$

and each one of U, V, W, X, Z ≥ 10

$$U = V + X \text{ and } 3Y = 4Z$$

Now,

X = 8 + 3 = 11 or X = 27 + 3 = 30 and
U = 16, 25, 36, 49 and
V = 16, 25, 27, 36

Observing the values of U, V and X, we can easily get that

$$X(11) + V(25) = U(36)$$

So, X = 11, V = 25 and U = 36

Now, Y + Z = 100 – (U + V + X)
= 100 – (11 + 36 + 25) = 28.

now put Y = 4/3 Z in the above equation to get
Z = 12 and then Y = 16.

Answers to Q.5 to 9:

		A	B	C	D
+	C	A	B	E	B
	B	F	D	F	C

Start with the last column. We can infer that there has to be a carry over in the previous column so that C + 1 = B, or B – C = 1

From the first column, D + B = C or D + B = C + 10; D + B= B – 1 or D + B =B + 9. Hence, D is equal to either –1 or 9. Since –1 is not possible, so D = 9. Now there is a carry over to the next column i.e., C + E + 1 = F or C + E + 1 = F + 10.

Moreover, B + B =D is not possible as B + B = 2B which is always an even number. Thus, B + B + 1 = D or B + B + 1 = D + 10 =19 i.e., B = 4 or B = 9. But B cannot be equal to 9 as D= 9. Hence, B = 4,

C = B – 1, so, C = 3

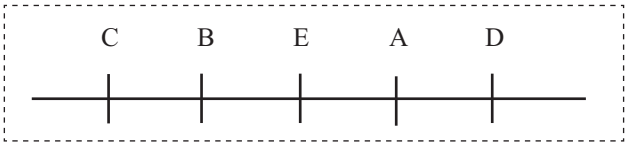
A + A = F + 10 and C + E + 1 = F + 10.

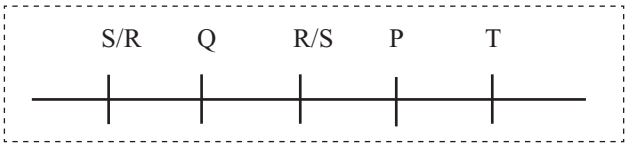
A	F	E	
6	2	8	possible
7	4		not possible as B = 4
8	6	12	not possible

Finally,

A	B	C	D	E	F
6	4	3	9	8	2

Answers to Q.10 to 13:





Answers to Q.14 to 17:

Order in Language: EACDFB or EACDBF or ACDBFE or ACDBEF or ACDEBF or ACDEFB or ACDFEB or ACDFBE

Order in Science: BCAFDE or BCAFED

17. To answer the question, all four statements (i), (ii), (iii) & (iv) are needed.

Hence, option (d) is the correct answer.

Answers to Q.18 to 22:

	Average	Good	Excellent	Total
Male	18	24	12	54
Female	27	9	0	36
Total	45	33	12	90

23. Hence, option (c) is the correct answer.

24. For minimum possibile score with only 2 incorrect answer, the last 2 answers must be incorrect & first 4 answers must be correct. So, required sequence is TTTTFF → 50 + 40 – 40 = 50.

Hence, option (d) is the correct answer.

25. Maximum score can be obtained through TTFFTT sequence = 100 points or FFTTTT = –20 + 40 + 80 = 100 points.

Hence, option (a) is the correct answer.

Exercise 4

Solutions to Q.1 to 3:

Following details are given:

- Two towns are hill stations.
- Three are plains of which two are harbours.
- Two towns are industrial towns.
- Population of two towns is less than 5 lacs.
- Four towns are capitals also.
- Population of one town is 20 lacs.
- Two towns have population more than 50 lacs.
- Two towns are on same latitudes.

B is a hill station. E is a harbour. Clearly, A which has the same longitude as E, cannot be a harbour and clearly, D having population 20 lacs cannot be an industrial town. So, it is a harbour. Thus, E and D are harbours.

Clearly, one harbour is industrial town but D is not. So. E is an industrial town with population more than 50 lacs. Clearly, longitudes of a hill station and industrial town are same. So, A having same longitude as E, is a hill station. Latitudes of D and C are same and D is a harbour. So, C cannot be a hill station. So, B is the other hill station Thus, three plains are C, D, E. One industrial town is neither a hill station nor a harbour. So, C is an industrial town with population more than 50 lacs. Clearly, both harbours are capitals. So. E and D are capitals. The hill station A, having same longitude as a harbour, is also a capital. Population of D is 20 lacs. So, population of A and B is less than 5 lacs. Clearly, only one hill station is capital. So, C is the other capital.

The capitals are A, C, D and E. The hill stations are A and B. So, A is a hill station as well as a capital.

Now all the questions can be answered.

Answers to Q.4 to 5:

The possible groups are XYABK, XYBCK, XZBCJ and YZBCK.

4. Since A & C cannot work together in the team and 2 out of A,B & C must be in the team, therefore B must be selected with either A or C.

Hence, option (d) is the correct answer.

5. A and B are chosen, then Z cannot be in the team. So, X and Y will be in the team and therefore so will K. Both I and II only are true.

Hence, option (d) is the correct answer.

Answers to Q.6 to 9:

Villages	Post office	School	Accessibility By bridge	Electricity	Population >5000	Population 2000 to 5000	Population <2000
A	√		√			√	
B	√	√	√	√	√		
C						√	
D		√	√	√	√		
E		√					√
Total		**3**	**3**	**2**	**2**	**2**	**1**

Answers to Q.10 to 14:

Lecturer	Sex	Subject	Relative Age
Q	F	**History**	4/5
R	M	**Biology**	1
T	M	**Mathematics**	3
S	F	**Sociology**	6
P	F	**Physics**	2
U	F	**Geography**	5/4

The smaller the number., the lesser the age.

Answers to Q.15 to 19:

Student	Subject	Author
R	Physics	Gupta
M	Chemistry	Edgar
N	Maths	Khanna
V	English	Harish
S	Biology	D'souza

Answers to Q.20 to 24:

It is given that A and G sit on the Ist and the 3rd bench respectively.

Now, since F is a boy who sits with only B, B has to be a female. F and B sit on the 2nd bench.

On the basis of the above information, we can summarize the details as follows:

1st Bench	A	—
2nd Bench	F(+)	B(–)
3rd Bench	G	—

(+) Indicates male; (–) indicates female

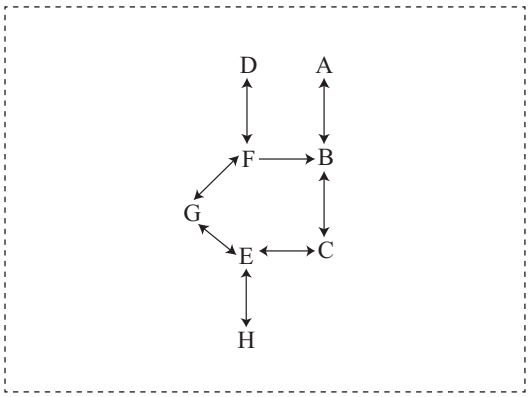
Now, since C (a girl) does not sit with A, E and D, it means that C sits on the 3rd bench (on the 2nd bench only two students sit). This by eliminating, E and D sit on the Ist bench.

Now, using the statement, "A sits with his best friend", hence A is a male. Again, E is a male as he is the brother of C. Eliminating the choices, D is a female but the sex of G is not known.

Exercise 5

Answers to Q.1 to 4:

Let us first make the network of connections:



1. As F to B is one way route. A to G will not be possible if E to C is cut.

   Hence, option (b) is the correct answer.

2. The path with the minimum possible cities in between will be D – F – G – E.

   Hence, option (a) is the correct answer.

3. The route will be A – B – C – E – F – G

   Hence, option (b) is the correct answer.

4. Making F – B a two way connection will give us the route A – B – F. In this case, only one city will need to be crossed.

   Hence, option (a) is the correct answer.

Answers to Q.5 to 7:

5. Option (b) & (c) are not possible as there is G but not E. Option (d) is not possible as all members are from right group. Option (a) is a valid committee.

   Hence, option (a) is the correct answer.

6. If G is there in committee, E will be also there. So, there are 2 members from the right group. So, coordinator must be from the left group.

   Hence, option (c) is the correct answer.

7. As F & C must be together, so only F is not possible. So, FBA is not a possible group.

   Hence, option (a) is the correct answer.

Answers to Q.8 to 12:

Let us prepare the scenario first:

Seven friends are P, Q, R, S, T, V and W. Seven destinations: Delhi, Chennai, Hyderabad, Bangalore, Kolkata, Chandigarh and Patna.

Let us proceed with the following concrete information:

R-Patna – Monday; Bangalore – Saturday

P-Chandigarh; S-Kolkata – Friday, W-Delhi

With the help of the above information we get the following table:

Table 1

No.	Person	Destination	Day
1.	R	Patna	Monday
2.		Banglore	Saturday
3.	P	Chandigarh	
4.	S	Kolkata	Friday
5.	W	Delhi	

Using the indirect information—Since Q did not leave for either Hyderabad or Bangalore, the above table helps us conclude that Q left for Chennai.

Now, T left the next day of P's departure and a day previous to W's departure. Using the above table, P and W did not depart on Monday, Saturday or Friday. T did not depart on Monday or Friday.

Now P can't depart on Sunday or Thursday because T did not depart on Monday or Friday respectively. P can't depart on Wednesday because he did not depart on Friday. So, by elimination, P left for Chandigarh on Tuesday.

Let us tabulate the information received till now:

Table 2

No.	Person	Designation	Day
1.	R	Patna	Monday
2.		Bangalore	Saturday
3.	P	Chandigarh	Tuesday
4.	S	Kolkata	Friday
5.	W	Delhi	Thursday
6.		Hyderabad	
7.	Q	Chennai	

Finally, since T left for his destination on Wednesday, it is obvious that T's destination is Hyderabad.

Hence, V is going to Bangalore and Q left for Chennai. The person left for Bangalore, left on the left day of week. So, V and Q left on Sunday & Saturday respectively.

So, the final table will look like:

Table 3

No.	Person	Designation	Day
1.	R	Patna	Monday
2.	V	Bangalore	Sunday
3.	P	Chandigarh	Tuesday
4.	S	Kolkata	Friday
5.	W	Delhi	Thursday
6.	T	Hyderabad	Wednesday
7.	Q	Chennai	Saturday

Answers to Q.13 to 16:

Order	Doctor	Duration of meeting	Gap (in minutes)
1.	O	9 a.m. – 9.30 a.m.	25
2.	S	9.55 a.m. – 10.25 a.m.	25
3.	R	10.50 a.m. – 11.20 p.m.	25
4.	M	11.45 a.m. – 12.15 p.m.	25
5.	Q	12.40 p.m. – 1.10 p.m.	50
6.	P/N	2 p.m. – 2.30 p.m.	25
7.	N/P	2.55 p.m. – 3.25 p.m.	-

Answers to Q.17 to 21:

Let us first find out the scenario – There are three colleges, three disciplines and seven students. Further, we know that three of them are in the Commerce discipline and two each in Arts and Science.

We have been given that B and G are in Science, F in Arts and D is not in Commerce. This implies that D is in Arts. By elimination, the remaining (C, J and H) are in Commerce.

Thus we get the following table:

Table 1

Discipline	Students
Science	B and G
Arts	F and D
Commerce	C, J and H

Now, let us proceed to make a table which correctly matches the colleges and the students/discipline.

It is given that D (a male student) studies in college R only with B. This implies that only two students study in college R and B is a female. (Note that there are at least one boy and one girl in each college).

Further, it is known that B's sister G, and H (a female student) study in the same college. Now, this college can't be P because in that case there will be only a single student (among the given students) in college Q. Hence, H and G study in college Q.

Still we do not know about the sex of J and C. Hence, the above information can be tabulated as follows:

Table 2

College	Students
P	J and C
Q	F (male), H (female) and G(female)
R	D (male) and B (female)

18. If B & C are interchanged, C must be female as B is male. J must be a boy as B is female & there must be 1 boy & 1 girl in each college. So, C, G, H & B are girls.

Hence, option (b) is the correct answer.

21. D & F are males. Any 1 from J & C is a male & other is female. So, the 3 boys cannot be identified.

Hence, option (d) is the correct answer.

22. 'Father of the brother of my father' is also the father of my father and hence is my (woman's) grandfather.

Hence, option (c) is the correct answer.

23. For page 1 to 9, there are 9 digits. From 10 to 99 there are 180 digits from 100 to 999 there are 2700 digits. As, 1890 = 9 + 180 + 1701. So, the number of pages must be between 100 & 999. As, 1701/3 = 567. Now, counting from 100, the 567th member is 666. So, there are 666 pages in book.

Hence, option (c) is the correct answer.

Answers to Q.24 to 25:

Order of novel reading is as follows:

B – C – E – A – D.

Exercise 6

Answers to Q.1 to 4:

We can arrange the 5 students in following table with each column shows names; Area & musical instruments respectively.

Name	Area	Musical Instrument
Monica	Medical	Violin
Pragya	Architecture	
Rehana	Arts	Tabla
Yamini		
Nikita		Sarod

1. Nikita plays sarod.
2. It may be engineering or architecture or management.
3. Either Pragya or Yamini plays sitar.
4. We can find the exact discipline & musical instrument for only 2 students Monica & Rehana.

Answers to Q.5 to 10:

5. We cannot find a definitive answer to this question because the solution give rise to multiple over-lapping.

Hence, option (e) is the correct answer.

6. Looking at the elective D, total number of points scored = 4 points and the number of students = 3. Since the range of the points obtained is 1–2, hence the maximum 2 points can be obtained by only one student and remaining two students are getting one mark each. In A & C too any 1 student may get 1 mark. But we may assume they are same as 2 who get 1 mark in D.

Hence, option (c) is the correct answer.

7. Same as that of Q5. Hence, cannot be determined.

Hence, option (e) is the correct answer.

8. To find the minimum number of students with more than 3 points, we should try to accommodate as much students as possible at 3 points each. And after we have accommodated enough students at 3 points each, remaining students will be accommodated at more than 3 points.

In case of elective A, maximum number of students who can get 3 points = 3. Hence, remaining 3 students are getting a total of 12 points. And in no way these 3 students are getting 3 points or less than 3 points to satisfy the conditions given.

In case of elective C, the minimum number of students that can be accommodated at 3 points each = 3. Hence, total points = 9. Now remaining 19 points are to accommodated among 4 students and none of these five students can get 3 points or less than 3 points [Otherwise then 16 points will be required to be accommodated among 3 students and in that case at least one student will get more than 5 points and that is a contradiction].

We can further see that each of these students will get more than 3 points now to satisfy the given conditions.

Hence, minimum number of the students who have scored more than 3 points in at least one elective = 4.

Hence, option (e) is the correct answer.

9. Total points obtained by the students of elective A = 21

Total points obtained by the students of elective B = 9

Total points obtained by the students of elective A + B = 30

Total number of students = 9

Hence, average = 30/9

Hence, option (a) is the correct answer.

10. In this question, at least one student is going to be overlapped. And without knowing the score of this student (or other overlapped students if any), we cannot find the average score of the elective N.

Hence cannot be determined.

Hence, option (e) is the correct answer.

Answers to Q.11 to 13:

Jagmohan Mundra

1. A – English – Commercial
2. C – English – Arts
3. D – Hindi – Commercial

Steven Spielberg

1. B – English – Arts
2. E – English – Arts
3. F – Hindi – Commercial

Answers to Q.14 to 18:

Following is the structure of the stops on this route:

N	L	P	O	Q	M
Step 1	Step 2	Step 3	Step 4	Step 5	Step 6

or

O	Q	P	N	L	M
Step 1	Step 2	Step 3	Step 4	Step 5	Step 6

Now all the questions can be answered.

18. NLPOQM
NLPQOM
OQPNLM
QOPNLM
These are 4 possibilities for fixing the stops & routes by relaxing third observation.

Hence, option (d) is the correct answer.

Answers to Q.19 to 20:

19. We can eliminate options (b), (d) & (e) as movie from England must be last to be played. Option (c) can be eliminated as movie from China can be shown after movie from Austria.

Hence, option (a) is the correct answer.

20. The movie from England must be shown at last. So, movie from Denmark must be shown as early as possible. But it can be shown after movie from Bhutan. So, the first & second movies must be from Bhutan & Denmark. Movies from Austria & China are shown at third & fourth place.

Hence, option (c) is the correct answer.

Exercise 7

Answers to Q.1 to 3:

1. As green side is between red & black sides so, 2 of the 4 adjoining sides of green side must be of red & black colours. As, blue side is adjacent to both brown & white side. So, it must be opposite to green side. So, the 4 colours adjacent to green side are black, white, brown & red.

Hence, option (d) is the correct answer.

2. As red colour is on bottom face & it is opposite to black coloured face. So, the top face must be of black colour.

Hence, option (a) is the correct answer.

3. From 1st & 2nd answer, we know red & black colour are on opposite sides. Similarly green & blue colour are on opposite faces. So, brown & white must also be colour on opposite faces. So, brown & white cannot be the adjacent sides.

Hence, option (b) is the correct answer.

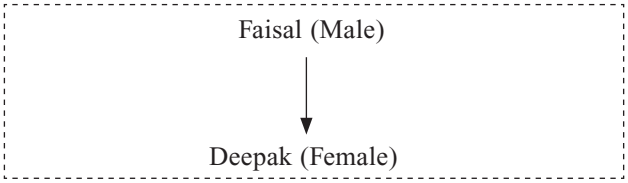
Answers to Q.4 to 8:

We get the following information using the statements given:

Statement 1:

1st Generation	
2nd Generation	
3rd Generation	
4th Generation	XX
5th Generation	
6th Generation	Charu

Statement 2:



Faisal and Deepak will be in consecutive generations.

4. If Atul is the grandson of Binod, then the only possibility for this family is:

1st Generation	Faisal
2nd Generation	Deepak
3rd Generation	Binod
4th Generation	XX
5th Generation	Atul
6th Generation	Charu

Hence, Atul is in the second last generation. Since Atul is the grandson, so Atul is a male.

Hence, option (d) is the correct answer.

5. If Binod is the eldest member in the family, then following is the arrangement of the people in this family:

1st Generation	Binod
2nd Generation	Faisal
3rd Generation	Deepak (F)

4th Generation	XX
5th Generation	Atul
6th Generation	Charu

Hence, Deepak is grandmother of Atul.

Hence, option (a) is the correct answer.

6. Using the arrangement given in Q 5, we can see that Atul can be mother or father of Charu. Hence, cannot be determined.

Hence, option (d) is the correct answer.

7. 1. Faisal (Male)
2. Deepak (Female)
3. Binod
4. X
5. Atul (Male)
6. Charu

So, there is just 1 combination of family which is possible.

Hence, option (a) is the correct answer.

8. Grandfather of Charu must have been in the fourth generation = 3rd last generation.

Hence, option (d) is the correct answer.

9. If C is fifth then B must be fourth as it is just before C.

Hence, option (d) is the correct answer.

10. B cannot be 3rd as then C must be 4th & both C & D will be separated by lunch break which is not possible.

Hence, option (c) is the correct answer.

11. D must be 1st as he cannot be last as per statement of question. So, there are 2 possibilities. D, F, _, B, C, _ or D, F, _, _, B, C.

Hence, option (d) is the correct answer.

12. D must be 1st, B & C can be 2nd & 3rd. So, A must be 4th.

Hence, option (c) is the correct answer.

Answers to Q.13 to 20:

13. Total number of selections = $2^3 = 8$

Total selections possible = 8 – 1 = 7

Hence, option (c) is the correct answer.

14. (P1, P2), (P1, P2, P3)

Hence, option (b) is the correct answer.

15. P1, P3, (P1, P2), (P2, P3)

Hence, option (c) is the correct answer.

16. P1, P3, (P1, P3), (P2, P3), (P1, P2, P3),

Hence, option (a) is the correct answer.

17. P2, P3, (P1, P3), (P2, P3), (P1, P2, P3)

Hence, option (a) is the correct answer.

18. (P1, P2)

Hence, option (b) is the correct answer.

19. P1, P3, (P3, P2)

Hence, option (d) is the correct answer.

20. None of the selections can be done.

Hence, option (a) is the correct answer.

Answers to Q.21 to 26:

Sum of ranks of all the 16 players = 136.

Sum of the ranks of all the universities is same, hence, their sum should be divisible by 5. So, their sum should be either 135, or 130, or 125 or 120. In turn, the rank of the race-track maker will be either 1, or 6, or 11 or 16 respectively.

Since race-track maker comes in between the two athletes of university B, hence rank cannot be 1 or 16.

Case 1 – If the rank of race-track maker = 6

Hence, the sum of the ranks obtained of all the universities = 130, and so the sum of ranks of all the athletes of each of the universities = 26.

Since the race track maker comes in between two athletes of university B, hence the ranks obtained by two of the athletes of university B are 5 and 7. Hence the rank of the third athlete of university B = 26 – (5 + 7) = 14

Now the product of ranks of all the athletes of university B = Product of ranks of all the athletes of university C.

Product of ranks of university B contains 72 inter alia, and no other exponent of 7 is possible in the whole series of 1 to 16 for university C.

Hence, we can conclude that rank of race-track maker cannot be 6.

Now the only possible rank of race-track maker = 11.

Case 2 – If the rank of race-track maker = 11

Hence, the sum of the ranks obtained of all the universities = 125, and so the sum of ranks of all the athletes of each of the universities = 25.

Since the race track maker comes in between two athletes of university B, hence, the ranks obtained by two of the athletes of university B are 10 and 12. Hence the rank of the third athlete of university B = 25 – (10 + 12) = 3

Hence the ranks of athletes of university B = 3, 10, 12

Now the product of ranks of all the athletes of university B = Product of ranks of all the athletes of university C.

Hence, the ranks of athletes of university C = 4, 6, 15

We can observe that the product and sum of the ranks of athletes of university B and C are same.

From the remaining ranks now, for the smallest product of the ranks of athletes such that their sum is equal to 25, the ranks should be 1, 8, 16 (University K).

Similarly, for the maximum product of the ranks of the athletes for the university A, ranks should be 13,7,5.

Hence the ranks for the athletes of the university L = 2, 9,14.

A	B	C	L	K
13 7 5	3 12 10	4 6 15	2 9 14	1 8 16