PRACTICE EXERCISES FOR REASONING

Practice Exercise – 1

Directions for questions 1 to 3: Select the correct alternative from the given choices.

1. Six persons – A to F stand in a queue, but not necessarily in the same order.
(i) Exactly two persons stand ahead of D and exactly two behind C.
(ii) Two persons stand in between A and E.
(iii) A stands exactly in between C and F.

(a) Who stands ahead of D but behind B?
(A) C (B) A (C) E (D) C or A

(b) How many persons stand behind B?
(A) Five (B) Two (C) Three (D) Four

2. Five persons (A to E) sit in a row, not necessarily in the same order.
(i) B is to the right of D but is not at any one of the ends.
(ii) C is to the left of A.
(iii) D is to the immediate left of E, who is at the center.

(a) Who is to the immediate left of B?
(A) C (B) D (C) A (D) E

(b) What (is/are) the order/s in which these five persons can sit?
(A) A C E D B (B) C A E B D
(C) A B E C D (D) C D E B A

3. Five persons – Bala, Ajay, Swaroop, Preeti and Harini are standing in a queue. Bala is ahead of Swaroop, who is behind Preeti, who is ahead of Harini, who is behind both Bala and Ajay. Swaroop is behind Ajay. The tallest person is standing behind Harini. The shortest person is ahead of both Ajay and Bala. Bala is standing in the second position. Which of the following cannot be true?
(A) Swaroop is the tallest person.
(B) Preeti is the shortest person.
(C) Ajay is standing at the third position from the front end of the row.
(D) Harini is standing at the fourth position from the rear end of the row.

Directions for questions 4 to 7: These questions are based on the following information.

Seven persons – A through G are sitting in a row facing the same direction, not necessarily in that order. The following information is known about their seating arrangement.

(i) B is sitting to the immediate left of C.
(ii) D is sitting to the right of E.
(iii) The number of persons sitting to the left of G is the same as the number of persons sitting to the right of A.
(iv) F is sitting four places away to the left of E.

4. Who is sitting to the immediate right of C?
(A) A (B) G (C) E (D) F

5. How many persons are sitting between B and D?
(A) Four (B) Three (C) Two (D) One

6. Who is five places away from F?
(A) E (B) A
(C) D (D) Cannot be determined

7. Who among the following can be to the immediate left of G?
(A) C (B) D (C) E (D) B

***Directions for questions 8 to 10*:** These questions are based on the following information.

Seven persons Swathi, Preethi, Deepthi, Keerthi, Pragati, Riti and Harati are standing in a queue, but not necessarily in that order. The following information is known about them.

(i) Exactly one person is standing ahead of Preethi.
(ii) Swathi is behind Preethi and ahead of Riti.
(iii) Only two persons are standing behind Harati.
(iv) The number of persons standing ahead of Riti is the same as the number of persons standing behind Keerti.
(v) Pragati is ahead of Deepthi, who is not the second person from the rear end.

8. Who stands immediately in front of Harati?
(A) Swathi (B) Riti
(C) Keerthi (D) Deepthi

9. What is the position of Swathi from the front end of the queue?
(A) Third (B) Fourth
(C) Sixth (D) Seventh

10. How many persons are standing ahead of Riti?
(A) Six (B) One (C) Five (D) Three

Directions for questions 11 to 14: These questions are based on the following information.

A, B, C, D, E and F are six friends appearing for a Management entrance test. They applied together and were surprised to see that though they were all seated in the same row, their hall ticket numbers were not in serial order. Further, the following information was available.

(A) Neither A nor F is seated at the ends, and the persons sitting at any ends do not have hall ticket numbers whose last digit is 2.
(B) A and F are adjacent to each other, while B and E are adjacent to each other and are to the left of A. The remaining two friends are also adjacent to each other. Also A and F have hall ticket numbers whose first digit is 4.
(C) Each hall ticket number is of two digits which is a multiple of 6, such that there are three pairs of consecutive multiples of 6. The sum of each pair is a multiple of 10.
(D) They are seated in such a way that the hall ticket numbers that end with the same digit are in ascending order from left to right.
(E) E is not at any end and the same is true of D, who is not adjacent to A.

11. In how many ways can the six friends be seated?

12. If A's hall ticket number ends with the digit '2', then what is the hall ticket number of F?

13. The lowest of the hall ticket numbers of the six friends is

14. What is the hall ticket number of the person sitting to the immediate right of F?

Directions for questions 15 to 18: These questions are based on the following information.

Each of – S, T, U, V, W, X, Y and Z lives on a different floor of an apartment. (The ground floor is named as the first floor, the floor above the ground floor is named as the second floor and so on). The following information is known about them.

T lives on an even-numbered floor. There are exactly four floors between T's floor and Z's floor. S and W do not live on consecutive floors. Y lives immediately below U's floor and above V's floor. V lives on an odd-numbered floor but is not the first floor. The number of floors between V's floor and X's floor is equal to the number of floors between W's floor and S's floor. The number of floors between S's floor and X's floor is not less than one. There are at least two floors above and atleast two floor's below the floor on which Z lives.

15. Three of the following four are alike in a certain way based on the given information and so form a group. Find the one which does not belong to that group.
(A) T, V (B) Z, U (C) X, W (D) X, U

16. How many floors are there between U's floor and X's floor?
(A) Two (B) Three (C) Four (D) One

17. Who lives just above S's floor?
(A) Z (B) Y (C) X (D) V

18. Which of the following pairs of persons live on consecutive floor?
(A) U, V (B) S, X (C) T, Y (D) X, W

Directions for questions 19 to 22: These questions are based on the following information.

Seven persons I, J, K, L, M, N and O sit in a row. Some are facing north and some are facing south. (When it is stated that, two or more persons are facing the same direction it means either all of them are facing either north or south. Two persons are facing different directions it means, if one of them faces north, another one faces south and vice versa).

N is three places away from L and is second to the right of M, who faces south. L sits at an end. M and L are not adjacent to each other and are facing different directions. I is to the immediate left of N. J is adjacent to neither M nor I. K is second to the left of I. I and N face different directions. O is to the left of J and to the right of K. O faces north.

19. Which of the following is the position of O?
(A) Third to the right of I
(B) At the end of the row
(C) Fifth to the left of K
(D) Two places away from M

20. How many persons are facing South?
(A) One (B) Two (C) Three (D) Four

21. Who sits to the immediate left of K?
(A) I (B) M (C) N (D) J

22. How many persons sit between J and O?
(A) One (B) Two (C) Three (D) Four

Directions for questions 23 to 26: These questions are based on following information.

Six boys (B_1, B_2, B_3, B_4, B_5 and B_6) are sitting in one row and six girls (G_1, G_2, G_3, G_4, G_5 and G_6) are sitting in a different row. Each boy in the row is facing a different girl in the other rows.

It is also known that;
(i) B_3 is sitting to the immediate right of B_6, B_3 is not opposite G_3.
(ii) Neither B_4 nor B_1 are at the ends. G_2 is not at the right end.
(iii) B_6 is sitting opposite G_5, who is to the immediate left of G_2, B_2 is sitting opposite G_1.
(iv) G_6 is sitting to the left of G_3 and G_1.
(v) B_3 is not sitting at any end.
(vi) G_6 is not any end.

23. Which of the following pairs is sitting at the ends?
(A) B_3 and G_6 (B) B_5 and G_2
(C) B_5 and G_4 (D) B_6 and G_5

24. Who is sitting opposite G_3?
(A) B_1 (B) B_4
(C) B_3 (D) Cannot be determined

25. If B_1 is sitting to the immediate right of B_2, then who is sitting to the immediate left of B_6?
(A) B_1 (B) B_3
(C) B_4 (D) Either B_1 or B_3

26. Who is sitting second to the left of the girl sitting opposite B_3?
(A) G_2 (B) G_5 (C) G_4 (D) None

Directions for questions 27 to 30: These questions are based on the following information.

Nine persons – A through I, were sitting in three rows and three columns, facing north, in which A, F, G, I and C sat along the diagonal positions.
(i) Two persons were sitting to the right of A.
(ii) D and B were not sitting in the same row or in the same column.
(iii) H was sitting in the last row and G was sitting to his/her immediate right.
(iv) E was sitting immediately ahead of I.
(v) F was sitting exactly at the centre of the middle row.

27. Who is sitting to the immediate left of D?
(A) B (B) D
(C) E (D) Cannot be determined

28. If B sits behind C, then who sit behind D?
(A) F (B) B
(C) A (D) More than one person

29. Which among the following statements is redundant?
(A) F was sitting exactly at the centre of the middle row.
(B) E was sitting infront of I.
(C) H was sitting in the last row and G was sitting to the immediate right of him.
(D) D and B were not sitting in the same row or same column.

30. Which of the following statements cannot be true?
(i) C sits to the right of D
(ii) C sits to the left of B
(iii) C sits infront of B
(iv) C sits behind D
(A) All (i), (ii), (iii), (iv)
(B) Only (ii) and (iv)
(C) Only (i) and (iv)
(D) Only (ii), (iii) and (iv)

ADDITIONAL QUESTIONS FOR PRACTICE

Directions for questions 1 to 4: These questions are based on the following information.

Six persons A, B, C, D, E and F are sitting in row-I facing North and six persons P, Q, R, S, T and U are sitting in row-II facing South, but not necessarily in the same order. Each person from one row faces a different person from the other row. The following information is known about them.

(i) B is to the immediate left of C, who does not face Q. Q is third to the left of R.
(ii) Neither Q nor C sit at the ends. B is to the right of F and D.
(iii) D faces the person who is third to the right of T, who faces E.
(iv) P sits second to the left of the person who faces A.
(v) S is not an immediate neighbour of P.

1. Who faces F?
(A) P (B) Q (C) S (D) U

2. Who sits second to the left of P?
(A) T (B) Q (C) U (D) S

3. Which of the following is true based on the given information?
(A) P faces F.
(B) S sits second to the left of the person who faces B.
(C) A, P, T and E are sitting at the ends.
(D) A sits second to the left of D.

4. What is the position of P with respect to T?
(A) Third to the left (B) Third to the right
(C) Second to the left (D) Fourth to the right

Directions for questions 5 to 8: These questions are based on the following information.

Trinesh, Rajesh, Bhanu, Ravi, Barath, Laxmi and Vinay are seven friends sitting in a row facing North, not necessarily in the same order.

(i) Rajesh is sitting exactly between Ravi and Bhanu.
(ii) Vinay is sitting to the left of Ravi, but not at any end.
(iii) Bhanu is neither to the left of Rajesh nor adjacent to Rajesh.
(iv) Laxmi is sitting second to the left of Barath.

5. Who is sitting to the immediate right of Trinesh?
(A) Vinay (B) Ravi (C) Rajesh (D) Barath

6. How many persons are sitting between Laxmi and Bhanu?
(A) One (B) Two (C) Three (D) More

7. What is Lakshmi's position, with respect to Ravi?
(A) Second to the left
(B) Immediate left
(C) Immediate right
(D) Three places away

8. Three of the following four are alike in a particular pattern hence form a group. Find the one which does not belong to that group.
(A) Ravi, Laxmi (B) Barath, Rajesh
(C) Bhanu, Barath (D) Vinay, Trinesh

Practice Exercise – 2

Directions for questions 1 to 4: Select the correct alternative from the given choices.

1. Six persons – A through F are sitting around a circular table such that A is sitting two places away to the left of E, who is not adjacent to either C or F. D is to the immediate right of E. A is adjacent to both B and F. Who is sitting opposite D?
(A) A (B) B
(C) C (D) F

2. Six friends – P through U are sitting at the vertices around a hexagonal table. S is sitting adjacent to T and Q. Q is sitting to the immediate left of U. P is sitting to the right of R. Who is sitting opposite R?
(A) T (B) Q
(C) S (D) U

3. Six persons – A through F sit around a rectangular table, not necessarily in the same order. Two persons sit along each of the longer sides and one sits along each of the shorter sides. Further it is known that
(i) B is to the immediate left of D but is not adjacent to F. B is at one of the shorter ends.
(ii) C sits opposite E but is not adjacent to D.

Who sits opposite B?
(A) E (B) A (C) F (D) C

4. Six Persons – A through F are seated around a circular table, but not necessarily in the same order.
(i) A is to the immediate left of D.
(ii) B is three places away from E but not adjacent to A.
(iii) C is to the immediate right of F.

Who is two places away to the left of E?
(A) C (B) F (C) B (D) D

Directions for questions 5 to 7: These questions are based on the following information.

Eight persons – Ravi, Ghansyam, Abhijeet, Sohail, Badrinath, Charan, Harish and Tarun, are sitting around a circular table. Charan is sitting opposite Sohail. Abhijeet is sitting two places away from Ghansyam. Ravi is sitting to the immediate right of Sohail but not adjacent to Tarun. Neither Charan nor Tarun is sitting adjacent to Ghansyam.

5. Who is sitting opposite Badrinath?
(A) Harish (B) Abhijeet
(C) Ghansyam (D) Cannot be determined

6. Who is sitting opposite Ravi?
(A) Tarun (B) Harish
(C) Badrinath (D) Abhijeet

7. Who is sitting two places away to the left of Tarun?
(A) Harish (B) Ravi
(C) Sohail (D) Charan

Directions for questions 8 to 10: These questions are based on the following information.

Seven persons A, B, C, D, E, F and G are sitting around a circular table, facing the centre not necessarily in that order. C is sitting third to the left of E. D is not the neighbour of either C or E. B is sitting second to the right of F, who is not adjacent to E. A is not adjacent to D.

8. Who is sitting to the right of F?
(A) C (B) A (C) D (D) B

9. Who is sitting in between D and E?
(A) A (B) G (C) F (D) C

10. Who is sitting the to left of A?
(A) B (B) F (C) C (D) E

Directions for questions 11 to 14: These questions are based on the following information.

Six persons – Anvesh, Dinesh, Suresh, Ganesh, Naresh, Avinash are sitting around a circular table not necessarily in the same order. Among them three persons are facing away from the centre and three persons are facing the centre. Ganesh is facing towards the centre and is sitting second to the left of Dinesh, who is adjacent to Suresh. Anvesh who is facing away the centre, is sitting to the immediate right of Avinash, who is an immediate neighbour of Dinesh, who is facing away from the centre.

11. Who among the following are facing towards the centre?
(A) Suresh, Dinesh (B) Avinash, Naresh
(C) Ganesh, Avinash (D) Suresh, Naresh

12. Who is sitting to the immediate left of Suresh?
(A) Ganesh (B) Dinesh
(C) Anvesh (D) Avinash

13. If Anvesh and Avinash interchange their positions, then who is sitting to the immediate right of Anvesh?
(A) Ganesh (B) Avinash
(C) Naresh (D) Dinesh

14. Who is sitting in the opposite position of Anvesh?
(A) Suresh (B) Ganesh (C) Dinesh (D) Naresh

Directions for questions 15 to 18: These questions are based on the following information.

Eight persons P, Q, R, S, T, U, V and W are sitting around a circular table, but not necessarily in the same order. Some of them are facing the centre and some of them are facing away from the centre. The following information is known about them.

S is facing the centre and sits second to the left of V. P sits to the immediate left of S but is not the neighbour of V. Q is the neighbour of P and W. R sits third to the right of Q. T sits second to the left of P. Neighbours of R are not facing the same direction. Neighbours of U are facing the same direction, as in which P is facing.

15. Who sits second to the left of T?
(A) P (B) R
(C) S (D) Either P or R.

16. How many persons are facing away from the centre?
(A) Four (B) Five
(C) Six (D) Cannot be determined

17. Who sits third to the right of W?
(A) S (B) V (C) T (D) R

18. How many persons are sitting between P and V, counting from the right side of P?
(A) One (B) Two (C) Three (D) Four

Directions for questions 19 to 22: These questions are based on the following information.

Six friends – Durgesh, Dileep, Devi, Deepa, Divya and David are sitting around a rectangular table, not necessarily in the same order. Two persons sit along each of the longer sides of the table and one person sits along each of the shorter sides. It is known that Durgesh is sitting to the immediate right of Dileep. David is sitting opposite Divya and Deepa is to the immediate right of Divya. Devi is sitting opposite the person who is adjacent to Divya.

19. Who is sitting to the immediate right of Durgesh?
(A) Divya (B) David
(C) Devi (D) Deepa

20. Who is sitting second to the left of Divya?
(A) David (B) Durgesh
(C) Dileep (D) Deepa

21. Who is sitting opposite Deepa?
(A) Durgesh (B) Dileep
(C) Devi (D) David

22. Three out of the following four pairs are alike in a certain way based on the given information and so form a group. Find the one which does not belong to that group.
(A) David, Devi (B) Durgesh, Divya
(C) Dileep, Devi (D) Devi, Durgesh

Directions for questions 23 to 26: These questions are based on the following information.

Six MBA aspirants P, Q, R, S, T and U arrived in Hyderabad to participate in a group discussion (GD) for the twenty IIMs spread across India. The number of calls

received by each of them is a multiple of either 3, 4 or 5. They are to be seated around a circular table during the GD. Further, the following is known about them.

1. No two of them received the same number of calls. The lowest number of calls that a candidate among them received is 5, while none of them received a call from all the twenty IIMs.
2. The candidates are seated in such a manner that the number of calls received by each person increases as we move in anti-clockwise direction starting from the candidate who received the lowest number of calls.
3. P and S are opposite each other and together they got a call from each of the 20 IIMs. But no IIM sent calls to both of them.
4. The person seated to the immediate left of P is Q, who received the lowest number of calls.
5. R received nine calls and is opposite T.
6. The highest number of calls received by a person is an odd number.

23. What is the number of calls received by U?

24. What is the difference between the highest and the lowest number of calls received in the group?

25. What is the number of calls received by the person who sits two places away to the right of T?

26. The ratio of number of aspirants with even number of calls to that of with odd number of calls is? (Give ratio as decimal number)

Directions for questions 27 to 30: These questions are based on the following information.

Eight persons – P, Q, R, S, T, U, V and W – are sitting around a circular table, facing the center, not necessarily in the same order. Each of them is learning a different language among – Spanish, Arabic, Bengali, Chinese, Dutch, French, Greek and Hindi. The following information is known about them.

P sits third to the left of the person who is learning Greek. Only two persons sit between R and the person who is learning Greek. The person who is learning Dutch is a neighbour of either P or R but not both. W is second to the left of the person who is learning Hindi, who is adjacent to P.

Q, who speaks Bengali, is two places away from the one who speaks French. Neither P nor W is learning French or Chinese. The persons who are learning French and Chinese sit adjacent to each other. S sits second to the right of the person who is learning Spanish. Neither T nor V is learning Hindi. V is not learning Chinese.

27. Who sits second to the right of P?
(A) The person who is learning Chinese
(B) The person who is learning Arabic
(C) U
(D) S

28. How many persons sit between T and the person who is learning Arabic, when counted from the right of T?
(A) Four (B) Three (C) Two (D) One

29. Which languages is T learning?
(A) Spanish (B) Chinese (C) Greek (D) Dutch

30. Who is learning Dutch?
(A) R (B) V (C) W (D) S

ADDITIONAL QUESTIONS FOR PRACTICE

Directions for questions 1 to 3: These questions are based on the following information.

Eight persons A, B, C, D, E, F, G and H are sitting around a circular table. Not all of them are facing the centre of the table. Some are facing the centre and some are facing away from the centre. It is known that, H is third to the right of A, who is third to the left of D. E is third to the right of C. F, who is facing the centre, is to the immediate right of H. B is sitting to the immediate left of H and immediate right of D. C is to the immediate left of F. C and G are facing the same direction.

1. Who is sitting second to the right of F?
(A) A (B) G (C) B (D) F

2. Which direction is G facing and who is to the right of G?
(A) Centre, B
(B) Away from the centre, E
(C) Centre, E
(D) Cannot be determined

3. Which direction is E facing?
(A) Centre
(B) Away from the centre
(C) Same as C is facing
(D) Cannot be determined

Directions for questions 4 to 7: These questions are based on the following information.

A, B, C, D, E, F, G and H are sitting around a square table, facing the centre. One person is sitting at each of the four corners and one person is sitting along each side of the table.
(i) B sits diagonally opposite D.
(ii) D sits third to the right of A.
(iii) C sits second to the right of G.
(iv) E sits adjacent to neither G nor C, but sits at a corner.
(v) H is not adjacent to D.

4. Who is opposite C?
(A) E (B) G (C) A (D) F

5. Who sits second to the left of F?
(A) G (B) E (C) H (D) A

6. Who sits third to the right of G?
(A) F (B) A (C) B (D) D

7. Which of the following is true?
(A) F sits at the corner.
(B) H faces C.
(C) C sits second to the right of A.
(D) E sits diagonally opposite H.

Practice Exercise – 3

Directions for questions 1 to 3: Select the correct alternative from the given choices.

1. Each of the five buildings A, B, C, D and E is painted in a different colour among red, blue, violet, orange and white, not necessarily in the same order. Building A is not painted in red and D is not painted in violet or white. Building B is painted blue and C is painted orange. What is the colour in which building E is painted?
(A) Violet (B) White
(C) Orange (D) Cannot be determined

2. Each of P, Q, R, S and T belongs to a different profession among - teacher, doctor, lawyer, police-officer and banker. P is the police-officer and Q is neither the doctor nor the lawyer. R is the teacher and S is neither the banker nor the lawyer. Who among them is the banker?
(A) T (B) Q
(C) Q or T (D) None of the above

3. Among a group of 12 persons A through L four are journalists, four are politicians and four are RTI activists.
The following information is known about them.
(i) No two among C, H and G is of the same profession.
(ii) Neither E nor F is of the same profession as B or L.
(iii) B and H are politicians and G and L are journalists.
(iv) J and K are of the same profession.
(v) A is of the same profession as L. I and D are of different professions.

Which among the following is true?
(A) L and D are journalists.
(B) I and C are RTI activists.
(C) H and K are politicians.
(D) F and D are RTI activists.

Directions for questions 4 and 5: These questions are based on the following information.

Each of the seven persons – Aravind, Kranthi, Sunil, Rajesh, Kapil, Lala and Thomas – is from a different profession among lawyer, doctor, engineer, professor, scientist, journalist and architect. We also have the following information about them.
(i) Either Aravind or Sunil is the doctor.
(ii) Neither Sunil nor Lala is the engineer.
(iii) Kranthi is either the lawyer or the professor.
(iv) Rajesh is the scientist.
(v) Kapil is either the architect or the lawyer.
(vi) Thomas is either the doctor or the architect.

4. Which of the following is the correct pair of the person and his profession?
(A) Sunil – Journalist (B) Lala – Journalist
(C) Kapil – Professor (D) Aravind – Architect

5. Who is the professor?
(A) Kapil (B) Aravind
(C) Sunil (D) Kranthi

Directions for questions 6 to 8: These questions are based on the following information.

Each of the five persons – P, Q, R, S and T works with a different company among CTS, PTS, DTS, HTS and LTS and stays in a different city among Delhi, Mumbai, Kolkata, Chennai and Hyderabad.

Further it is known that:
(1) No two of them stay in the same city. Also, no two of them work with the same company.
(2) Q does not work with PTS and P does not stay in Delhi.
(3) Neither P nor Q stays in Kolkata and also neither P nor Q works with LTS.
(4) R stays in Hyderabad. S works with CTS but does not stay in Mumbai or in Delhi.
(5) The person who works with DTS stays in Kolkata.

6. Who among them stays in Mumbai?
(A) P (B) Q (C) R (D) S

7. The person working with LTS stays in
(A) Mumbai (B) Delhi
(C) Hyderabad (D) Chennai

8. Which of the following is true?
I. Q stays in Chennai.
II. R works with PTS.
III. P works with HTS.
(A) Only II
(B) Only III
(C) Both I and II
(D) None of I, II and III

Directions for questions 9 to 13: These questions are based on the following information.

Each of the eight employees A, B, C, D, E, F, G and H of a company work on one of the days among Monday, Tuesday, and Wednesday and in one of the shifts among I, II and III but not necessarily in the same order. There are at least two and at most three shifts on a particular day. No two persons working on the same day are in same shift.
Following information is known about them.
(1) There are only two shifts on Wednesday i.e., I and II. E does not work on Wednesday.
(2) B and D are the only two persons working in shift III.
(3) H and A work on Tuesday and Wednesday respectively. A does not work in shift II. H and A are in different shifts.
(4) C and H are in same shift, F and G are in same shift.
(5) F does not work on Tuesday.

9. Who works in shift I on Monday?
(A) E (B) B (C) G (D) F

10. Which of the following is the correct combination of person – day – shift?
(A) B – Wednesday – III (B) E – Monday – II
(C) G – Wednesday – I (D) C – Tuesday – III

11. Which of the following is the correct group of persons working on a Monday?
(A) B, E, F (B) B, D
(C) D, E, F (D) Cannot be determined

12. Which of the following is the correct group of persons working in shift I?
(A) F, G, A (B) A, F, H (C) E, H, C (D) B, D, C

13. If B and E work on the same day then which of the following is true?
(A) B and G work on same day.
(B) D and H work on same day.
(C) B does not work on the day on which F works
(D) D, E and F work on same day

Directions for questions 14 to 17: These questions are based on the following information.

A team of agricultural scientists is trying to figure out the banana production planning for the forthcoming year. A report on the same has provided the following information.

Andhra Pradesh, Tamil Nadu, Karnataka, Maharashtra and Gujarat are the five major producers of bananas in India. Each state has a production target (in tonnes) from among 1000, 2000, 3000, 4000, 5000, 7000 and 9000. Each state has a target area for cultivation, which is one among 500, 1000, 1500, 2000, 3000 and 3500 (in hectares). Further, the team gathered the following information.

1. Every state has a different targeted yield (in tonnes per hectares) with Gujarat having the highest target (yield) of 2.5, while Karnataka has the least yield target of 0.86. (Appx)
2. Andhra Pradesh has the lowest production and area targets among the five states with 2000 tonnes and 1500 hectares respectively, Although its targeted yield is greater than that of Maharashtra but less than that of Tamil Nadu.
3. Tamil Nadu has a yield target of 2 and the current area needs to increase production target by 1000 tonnes to equate Gujarat's target yield.
4. Karnataka has the same production target as Maharashtra but plans to utilize 500 hectares of more land than that of Maharashtra.
5. The states are ranked 1 to 5 in each of the parameters production target, area target and yield target, with the best rank being 1 and the last rank being 5. If two or more states have same value in production target or area target, the state with higher yield target is given better rank.

   Yield target = Production Target in tonnes/ Area Target in hectares

Directions for questions 14 to 17: Write the answer in the box given below each question.

14. What is Gujarat's rank in terms of area target?

15. What is the rank of Karnataka in terms of production target?

16. If Karnataka targets to move up three ranks and tie with the state currently holding that position in terms of yield, how much more should it produce (in tonnes) with the current targeted area?

17. If Tamil Nadu's actual yield likely to fall to 50% of the targeted value, how much area (in hectares) has to be increased or decreased to keep the production at the targeted level?

Directions for questions 18 to 22: Select the correct alternative from the given choices.

18. Which of the following is/are possible way(s) of selecting P and Q without violating the statement "If P is selected, then Q must be selected"?
(i) P alone without Q.
(ii) Q alone without P.
(iii) Both P and Q are selected.
(iv) Neither P nor Q is selected.

(A) Only (i) and (iii) (B) Only (ii) and (iii)
(C) Only (i), (iii) and (iv) (D) Only (ii), (iii) and (iv)

19. Which of the following is/are possible ways of selecting P and Q without violating the statement "Only if P is selected, then Q can be selected"?
(i) P without Q.
(ii) Q without P.
(iii) Both P and Q are selected.
(iv) Neither P nor Q is selected.

(A) Only (i) and (iii) (B) Only (ii) and (iii)
(C) Only (i), (iii) and (iv) (D) Only (ii), (iii) and (iv)

20. Which of the following is/are possible ways of selecting P and Q without violating the statement "Unless P is selected, Q cannot be selected"?
(i) P without Q.
(ii) Q without P.
(iii) Both P and Q are selected.
(iv) Neither P nor Q is selected.

(A) Only (i) and (iii) (B) Only (ii) and (iii)
(C) Only (i), (iii) and (iv) (D) Only (ii), (iii) and (iv)

21. Which of the following is/are possible ways of selecting P and Q without violating the statement "Either P or Q is selected"?
(i) P without Q.
(ii) Q without P.
(iii) Both P and Q are selected.
(iv) Neither P nor Q is selected.

(A) Only (i) and (ii) (B) Only (ii) and (iii)
(C) Only (i), (iii) and (iv) (D) Only (i), (ii) and (iii)

22. Two baskets are kept beside each other. Three ornaments made of wood, iron and copper are placed in one basket and three ornaments made of silver, gold and aluminium are placed in the other basket. Sanjivi is asked to select four ornaments, such that she selects two from each basket. If she selects the iron ornament she cannot select the aluminium one and if she selects the wooden ornament then she cannot select the silver one. In how many ways can she select the ornaments, if the aluminium ornament is one of the selected ornaments?
(A) Two (B) Three
(C) One (D) None of these

Directions for questions 23 to 25: These questions are based on the following information.

Out of five men – A, C, D, G and I – and five women – B, E, F, H and J – a group of five persons consisting of exactly two men is to be selected. It is also known that

(i) among A, C, D and F, exactly two persons are to be selected.
(ii) if A or D is selected, then none among E, F and H is to be selected.
(iii) if G is selected, neither H nor J can be selected.
(iv) I and E cannot be selected together.

23. Who among the men must be selected?
(A) C (B) D (C) G (D) I

24. If E is selected, who among the following must be selected?
(A) B (B) H (C) I (D) J

25. In how many different ways can the group be selected?
(A) Two (B) Three (C) Four (D) Five

Directions for questions 26 to 30: These questions are based on the following information given below.

There are six persons – a flutist, a percussionist, a violinist and a pianist in addition to two singers. Each of them is of a different age. The singers are neither the youngest nor the eldest and the difference between their ages is 30 years, which is the age of the flutist. The age of the percussionist is twice that of age of the flutist and 6 times the age of pianist, who is the youngest.

One of the singers is 10 years older than the youngest person, while the violinist is four times older than the youngest person.

26. In a team of four members consisting of exactly one singer, if the percussionist cannot be selected with the older singer, the flutist cannot be selected with the younger singer, which of the following is false?
(A) Flutist and the pianist can be selected together.
(B) Pianist and the percussionist can be selected together.
(C) Flutist and percussionist cannot be selected together.
(D) Violinist and pianist cannot be selected together.

27. If a team of four members is to be formed, such that the oldest and atleast a singer are to be included then in how many ways can the team be formed?
(A) 9 (B) 12 (C) 14 (D) 16

28. If a team of three members is to be formed with individuals whose age is less than 50 years, in how many ways can this team be formed?
(A) 2 (B) 4
(C) 6 (D) None of these

29. In a team of five members, if singer is not the youngest, which of the following is true about such team?
(A) The younger singer cannot be selected.
(B) The older singer cannot be selected.
(C) Both the singers cannot be selected.
(D) The pianist must be selected.

30. For a live performance, a singer and two other specialists in musical instruments (non-singer) were to be selected, then in how many ways can this be done?
(A) 8 (B) 10 (C) 12 (D) 14

ADDITIONAL QUESTIONS FOR PRACTICE

Directions for questions 1 to 3: These questions are based on the following information.

Each of the six persons A, B, C, D, E and F belongs to a different tribe among P, Q, R, S, T and U. Each of them belongs to one of the four countries Bhutan, China, Mangolia and Pakistan. Atleast one and atmost two persons belong to each of the four countries. Each of them knows exactly one language among Spanish, French, Dutch and Swedish. Atleast one and atmost two know each of these four languages. No two persons have the same combination of country and language. The following information is known about them.

(i) F and C belong to the same country and A and D belong to different countries.
(ii) E belongs to China and tribe T. The person who belongs to tribe P knows Swedish.
(iii) Two persons know Dutch. Two persons belong to Bhutan and two persons belong to Pakistan.
(iv) B belongs to Bhutan. Two persons, the one who belongs to the tribe R and B, know French.
(v) C knows Dutch and belongs to tribe Q.
(vi) Neither A nor the person who belongs to Pakistan know French.
(vii) The persons belonging to the tribes Q and U know the same language

1. To which country does A belong?
(A) Bhutan (B) Pakistan
(C) Mangolia (D) China

2. To which tribe does F belong?
(A) P (B) Q (C) R (D) S

3. Which of the following is true about the persons who belong to the tribes S and U?
(A) They both know the same language.
(B) One of them is F and the other one is B.
(C) They both belong to the same country.
(D) They do not have anything in common.

Directions for questions 4 to 6: These questions are based on the following information.

A team of five members has to be selected from a group of eleven members – A through K – for a quiz competition. The experts in each of the three areas of quiz are as follows:

General knowledge (GK) : A, C, E, H and I
Mental ability (MA) : A, C, E, F, G and J
Current affairs (CA) : B, C, D, E, G and K

The team must consist of

(i) a captain who is an expert in all the three areas.
(ii) a vice-captain, who is an expert in exactly two areas.

(iii) one person from each of the three areas, who is an expert only in that particular area.

(a) Further, C and G should not be selected together. If H is selected, neither B nor J is selected.
(b) B can be selected, only if C is selected. If D is selected, neither A nor E is selected. F and I cannot be selected together.

4. If C is selected as the captain, in how many ways can the remaining four members be selected?
(A) One (B) Two (C) Three (D) Four

5. If G is selected as the vice-captain, in how many ways can the remaining four members be selected?
(A) One
(B) Two
(C) Three
(D) More than four ways

6. Who among the following cannot be selected into the team?
(A) D (B) B (C) E (D) G

Practice Exercise – 4

Directions for questions 1 to 3: Select the correct alternative from the given choices.

1. In 'Hononolo' island, there are two types of people – truth tellers and liars. Truth-tellers always speak truth and liars always lie. I met three residents Ho, Lo and Po, and asked them "who among you is the liar?" The following are their replies.

Ho : I am a truth-teller.
Lo : Ho is not a truth-teller.
Po : Lo is not a liar.

If it is known that exactly one person among them is a liar and the other two are truth-tellers, then who among them is the liar?
(A) Ho (B) Lo
(C) Po (D) Cannot be determined

2. When three suspects of a theft were interrogated, they replied as follows. Each of them belongs to a unique category among truth tellers (who always speak truth), liars (who always lie) and alternators (who alternate between truth and lie, in any order). They replied as follows:

Karan : 1. I am not the thief.
2. Sharukh is the liar.
Johar : 1. Karan is the thief.
2. I am a liar.
Sharukh : 1. Karan is the liar.
2. Johar is not the thief.

Who is the truth teller?
(A) Karan (B) Johar
(C) Sharukh (D) Cannot be determined

3. Each of Ravi, Rajesh and Raman belong to a different category among Truth Tellers (who always speak the truth), Liars (who always lie) and Alternators (who alternate between truth and lie), but not necessarily in that order. They made the following statements.

Ravi : I am a Truth Teller.
Rajesh is a liar.
Rajesh : I am a Truth Teller.
Raman is an alternator.
Raman : I am a Truth Teller.
Ravi is a liar.

Who among them is the Truth Teller?
(A) Ravi (B) Rajesh
(C) Raman (D) Cannot be determined

Directions for questions 4 to 6: These questions are based on the following information.

Among the three persons P, Q and R one is a doctor, one is an engineer and the other is a teacher. Each of them belongs to a different category among Truth Tellers (who always speak the truth), Liars (who always lie) and Alternators (who alternate between truth and lie), but not necessarily in that order.

When they were asked about their profession and the category, they made the following statements.

P: I am the doctor. Q is an engineer.
Q: I am not an engineer. R is a doctor.
R: I am a teacher. P is a liar.

4. Who cannot be the teacher?
(A) P (B) Q
(C) R (D) Cannot be determined

5. If P is engineer, then who is the truth teller?
(A) P (B) Q
(C) R (D) Cannot be determined

6. If P is the doctor, then who is the engineer?
(A) P (B) Q
(C) R (D) Cannot be determined

Directions for questions 7 to 10: These questions are based on the following information.

Each of P and Q, who are of different heights, likes a different colour between blue and green. Each of them made two statements, regarding his/her height and the colour that he/she likes as given below.

P: I do not like green.
I am shorter between us.
Q: I do not like green.
I am shorter between us.

It is known that each of them is either a truth teller (who always speaks truth), a liar (who always lies) or an alternator (who alternates between truth and lie).

7. Which of the following is possible?
(A) Both P and Q are truth tellers.
(B) Both P and Q are liars.
(C) Both P and Q are alternators.
(D) P is an alternator and Q is a truth teller.

8. What is the difference between the number of true statements and the number of false statements made by them?
(A) One (B) Two (C) Three (D) Zero

9. If P likes blue colour, which of the following is possible?
(A) P is a truth teller and Q is an alternator.
(B) Both P and Q are truth tellers.
(C) P is an alternator and Q is a truth teller.
(D) Both P and Q are alternators.

10. If the first statement of P is false, then which of the following is true?
(A) P likes blue.
(B) Q likes blue.
(C) P is shorter between the two.
(D) Q is shorter between the two.

Directions for questions 11 to 14: These questions are based on the following information.

Santiago, Benjamin and Mateo are three friends from Brazil visiting India. Each of them purchased a different article among a shawl, Darjeeling tea and a saree from the Rajasthan state tourism development handicraft outlet with each item bearing a different cost. Additionally, they had to pay a tax of 10% on the cost of the article. While exiting the outlet they were required to show the bills of the items purchased items, which could not be found.

When asked by the outlet security about the purchases each of them made three statements.

It is known that each of them belongs to a different group among truth teller, alternator and liar.

Truth tellers always speak the truth, liars always lie and alternators alternate between truth and lies in any order.

Santiago:
1. Benjamin bought a Saree.
2. Mateo paid a tax of ₹300.
3. I bought an article worth ₹2000.

Benjamin:
1. Santiago purchased a shawl.
2. Mateo paid a tax of ₹300.
3. I bought an article for a price of ₹2000.

Mateo:
1. I purchased Darjeeling tea.
2. Benjamin paid a tax of ₹100.
3. Santiago purchased an article priced ₹2000.

Directions for questions 11 to 14: Write your answer in the box given below each question.

11. What is the total price paid for Darjeeling tea?

12. The cost of the saree is how many times the cost of the product purchased by Benjamin?

13. If the sum of the cost of product Benjamin purchased and the shawl is equal to the cost of the of product purchased by Mateo, what is the total money spent by Santiago for the purchase of his product (tax included)?

14. What is the total amount spent by all the three at the outlet, if the conditions in the previous question remains the same?

Directions for questions 15 to 18: Select the correct alternative from the given choices.

15. Five persons P, Q, R, S and T, who are of different weights, are comparing their weights. R is heavier than at least two other persons and S is lighter than at least three other persons. None among R, S and T is either the heaviest or the lightest. T is not heavier than R. If P is heavier than Q, then who is the second heaviest among them?
(A) R (B) S (C) T (D) P

16. P, Q, R, S and T are five dancers who have to perform on a particular day, not necessarily in the same order. R is neither the first nor the last to perform. Only one dancer performed before S. T performed before only one dancer. If P performs after Q, then who is the last to perform?
(A) S (B) T (C) P (D) Q

17. Six persons A, B, C, D, E, and F, each are of a different height, are comparing their heights. A is taller than D, but shorter than F. C is shorter than E and taller than B, who is taller than F. Who among the following is the shortest?
(A) A (B) B (C) C (D) D

18. Five students Karan, Charan, Lavan, Pavan, and Sravan, are the top five rankers of a class. No two students got the same rank. The number of students who got better rank than Pavan is same as those who got a worse rank than Lavan. Only one student got a worse rank than Karan. Who among the following is the first ranker?
(A) Pavan (B) Lavan
(C) Sravan (D) Cannot be determined

Directions for questions 19 to 21: These questions are based on the following information.

Five persons – Arvind, Birendra, Charu, Dharmendra and Ekta were ranked in each of the categories age, weight and height, in descending order, such that the tallest, the heaviest and the eldest person got the first rank in the respective category, and the shortest, the lightest and the youngest got the fifth rank in the respective category. No two persons are of the same weight, height or age. No person got the same rank in any two categories. Further we know the following information.

(i). Neither Arvind nor Ekta got the first rank in any category.
(ii). Ekta did not got the third rank in any category.
(iii). The person who got the fifth rank in height got the third rank in age.
(iv). Arvind is older than Charu but younger than Birendra.
(v). Neither Birendra nor Dharmendra got the fifths rank in any category.
(vi). The person who got the first rank in weight got the third rank in height.
(vii). Birendra is shorter than Charu but taller than Arvind and Dharmendra.

(viii). Birendra is lighter than Charu but heavier than Arvind.

19. Who is the second oldest person?
(A) Ekta (B) Arvind
(C) Dharmendra (D) Either (A) or (B)

20. Who is the lightest person?
(A) Arvind (B) Ekta
(C) Birendra (D) Charu

21. Who among the following did not get the fourth rank in any of the categories?
(A) Arvind (B) Dharmendra
(C) Ekta (D) Birendra

Directions for questions 22 to 25: These questions are based on the following information.

Five persons – Chinta, Mani, Amdani, Karcha and Tanqua – are comparing their incomes and expenditure. The following information is also known.

(i). No two persons have equal income or equal expenditure.
(ii). The income of each person is more than his expenditure.
(iii). The income of Chinta is more than that of Tanqua and the expenditure of Amdani is more than that of Karcha.
(iv). The income of Mani is less than the expenditure of Tanqua.
(v). The person, whose income is the second highest, has the least expenditure and the person with the highest income has the highest expenditure.
(vi). The income and expenditure of Karcha is more than the income and expenditure of Tanqua respectively.

22. Who has the least expenditure?
(A) Amdani (B) Chinta (C) Karcha (D) Mani

23. Who has the third highest income?
(A) Amdani (B) Chinta (C) Karcha (D) Tanqua

24. Who has the second highest expenditure?
(A) Tanqua (B) Chinta (C) Karcha (D) Mani

25. Who among the five has the highest savings?
(A) Mari (B) Amdani
(C) Karcha (D) Cannot be determined

ADDITIONAL QUESTIONS FOR PRACTICE

Directions for questions 1 to 3: These questions are based on the following information.

In a village, there live three tribes – the truth tellers, who always speak truth, liars – who always lie and alternators – who alternate between truth and lie.

A, B and C who belong to that village are suspects in a theft. Exactly one of them is the thief. They replied for the question – "Who is the thief?" in the following manner.

A. I am not the thief.
C is the thief.
B is an alternator.

B. A is not an alternator.
I am the thief.
I am a truth teller.

C. I am not an alternator.
We together have given six true statements.
A's second statement is false.

1. Who is a liar?
(A) A (B) B
(C) C (D) None of these

2. Who is the thief?
(A) B (B) C
(C) A (D) Cannot be determined

3. How many false statements have all the three together made?
(A) 3 (B) 4
(C) 5 (D) None of these

Directions for questions 4 and 5: These questions are based on the following information.

In a locality, there live three tribes – the truth tellers, (who always speak truth), the liars (who always lie) and the alternators (who alternate between true and false in any order).

A and B belong to that locality and are of different tribes. The following are their replies to a question.

A. I am not an alternator.
B's father's name is Mahendar.

B. My father's name is not Mahender.
One among us is an alternator.

4. Mahender is the father of _____.
(A) A (B) B
(C) Both (A) and (B) (D) None of these.

5. How many true statements have been made by A and B together?
(A) 1 (B) 2
(C) 3 (D) Either (2) or (3)

Directions for questions 6 to 8: These questions are based on the following information.

Three friends Akil, Bintu, Chintu are sitting in a row facing north. Each of them belongs to a different tribe among alu (who always speak truth), balu (who always lie) and chalu, (who alternates between truth and lie). I asked them, "Who is sitting in the middle of the row?" and they replied as follow:

Akil : 1. Chintu is a balu.
2. I am not an alu.
3. Bintu is to the right of Chintu.

Bintu : 1. I am an alu.
2. Akil is to the immediate right of me.
3. Chintu is not sitting in the middle of the row.

Chintu : 1. Bintu is a balu.
2. Exactly one person is sitting between Akil and Bintu.
3. I am not a chalu.

6. Who is sitting in the middle of the row?
(A) Akil (B) Bintu
(C) Chintu (D) Cannot be determined

7. Who is an alternator?
(A) Akil (B) Bintu
(C) Chintu (D) Cannot be determined

8. Who is sitting at the extreme left of the row?
(A) Akil (B) Bintu
(C) Chintu (D) Cannot be determined

Directions for questions 9 and 10: These questions are based on the following information.

Six boys Mohan, Rohan, Sohan, Bhuvan, Dhavan and Guhan are comparing their marks. No two boys scored the same marks. We have the following information about their marks.

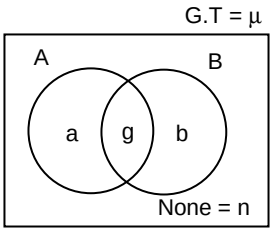
(i) Mohan scored 66 marks, which is the second least marks.
(ii) Dhavan scored more marks than Rohan and two other persons only, but Rohan did not score the least marks.
(iii) Sohan scored less marks than Guhan but more marks than Bhuvan.

9. What could be the marks of Dhavan?
(A) 65 (B) 60 (C) 69 (D) 66

10. How many boys scored less than Sohan and more than Mohan?
(A) None (B) One (C) Two (D) Three

Practice Exercise – 5

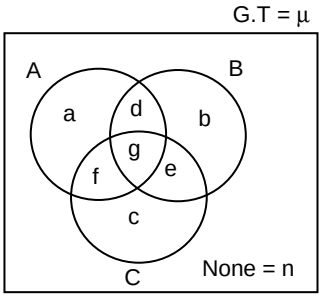
VENN DIAGRAMS INVOLVING TWO VARIABLES:



In the above diagram, A and B represent two different sets and the various regions can be referred to as given below.

A = a + g ; B = b + g
Only A = a; Only B = b
Exactly one set = a + b
A and B = g ; Only A and B = g
Exactly two sets = g
At least one set = Exactly one + Exactly two = a + b + g = T
Grand Total (G.T = μ) = a + b + g + n = T + n
A + B = a + b + 2g = T + g
A or B = a + b + g = T
Does not belongs to A = b + n
Does not belongs to B = a + n

VENN DIAGRAM WITH THREE VARIABLES:



Here A, B and C are three different sets and the various regions can be referred to as given below.

A = a + d + g + f; Only A = a
B = b + d + g + e; Only B = b
C = c + f + g + e; Only C = c

Exactly one set = a + b + c;

A and B = d + g; B and also C = e + g; C as well as A = f + g;
Only A and B = d; A and B but not C = d;
Only B and C = e; B and C but not A = e;
Only C and A = f; C and A but not B = f;

Exactly two sets = d + e + f;
A, B and C = All the three = Only A, B and C = g;
Exactly three sets = g;
None among A, B and C = n;
At least one set = Exactly one + Exactly two + Exactly three = a + b + c + d + e + f + g = μ – n
At least two sets = Exactly two + Exactly three
= d + e + f + g

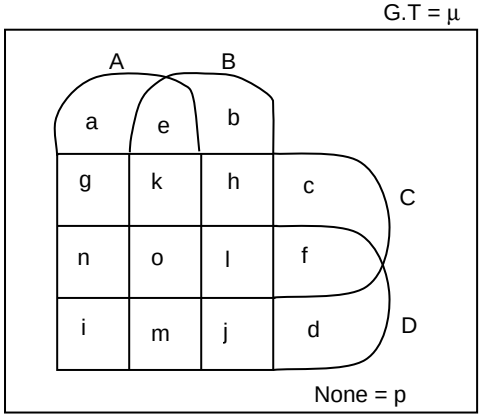
At least three sets = Exactly three = g
At most one sets = Exactly one + None = a + b + c + n
At most two sets = Exactly two + Exactly one + None = d + e + f + a + b + c + n = μ – g

At most three sets = Exactly three + Exactly two + Exactly one + None = g + d + e + f + a + b + c + n = μ

A + B + C = a + b + c + 2(d + e + f) + 3g
= Exactly one + 2(Exactly two) + 3(Exactly three)
= (Exactly one + Exactly two + Exactly three) + Exactly two + 2 (Exactly three)
= At least one + Exactly two + 2(Exactly three)
= At least one + (Exactly two + Exactly three) + Exactly three = At least one + At least two + At least three

Does not belong to A = b + e + c + n
A or B or C = a + b + c + d + e + f + g = At least one.
A or B = a + b + d + e + f + g
A or B but not C = a + d + b
Neither A nor B = c + n
(A and B) or C = d + c + f + g + e
A and (B or C) = d + g + f

VENN DIAGRAM INVOLVING A FOUR VARIABLES:



Here, A, B, C and D are four different sets and the various regions can be referred to as given below.
A = a + e + g + k + n + o + i + m; Only A = a
B = b + e + h + k + l + o + j + m; Only B = b
C = c + f + h + l + k + o + g + n; Only C = c
D = d + f + j + l + m + o + i + n; Only D = d

Exactly one set = a + b + c + d

A and B = e + k + o + m; Only A and B = e;
A and C = g + k + o + n; Only A and C = g;
A and D = n + o + i + m; Only A and D = i;
B and C = k + h + o + l; Only B and C = h;
B and D = m + j + o + l; Only B and D = j;
C and D = n + o + l + f; Only C and D = f;

Exactly two sets = e + f + g + h + i + j

A, B and C = k + o; Only A, B and C = k;
B, C and D = l + o; Only B, C and D = l;
A, B and D = m + o; Only A, B and D = m;
A, C and D = n + o; Only A, C and D = n;

Exactly three sets = k + l + m + n
A, B, C and D = All the four = Exactly four set = o;
None among A, B, C and D = p

Directions for questions 1 to 4: These questions are based on the following data.

In a class of 130 students, 85 passed in Maths, 60 passed in Social Studies and 10 failed in both the subjects.

1. How many students passed in both the subjects?
(A) 25 (B) 15 (C) 35 (D) 20

2. How many students passed in Social Studies but failed in Maths?
(A) 10 (B) 50 (C) 60 (D) 35

3. How many students failed in exactly one subject?
(A) 35 (B) 60 (C) 95 (D) 105

4. The number of students who failed in Maths as a percentage of the number of students who failed only in Social Studies is
(A) 50% (B) 75%
(C) $133^1/_3$% (D) $58^1/_3$%

Directions for questions 5 to 7: These questions are based on the following data.

In a class of 100 students, 45 have bicycles. The number of students who have neither a moped nor a bicycle is 25% of the number of students who have a moped. $33^1/_3$% of the students who have bicycles also have mopeds.

5. How many students have a moped but not a bicycle?
(A) 56 (B) 55 (C) 41 (D) 26

6. How many students have a moped or a bicycle but not both?
(A) 86 (B) 89 (C) 100 (D) 71

7. How many students do not have a moped?
(A) 30 (B) 44 (C) 14 (D) 25

Directions for questions 8 to 10: These questions are based on the following data.

In a community of 160 people, a survey was conducted to find the number of people who like the movies of the director Steven Spielberg and that of the director James Cameroon. Some of the data got erased and the available information is as follows.

The following table gives the partial information about the number of people who like the movies of these two directors.

	Speilberg	Cameroon	Both	Total
Male				
Female	70			100
Total				

It is also known that,

(i) every male who likes Cameroon's movies likes Spielberg's movies also.
(ii) the number of females who like the movies of both the directors is half the total number of males.
(iii) 45% of the total number of people like Cameroon's movies.
(iv) each person likes the movies of at least one of the two directors.

8. How many people like Spielberg's movies?
(A) 130 (B) 60 (C) 70 (D) 58

9. How many males like only Spielberg's movies?
(A) 130 (B) 72 (C) 60 (D) 48

10. How many people like movies of both the directors?
(A) 30 (B) 58 (C) 42 (D) 118

Directions for questions 11 to 15: These questions are based on the following data.

A survey was conducted among 500 families regarding the types of fuel that they use for cooking purpose. It is known that 200 people use Kerosene, 270 people use LPG and 240 people use Electricity 72 people use both Kerosene and LPG. 126 people use both LPG and Electricity, 62 use both Kerosene and Electricity. It is also known that, 20 people use none among these three.

11. How many people use fuel of all the three types?
(A) 50 (B) 40 (C) 10 (D) 30

12. How many people use at most one type of fuel?
(A) 300 (B) 320 (C) 280 (D) 340

13. How many use either Kerosene or LPG?
(A) 470 (B) 198 (C) 398 (D) 240

14. How many people use at least two types of fuels?
(A) 190 (B) 200 (C) 210 (D) 170

15. How many use neither Kerosene nor Electricity?
(A) 270 (B) 102 (C) 112 (D) 122

Directions for questions 16 to 19: These questions are based on the following data.

A survey was conducted in a community of 350 people regarding three games – Chess, Carroms and Chinese Checkers. The following information is obtained in the survey.

(i) Thrice the number of people who play all the three games is equal to the number of people who play Chinese Checkers.
(ii) The number of people who play Chinese Checkers and Carroms is equal to the number of people who play Chess only.
(iii) For every three people who play Chess and Chinese Checkers only, there are five people who play none of the three games.
(iv) In every seven people who play Chinese Checkers, four people play Carroms also.
(v) For every six people who play only Carroms, there is one who plays Chinese Checkers only.
(vi) For every four people who play exactly two games, there is one who plays Carroms and Chinese Checkers only and two persons who play none of the three games.

Direction for questions 16 to 19: Fill the box given below the questions with appropriate value.

16. How many people play exactly two games?

17. How many people play Chess but not Carroms?

18. How many people do not play Chinese Checkers?

19. How many people play Chess or Carroms?

Directions for questions 20 to 22: These questions are based on the following data.

In Brindavan Colony, a survey was conducted among 300 people to find the readership of three newspapers -The Hindu, The Times of India and Indian Express. It is known that, 100 people read at least two of these newspapers. 230 people read either The Hindu or Indian Express. 180 read exactly one among the three. 80 read neither The Hindu nor The Times of India. 130 read The Hindu or The Times of India but not Indian Express.

20. How many people read at least one of the other two newspapers along with Indian Express?
(A) 80 (B) 90 (C) 100 (D) 110

21. How many people read all the three newspapers?
(A) 70 (B) 60
(C) 40 (D) Cannot be determined

22. How many people read The Hindu only?
(A) 50 (B) 60 (C) 70 (D) 80

Directions for questions 23 to 26: These questions are based on the following data.

In a colony of 500 people, each person likes at least one of coffee, tea, fruit juice and Badam milk. Also 230 like coffee, 210 like tea, 220 like fruit juice, 240 like Badam milk and 40 like all the four. The number of persons who like exactly one drink for each category is the same and is 60.

The number of people who like exactly two of the four drinks for each possible pair is 30 except for only coffee and tea, only tea and fruit juice for which it is 20 each. 10 people like all the drinks except coffee.

23. How many people like exactly three out of the four drinks?
(A) 70 (B) 80 (C) 40 (D) 60

24. How many people like both coffee and fruit juice?
(A) 90 (B) 80 (C) 120 (D) 100

25. How many people like at most two of the four drinks?
(A) 380 (B) 400 (C) 420 (D) 360

26. How many people like both fruit juice and Badam milk but not tea?
(A) 50 (B) 40 (C) 60 (D) 70

ADDITIONAL QUESTIONS FOR PRACTICE

Directions for questions 1 to 4: These questions are based on the following data.

In the summer of last year, a survey was conducted in a colony to know how many houses have fans, ACs and coolers. 112 houses have coolers. The number of houses which have none of the three devices is five times of that have all the three. 10% of the houses have coolers and fans. 42% of the houses have ACs. 44% of the houses have fans. 20% of the houses have none of the three. 22% have only fans and 12% of the houses have ACs and coolers.

1. How many houses have fans only?
(A) 176 (B) 72 (C) 40 (D) 88

2. How many houses have at most two devices among ACs, fan and cooler?
(A) 384 (B) 400 (C) 200 (D) 304

3. How many houses were surveyed?
(A) 320 (B) 384 (C) 300 (D) 400

4. How many houses do not have fans?
(A) 88 (B) 176 (C) 224 (D) 144

Directions for questions 5 to 9: Select the correct alternative from the given choices.

5. A coaching institute conducted a workshop named 'Belling CAT in three days'. The workshop is scheduled for three consecutive days – Monday, Tuesday and Wednesday. A total of 70 students enrolled for the workshop. Though some of these students did not attend regularly, every enrolled student attended the workshop for at least one of the three days. Of the 36 students who attended the workshop on the first day i.e., Monday 13 attended the workshop on the immediate next day also. Of the 40 students who attended on the last day i.e., Wednesday, 25 did not attend the workshop on the previous day and 17 out of these 40 did not attend the workshop on any other day and 11 of these 40 students attended the first day of the workshop also. How many students attended for exactly two consecutive days?
(A) 30 (B) 33 (C) 25 (D) 22

6. In an office of 100 employees people, 43 read India today, 9 read India today and Business India but not The Week, 44 read The Week, 19 read India Today and the Week but not Business India. 45 read Business India. 18 read Business India and The Week. 3 read all the three magazines. How many employee people read none among the three?
(A) 0 (B) 7 (C) 17 (D) 27

7. In a Class, 70 students like the books written by Mark Twain, 60 students like the books written by Rudyard Kipling and 90 students like the books written by Ruskin Bond. 25 students do not like the books written by any one among the three authors. 160 students like the books written by at least one of the three authors. 175 students like the books written by at most two of the three authors. How many students like the books written by exactly one of the three authors?
(A) 100 (B) 110 (C) 120 (D) 125

8. Among a group of patients who visit a hospital, it is found that 200 patients suffer with Thyroid disorder, 180 patients suffer with High Blood pressure and 170 patients suffer with Asthma. 60 patients suffer with Thyroid disorder and High Blood pressure. 50 patients suffer with High Blood Pressure and Asthma. 60 patients suffer with Asthma and Thyroid disorder. Each patient visits only one doctor among Dr. Cook – who treats patients suffering with Thyroid disorder only, Dr. Watson – who treats patients suffering with High Blood Pressure only, Dr. Doyale – who treats patients suffering with Asthma only and Dr. No a generalist, who treats patients suffering with any ailment. Some of the patients among this group suffer with all the three ailments. Patients prefer to get treated by specialist doctors. If Dr. Cook treats 100 patients, which of the following is true with respect to the number of patients these doctors treat?
(A) Dr. Cook > Dr. No > Dr. Watson > Dr. Doyale
(B) Dr. No > Dr. Cook > Dr. Doyale > Dr. Watson
(C) Dr. No > Dr. Cook > Dr. Watson > Dr. Doyale
(D) Dr. Cook > Dr. No > Dr. Doyale > Dr. Watson

9. In a survey conducted among Cricket fans, 60% of the people like the TV channel Ten sports. 30% of the people who like Ten sports does not like the channel ESPN. What percent of the total number of people like ESPN, if each person likes at least one of the two Channels?
(A) 70% (B) 42% (C) 28% (D) 82%

Practice Exercise – 6

Directions for questions 1 to 5: These questions are based on the following information.

The following table gives partial information about the number of students of a school who like Hockey and Cricket. There are 400 students in the school.

	Hockey	Cricket	Both	Total
Girls	50			150
Boys		85		
Total				400

Of the total students, 50% like Cricket, 30% like Hockey and 20% like both the games. 20% of the girls like both the games.

1. The number of girls who like Cricket is
(A) 70 (B) 80 (C) 95 (D) 115

2. The number of boys who like both the games is
(A) 10 (B) 20 (C) 30 (D) 50

3. How many boys like none of the games?
(A) 0 (B) 45 (C) 145 (D) 95

4. How many students like none of the games?
(A) 0 (B) 160 (C) 80 (D) 120

5. How many girls like at least one of the games?
(A) 135 (B) 150 (C) 145 (D) 115

Directions for questions 6 and 7: These questions are based on the following information.

In a class of 100 students, each student wrote two exams Maths and Physics. The number of students who failed in exactly one of these two subjects is 65. 50% of the students who passed in Physics failed in Maths. 25% of the number of students who failed in only Physics is equal to the number of students who failed in both.

6. When each student who failed in any subject was given grace marks in that subject, it was found that the number of students who failed in both the subjects decreased by 40% and the number of students who failed in exactly one subject remained the same. What is the minimum possible value of the number of students who passed in only Maths?
(A) 29 (B) 27 (C) 30 (D) 36

7. In each subject, a certain number of grace marks were given for each of the failed candidates. It was later found that the number of students who failed in both the subjects decreased by 50%. What is the maximum possible value of the number of students who passed in Maths?
(A) 70 (B) 75
(C) 80 (D) None of these

Directions for questions 8 to 11: These questions are based on the following information.

During the annual day celebrations of a school, 450 students participated in the celebrations. Out of them, 200 played Cricket, 210 played Hockey, 190 played Football and 40 played none of these three games 90 students played exactly two of the above three games.

8. If 90 students played only Cricket, then find the number of students who played Football and Hockey only.
(A) 30 (B) 20 (C) 40 (D) 50

9. If 40 students played both Cricket and Football but not Hockey, find the number of students who played only Hockey.
(A) 100 (B) 110 (C) 90 (D) 120

10. If 100 students played Hockey but not Football, find the number of students who played Cricket and Football only.
(A) 20 (B) 30
(C) 10 (D) Cannot be determined

11. If 80 students played only Football, find the number of students who played Cricket and Hockey.
(A) 30 (B) 50 (C) 70 (D) 80

Directions for questions 12 to 16: These questions are based on the following information.

In an office of 250 employees, 25 own a house and a car, 5 own a car and a two-wheeler only. 80 own only two-wheelers, 80 own cars and 75 own houses but not cars. 10 employees own all the three and 15 own a house and a two-wheeler only. Consider that no one buys or sells any of the properties unless it is specifically mentioned. Any employee sells the property which he/she owns and purchases the one that he/she does not own.

12. How many employees own cars but not houses?
(A) 55 (B) 50 (C) 45 (D) 65

13. How many employees own atmost one of the above three?
(A) 195 (B) 205 (C) 200 (D) 215

14. If each employee either only bought or only sold exactly one of the given three but not both, then find the maximum possible value of the number of employees who own only house (Assume that the total number of employees remains the same).
(A) 40 (B) 45 (C) 50 (D) 55

15. If the employees owning two-wheelers sold their two-wheelers and bought cars, find the number of employees who own houses and cars.
(A) 50 (B) 70 (C) 40 (D) 30

16. If 25 employees sold their cars, then what is the maximum possible number of employees owning only two-wheelers?
(A) 130 (B) 135 (C) 125 (D) 85

Directions for questions 17 to 21: These questions are based on the following information.

In a college of 500 students, each student belongs to either the first year or the second year only but not to both. Each student belongs to exactly one of the two streams commerce and science, each student is either an NSF member or an SFI member but not both. 90 first year commerce students are SFI members. There are 270 NSF members. 50 commerce students are neither first year students nor NSF members. 140 first year students are NSF members. 150 NSF members are either first year students or commerce students but not both. 120 second year students are not science students. 100 science students are either first year students or NSF members but not both.

Directions for questions 17 to 21: Fill the box given below each question with appropriate value.

17. Find the number of second year science students who are SFI members.

18. Find the number of first year science students who are not NSF members.

19. Find the number of first year commerce students who are NSF members.

20. Find the number of commerce students who are either NSF members or second year students but not both.

21. Find the total number of students who are NSF members or second year students.

Directions for questions 22 to 24: These questions are based on the following information.

A survey was conducted among 500 people each of whom likes at least one of apple, orange and banana. The number of people who like apple is 240, those who like orange are 250 and those who like banana are 290.

22. If 60 people like only apple and banana, then what is the maximum possible number of people who like only orange?
(A) 120 (B) 130
(C) 140 (D) 150

23. If 120 people like only apple, then what is the maximum possible number of people who like only orange and banana?
(A) 170 (B) 160
(C) 180 (D) 150

24. What is the maximum possible number of people who like all the three fruits?
(A) 140 (B) 120 (C) 150 (D) 130

***Directions for questions 25 to 28*:** These questions are based on the following information.

In a colony of 280 families, which use mobile phones of different companies among Panasonic, Sony Ericsson, Motorola and Nokia, 175 families use Sony Ericsson, 155 families use Panasonic, 165 families use Motorola and 150 families use Nokia. Each of the families use mobile phones of at least one company. The number of families using Sony Ericsson and Motorola is same as those using Nokia and Panasonic which inturn is same as those using mobiles of exactly three different companies, which is 75. Also, it is known that the sum of the number of families using Sony Ericsson and Motorola only, and the number of families using Nokia and Panasonic only is 25. The number of families using mobiles of exactly two companies is 100 more than that using mobiles of exactly one company.

Directions for questions 25 to 28: Fill the box given below each question with appropriate value.

25. How many families use mobiles of all the four companies?

26. How many families use mobiles of at least two of the four companies but at most three of the four companies?

27. How many families use mobiles of exactly one of the four companies?

28. If the sum of the number of families using Sony Ecrison, Motorola and Nokia but not Panasonic and the number of families using Sony Ecrison, Motorola and Panasonic but not Nokia is 35, then what is the sum of the number of families who use Nokia only and the number of families using Panasonic only?

ADDITIONAL QUESTIONS FOR PRACTICE

Directions for questions 1 to 4: These questions are based on the following information.

In a colony, 50% of the people who speak Hindi also speak Sanskrit. The number of people who speak only Sanskrit is 25% of the number of people who speak only English. The number of people who speak all the three languages is the same as the number of people who speak none of the three languages. The number of people who speak only Hindi and English is the same as the number of people who speak only English and Sanskrit, which is equal to half the number of people who speak Hindi and Sanskrit. The number of people who speak only Hindi and Sanskrit and the number of people who speak only Sanskrit are equal, each of which is twice the number of people who speak none of the three languages.

1. What percentage of the people who speak exactly two languages speak only Hindi and Sanskrit?
(A) 120% (B) 30% (C) 40% (D) 50%

2. If the number of people who speak only English is 320, find the number of people who speak only Hindi.
(A) 30 (B) 60 (C) 40 (D) 80

3. If the number of people who speak all the three languages is 100, find the total number of people in the colony.
(A) 1850 (B) 1750 (C) 1950 (D) 2150

4. If the number of people who speak only Sanskrit is 80, find the number of people who do not speak Hindi.
(A) 460 (B) 480 (C) 420 (D) 500

Directions for questions 5 to 7: These questions are based on the following information.

In a school, 150 students like Maths, 160 students like Physics and 200 students like Chemistry. 40 students like Maths and Physics but not Chemistry. 140 students who like Chemistry also like exactly one of Maths and Physics.

5. If 10 students like all the three subjects, how many students like exactly one of the three subjects?
(A) 110 (B) 120 (C) 130 (D) 140

6. If 50 students like only Chemistry, find the number of students who like only Maths or only Physics.
(A) 70 (B) 80 (C) 60 (D) 90

7. If the number of students who like only Maths or only Physics is 80, then what is the number of students who like all the three subjects?
(A) 10 (B) 8 (C) 15 (D) 5

Practice Exercise – 7

The logical reasoning questions that are given in some of the competitive exams can be classified under the following heads:

(i) Series
(ii) Analogies
(iii) Odd man out
(iv) Coding and decoding
(v) Symbols and Notations
(vi) Directions sense
(Vii) Blood relations
(viii) Sequences
(ix) Miscellaneous

Series

Directions for questions 1 to 4: Complete the following series.

1. 15, 17, 20, 25, 32, __
(A) 41 (B) 43 (C) 44 (D) 45

2. 5, 13, 37, 77, 229, __
(A) 458 (B) 470 (C) 457 (D) 461

3. 5, 10, 26, 50, 122, 170, __
(A) 290 (B) 225 (C) 240 (D) 261

4. BTPS, CRSO, DPVK, ENYG, _____
(A) FPAK (B) HDBJ (C) FLZK (D) FLBC

Analogies:

Directions for questions 5 to 11: Find the missing term.

5 5 : 49 : : 13 : __
(A) 120 (B) 289 (C) 169 (D) 121

6. 8 : 64 : : 10 : __
(A) 90 (B) 120 (C) 80 (D) 105

7. 8 : 9 : : 16 : __
(A) 15 (B) 16 (C) 12 (D) 13

8. A : Z : : H : __
(A) S (B) U (C) M (D) T

9. PZMGK : QBPKP : : MDTPQ : _____
(A) NFXUV (B) NEQQR (C) NFWTV (D) PESMT

10. Bravery : Reward : : Crime : _____
(A) Punishment (B) Police
(C) Penal Code (D) Court

11. Cat : Kitten : : Cow : _____
(A) Ox (B) Bull (C) Shed (D) Calf

Odd man out

Directions for questions 12 to 18: Three out of the following four are alike in a similar way and hence form a group. Find the odd one.

12. (A) 23 (B) 33 (C) 43 (D) 53

13. (A) 121 (B) 49 (C) 27 (D) 169

14. (A) 121 (B) 169 (C) 225 (D) 289

15. (A) ABC (B) BCD (C) CDE (D) DEF

16. (A) MPT (B) JLO (C) RUY (D) CFJ

17. (A) Train (B) Bus (C) Ship (D) Car

18. (A) Lakshadweep
(B) Goa
(C) Andaman and Nicobar
(D) Puducherry

Coding and Decoding:

***Directions for questions 19 to 21*:** Select the correct alternative from the given choices.

19. In a code language, "PERFORM" is coded as, "TXTJUGQ", then how is the word "CONDUCT" coded in that language?
(A) ZFZHQQD (B) DQQHZFA
(C) AFZHQPD (D) None of these

20. In a code language, 'basket' is called 'pen', 'pen' is called 'book', 'book' is called 'telephone', 'telephone' is called 'radio', 'radio' is called 'car', 'car' is called 'drum'. According to that language, what is the code for the object that is used to talk to people at a far off place?
(A) Book (B) Radio
(C) Telephone (D) Drum

21. In a code language, 'stone' means 'sand', 'sand' means 'fruit', 'fruit' means 'flower', 'flower' means 'paper', 'paper' means 'wallet', 'wallet' means 'glove'. According to that language, what is the code for the object with which a garland is made?
(A) Paper (B) Fruit
(C) Flower (D) Glove

Directions for questions 22 to 24: These questions are based on the following information.

Column – I	Column – II
five persons faces north	kit bit rit sit
north and east are directions	fit mit rit lit pit
four persons faces east	sit nit bit lit
persons and directions different	fit bit git pit
there are four directions	dit pit mit nit

In a certain code language, the codes for sentences in column I are given in column II. Each word has a unique code. Answer the questions based on the given codes.

22. What is the code for "different"?
(A) fit (B) bit (C) git (D) pit

23. Which is coded as "dit"?
(A) there (B) are
(C) four (D) directions

24. What is the code for "four persons faces different directions"?
(A) nit bit sit git pit (B) nit bit sit fit pit
(C) nit bit sit git fit (D) nit rit sit fit pit

Symbols and Notations:

Directions for questions 25 to 27: In these questions, relationship between different elements is shown in the statements. These statements are followed by two conclusions. You have to decide which conclusion definitely follows from the given statements. Give answer as,

(A) If only conclusion I follows.
(B) If only conclusion II follows.
(C) If neither conclusion I nor conclusion II follows.
(D) If both conclusions I and II follow.

25. Statements: $L \geq M \leq N = O$, $R > P \geq Q$, $A > M = P$
Conclusions: I. $A > R$
II. $Q \leq M$

26. Statements: $A > B \geq C$, $D = E \geq F < G$, $A > G > C$
Conclusions: I. $B > G$
II. $A > F$

27. Statements: $P < Q \leq R < S$, $T > S > U$, $T = V$

Conclusions: I. $S < V$
II. $S = V$

Directions for questions 28 and 29: Select the correct alternative from the given choices.

28. Which of the following set of symbols should be placed respectively in that order to make the given expression 'B ≥ E' definitely true?
A_ B_ C_ D_ E
(A) <, ≥, =, ≥ (B) <, <, ≤, <
(C) <, =, ≤, = (D) >, ≥, ≥, >

29. Which of the following set of alphabets should be placed respectively in order to make the given expressions 'W < X' and 'Z < X' definitely true?
– > – < – < – ≤ –
(A) Z, Y, W, V, X (B) W, Y, X, V, Z
(C) Z, W, Y, V, X (D) Y, W, Z, V, X

Blood Relations:

Directions for questions 30 and 31: Select the correct alternative from the given choices.

30. How is Sarala's sister's mother's father's only son's daughter related to Sarala's brother?
(A) Sister (B) Aunt
(C) Cousin (D) Niece

31. P + Q means P is the father of Q.
P - Q means P is the sister of Q.
P × Q means P is the brother of Q.
P ÷ Q means P is the wife of Q.
What will come in place of ? To establish that K is the father-in-law of O in the following expression?
K + L – M × N ? O
(A) ÷ (B) ×
(C) + (D) Either (×) or (÷)

Direction Sense:

Directions for questions 32 and 33: Select the correct alternative from the given choices.

32. Ravi started from his house and walked 10 km towards the West, then turns to his right and travels 18 km and then turns right and travels 6km.He then turns right to travel 26 km followed by another right to travel 2 km to reach his office. How far and towards which direction is his house from his office.
(A) 10 km, North-east
(B) 10 km, South-west
(C) 10 km, North-west
(D) 10 km, South-east

33. The needle of a damaged compass which was showing the South, is now showing the West. If a person is going towards the East as per the damaged compass, then towards which direction is he actually going?
(A) North (B) South (C) East (D) West

Sequence:

Directions for question 34: Select the correct alternative from the given choices.

34. In the following sequence, how many digits are there which are immediately followed by an odd digit and immediately preceded by an even digit?
364423844239468321528465328364
(A) Nine (B) Eight (C) Seven (D) Six

Directions for questions 35 to 38: These questions are based on the following sequence.

$ 3 ∗ **V P L R N H T** ! # @ & 9 < θ ↑ π 4 ? 5 B 8 ©

35. Which is the sixteenth element to the left of the ninth element from the right end?
(A) 3 (B) * (C) V (D) $

36. How many symbols are there, which are neither immediately preceded by a digit nor followed by a letter?
(A) Nine (B) Eight (C) Ten (D) Seven

37. Among the boldfaced letters, how many such pairs of letters are there, which have as many letters between them as they have in the English alphabet? (Both in the forward and backward directions).
(A) Three (B) One (C) None (D) Two

38. Complete the following series.
8, θ, !, L, ———
(A) 3 (B) $ (C) ∗ (D) V

Miscellaneous:

Directions for questions 39 and 40: Select the correct alternative from the given choices.

39. In a row, there are 19 persons to the left of Ravi and 13 persons to the right of Rajesh. If there are 17 persons standing in between them then how many persons are standing in the row?
(A) 33 (B) 49
(C) 51 (D) Cannot be determined

40. 20 people entered a classroom before Lakshmi.10 people entered the classroom between Lakshmi and Roshni and 30 people entered the classroom after Roshni. If Roshni entered the class room before Lakshmi, then how many people are there in the class room?
(A) 40 (B) 50
(C) 62 (D) Cannot be determined

Practice Exercise – 8

Directions for questions 1 to 7: Select the correct alternative from the given choice:

1. How many odd days are there in one year and ten days?
(A) One (B) Two
(C) Zero (D) Cannot be determined

2. If 12th April of a particular year is a Friday, which day of the week will 28th April of the same year be?
(A) Sunday (B) Saturday
(C) Thursday (D) Monday

3. Which of the following year is/are leap years?
(a) 1962 (b) 1800
(c) 1496 (d) 1200
(A) only b, c and d (B) only b and d
(C) only c and d (D) only c

4. If 5th February of 1756 was a Wednesday, which day of the week was 12th July 1763?
(A) Tuesday (B) Thursday
(C) Saturday (D) Monday

5. Which day of the week was 17th May 1843?
(A) Monday (B) Wednesday
(C) Sunday (D) Thursday

6. Which of the following years will have the same calendar as that of 1877?
(A) 1881 (B) 1880
(C) 1882 (D) 1883

7. The closing date for CAT application is 12 days from today. The notification for it was released 20 days prior to the last day for submission. The day on which I am going to submit the application is 15 days from the day on which the notification is released. If the day of the week on which I am going to submit the application is a Thursday, then which day of the week will be the closing day for submitting the application?
(A) Sunday
(B) Saturday
(C) Friday
(D) Tuesday

Directions for questions 8 to 11: These questions are based on the following information:

A number/word arrangement machine rearranges a given input of numbers and words in a specific order using a stepwise process as illustrated below.
Input: 24 92 two one 67 36 seven 46 four five 85 nine

Step I: five 92 two one 67 36 seven 46 four 85 nine 24
Step II: five four 92 two one 67 seven 46 85 nine 24 36
Step III: five four nine 92 two one 67 seven 85 24 36 46
Step IV: five four nine one 92 two seven 85 24 36 46 67
Step V: five four nine one seven 92 two 24 36 46 67 85
Step VI: five four nine one seven two 24 36 46 67 85 92
Step VI is the last step for the given input.
Study the illustration carefully and answer the following questions according to the INPUT given below.
INPUT: try 95 67 solve 43 16 power car 39 plan 88 nice

8. How many steps are required to get the output?
(A) three
(B) four
(C) five
(D) six

9. Which of the following is step III of the given input?
(A) car nice plan power try 95 solve 88 16 39 43 67
(B) car nice plan power try solve 95 16 39 43 67 88
(C) car nice plan try 95 67 solve power 88 16 39 43
(D) car nice try 95 67 solve 43 power plan 88 16 39

10. Which word/number is sixth from the right end in step V?
(A) try
(B) 16
(C) solve
(D) 95

11. What is the output of the given input?
(A) car nice plan power solve try 95 88 67 43 39 16
(B) car nice plan power solve try 16 39 43 67 88 95
(C) car nice power plan solve try 16 39 43 67 88 95
(D) car try nice plan power solve 95 88 67 43 39 16

Directions for questions 12 to 15: These questions are based on the following information:

A word-and-number-arranging machine processes the input given according to set rules through a step-by-step process. Study the sample arrangement of the process provided below and answer the questions that follow:

Input:	Honesty	is	the	best	policy
Step I:	8	3	4	5	7
Step II:	16	6	8	10	14
Step III:	17	8	11	14	19
Step IV:	289	64	121	196	361
Step V:	361	289	196	121	64
Step VI:	360	287	193	117	59
Step VII:	Policy	honesty	best	the	is

Step VII is the last step and it is the final output for the given input.

12. What is the output for the following inputs?
Input: That lady on road screamed.
(A) Screamed lady road on that
(B) Screamed road lady that on
(C) Lady road screamed on that
(D) Road screamed lady that on

13. What is step I for a given input, if step IV is given below?
Step IV: 169 324 441 784 729
(A) 6 8 9 11 12 (B) 6 8 9 12 11
(C) 8 6 9 11 12 (D) 9 6 8 12 11

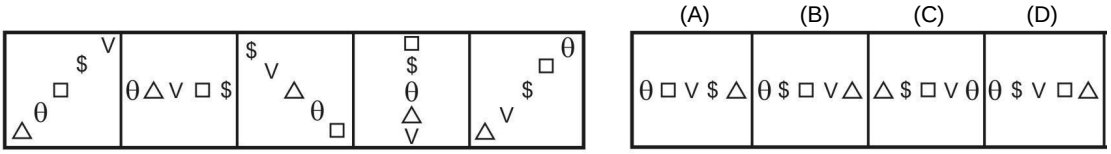
14. What is step VI of the output for the following input?
Samsung is a decent cell.
(A) 324 289 225 64 49 (B) 323 287 119 61 45
(C) 323 287 118 49 31 (D) 323 287 222 60 44

15. Which step will be the below-given output, if input is "Score hundred geography in exam"?
169 324 529 100 225
(A) Step III (B) Step IV
(C) Step V (D) Step VI

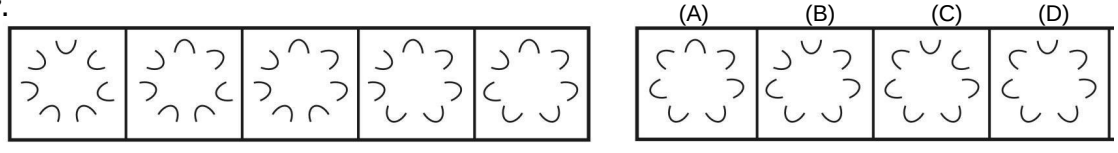
Directions for questions 16 to 18: In each of these questions there are two sets of figures. The figures on the left are Problem Figures and those on the right are Answer Figures indicated by numbers (A), (B), (C) and (D). Figures form a series, if they change from left to right according to the same rule. The number of the Answer Figure which would be the next figure in the series of problem figures is the answer. All the six figures, i.e., five Problem Figures and one Answer Figure should be considered as forming the series.

PROBLEM FIGURES **ANSWER FIGURES**

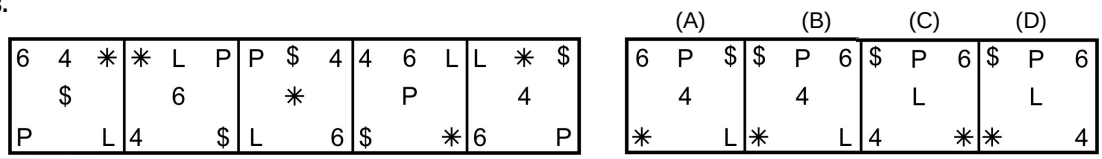
16.



17.



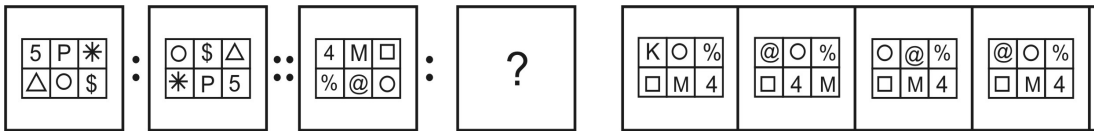
18.



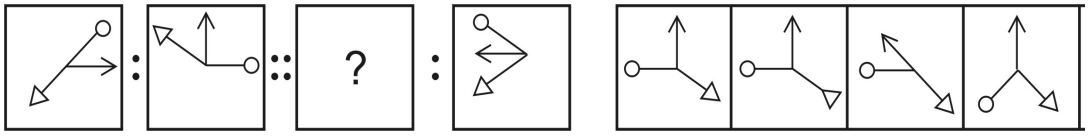
Directions for questions 19 and 20: In each of the following questions the first two figures are related to each other in a certain way. Find out which figure from the answer figures (A), (B), (C) and (D), should be placed at the? mark so that the second pair so formed will have a similar relationship and can be placed at the "question mark".

PROBLEM FIGURES **ANSWER FIGURES**

19.



20.



Directions for questions 21 to 25: These questions are based on the information given below:

Sun Solar Systems Limited, a leading solar company in India, set the following eligibility criteria for the post of Maintenance Manager. The candidate must

(i) be a B.E. (Mechanical) with at least 70% marks.
(ii) have at least ten years of similar work experience.
(iii) have at least 4 years of experience in maintaining DG sets of 1000 KVA.
(iv) have at least 3 years of work experience in Europe.
(v) have working knowledge of at least one of the two languages, French and German.

A candidate who satisfies all the above conditions is selected as Maintenance Manager.

If a candidate satisfies all the above conditions, except

(a) only (ii) above, but has an MBA (maintenance) and at least eight years of similar experience, he is selected.
(b) only (iii) above, but has at least 5 years of work experience in Europe, he is referred to the Manager (Projects).
(c) only (v) above, but has a working knowledge of Spanish, he is referred to the Manager (HR).

Based on the above criteria and information provided for each candidate, take a decision in each of the following questions. You are not to assume anything. If the data given is not adequate to take a decision, mark your answer as 'data inadequate'.

Mark your answer as

(A) If the candidate is selected.
(B) If the candidate is referred to the Manager (Projects) or Manager (HR)
(C) If the given data is inadequate.
(D) If the candidate is rejected.

21. Subrato Rai, a B.E. (Mechanical), with 76% marks, has 10 years of similar experience, out of which he has worked for 6 years in Europe. He does not know French but has working knowledge of German and Spanish. He has 5 years of work experience in maintaining DG Sets of 1000 KVA.

22. Manish Shastri, a B.E. (Mechanical), with 85% marks, has working knowledge of both French and German. He has 4 years of work experience in Europe and 5 years of work experience maintaining DG Sets of 1000 KVA. In all, he has 7 years of similar experience.

23. Sumit Baladev has 12 years of similar work experience and 5 years of work experience in Europe and 6 years of work experience in maintaining DG Sets of 1000 KVA. He has working knowledge of both French and German and he got 68% marks in his B.E. (Mechanical) and 65% in MBA (Maintenance).

24. Rajesh Saraf is a B.E (Mechanical) with 79% marks. He has no working knowledge of French or German. He has 6 years of work experience in maintaining DG Sets of 1000 KVA and 4 years of work experience in Europe, where he acquired working knowledge of Spanish. In total, he has similar work experience of 17 years.

25. Satish Agarwal is a B.E. (Mechanical), with 72% marks, and has only 8 years of similar experience. He has working knowledge of both French and Spanish. He has MBA (Maintenance) and has a work experience of, 7 years in Europe. He has 4 years experience in maintaining DG sets of 1000 KVA.

Directions for questions 26 to 30: These questions are based on the following information given below:

A number-classification system classifies numbers based on the following conditions:

(i) The number should have at least 6 digits and at most 12 digits.
(ii) The second and fourth digit of the number should be a composite number.
(iii) At least one of the digits should be repeated in the number.
(iv) There should be exactly 3 odd digits.

If the number satisfies all conditions, it is classified as a "Meagre number". If the number satisfies all the conditions except,

[a] condition (iii) alone, but its 3rd digit is a multiple of any of the other digits, it is classified as a "mélange number".

[b] condition (iv) alone, but it has at least two odd digits, then it is classified as a "melody number".

If the number does not come under any of the above-mentioned categories, and then it is classified as a "morose number".
For each of the following questions, choose your answer choice as:
(A) If the number is classified as a "meagre number".
(B) If the number is classified as a "melange number".
(C) If the number is classified as a "melody number".
(D) If the number is classified as a "morose number".

26. 7466315

27. 1968342

28. 8847325

29. 1792883

30. 14273322

Practice Exercise – 9

Table – I

Category of Quantifier	Example
Universal Affirmative	All
Universal Negative	No
Particular Affirmative	Some
Particular Negative	Some, not

Table – II

This table shows the distribution of subject and predicate. Wherever a tick mark (✓) is shown, it implies "distributed" and cross mark (x) implies "not distributed".

Table – II

Quantifier	Subject	Predicate
All	✓	X
No	✓	✓
Some	x	X
Some, not	x	✓

Statement I: Some A's are B's.

Which of the following statements is/are true on the basis of the above statement?

(a) Some B's are A's.
(b) Some A's are not B's.
(c) Some B's are not A's.

Statement II: Some A's are not B's.

Which of the following statements is/are true on the basis of the above statement?
(d) Some B's are not A's.
(e) Some A's are B's.
(f) Some B's are A's.

Note:

(A) 'No A is B' is the same as 'No B is A'.
(B) Each of the words "Many, A little, A few, Most, Several, At least one" is to be treated equivalent to the quantifier "some".
(C) Each of the words "Every, Each, Any" is to be treated equivalent to the quantifier "All".

Rules for Deductions

1. Every deduction should contain three and only three distinct terms.
2. If both the premises are particular, no conclusion can be drawn.
3. If both the premises are negative, no conclusion can be drawn.
4. The middle term must be distributed at least once in the premises.
5. If one premise is particular, the conclusion, if any, must be particular.
6. If one premise is negative, the conclusion, if any, must be negative.
7. If a term is not distributed in the premises, then that term cannot be distributed in the conclusion.

EXAMPLES

STATEMENTS **CONCLUSIONS**

1. All M's are N's.
All P's are R's.

2. Some R's are T's.
Some T's are Q's.

3. Many flowers are beautiful.
Some flowers are big.

4. No M's are P's.
No Q's are M's.

5. Some P's are not R's.
No P's are N's.

6. All K's are Q's.
Some Q's are N's.

7. All M's are P's.
Some P's are not L's.

8. All men are honest.
All honest are sincere.

9. All actors are dancers.
No dancer is a singer.

10. Some R's are T's.
All T's are M's.

11. Some snakes are not poisonous.
All dangerous are poisonous.

12. Some books are not good.
All readable are good.

13. No seller is a looser.
Some buyers are loosers.

14. Readers are not creative.
Some creative are painters.

15. All T's are K's.
Some P's are T's.

Directions for questions 16 to 19: The questions given below have four groups of three statements each. Read the statements in each group carefully and identify the group/groups where the third statement logically follows the first two statements in the group.

16. (a) Some lawyers are principled.
No principled is a liar.
Some lawyers are not liars.
(b) All dreamers are practical.
Some dreamers are achievers.
Some achievers are nationals.
(c) All citizens are nationals.
All foreigners have xenophobia.
Some citizens are foreigners.
(d) No winner is a stopper.
All stoppers are loosers.
Some loosers are not winners.
(A) Only a and c
(B) Only d and c
(C) Only d and b
(D) Only a and d

17. (a) All evenings are pleasant.
Some days are pleasant.
Some days are evenings.
(b) No painters are seller.
All painters are tax payers.
Some sellers are tax payers.
(c) All children are active.
All elders are hyper.
All hyper are active.
(d) Some fashions are vogue.
No style is vogue.
Some fashions are styles.
(A) Only a, b and d
(B) Only b
(C) Only d
(D) None of these

18. (a) All deserts are cactus
All Camels are cactus.
Camels are found in deserts.
(b) Dogs are not rats.
Rats are rodents.
Dogs are not rodents.
(c) All rulers are emperors
No ruler is chanakya.
Chanakya is not an emporer.
(d) Condolence is compassion.
Concern is condolence.
Concern is compassion.
(A) Only a and b
(B) Only b and c
(C) Only a and c
(D) Only d

19. (a) All palaces are villas.
Some mansions are palaces.
Some villas are mansions.
(b) Politicians are polite.
Pluto is not polite.
Pluto is not a politician.
(c) Some countries are good governments.
Only democracies are good governments.
Some countries are democracies.
(d) Some opinions are judgements.
All decisions are judgements.
Some decisions are opinions.
(A) Only a
(B) Only b
(C) Only a, b and c
(D) Only b and d

Directions for questions 20 to 22: Each of these questions consists of five statements followed by four sets of three statements each. Select as your answer the set in which the third statement can be logically concluded from the first two statements.

20. (a) All experiments are good results.
(b) Some experiments are mistakes.
(c) All scientists are mistakes.
(d) Some mistakes are good results.
(e) Some scientists are experiments.
(A) bce (B) adb
(C) bad (D) aec

21. (a) All advertisements are bulletins.
(b) All notifications are bulletins.
(c) All bulletins are notifications.
(d) All advertisements are notifications.
(e) All notifications are reports.
(A) abd (B) adc
(C) ace (D) dba

22. (a) All hey days are working days.
(b) No Sunday is a working day.
(c) Some public holidays are Sundays.
(d) Some public holidays are.hey days
(e) Hey days are not Sundays.
(A) abe (B) ced
(C) bde (D) aeb

Directions for questions 23 to 25: Each of these questions consists of six statements followed by four sets of three statements each. Select as your answer the set in which the statements are logically related.

23. (a) Some sellers are buyers.
(b) All consumers are shoppers.
(c) Some buyers are shoppers.
(d) All shoppers are sellers.
(e) Some customers are consumers.
(f) All sellers are consumers.
(A) eac (B) fda (C) dfb (D) acd

24. (a) Some rational are real.
(b) All rational are typical.
(c) All real are natural.
(d) All natural are rational.
(e) Some real are not rational.
(f) Some typical are rational.
(A) ade (B) acd (C) dbf (D) cdb

25. (a) Some bowlers are not cricketers.
(b) Some cricketers are not batsmen.
(c) No bowler is a batsman.
(d) All bowlers are batsmen.
(e) Some cricketers are batsmen.
(f) Some cricketers are not bowlers.
(A) bea (B) eda (C) aec (D) fdb

Practice Exercise – 10

Introduction

Questions based on deductions are frequently asked in competitive exams. These types of questions are generally solved by using Venn Diagrams.

Venn Diagrams: These are diagrammatic/pictorial representation of sets by using geometrical figures. The Venn diagram drawn to represent all the given statements should be a combined diagram. A set of given statements can be represented in several ways using Venn diagrams. We say that a conclusion definitely follows the given statements only if that conclusion is true for all possible diagrammatic representations.

Qualifiers:

All:

All A's are B's, All animals are living things, All shoes are socks, etc.

No:

No A is B, No boy is girl, No bat is rat, No weak is coward, etc.

Some:

Some A's are B's, Some doctors are men, Most girls are brave, Few roads are bridges, etc.

Some – not:

Some A's are not B's, Some Cricketers are not Indians, etc.

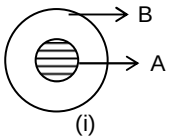
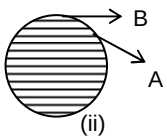
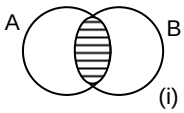
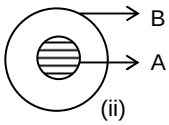
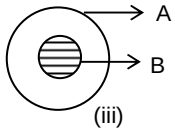
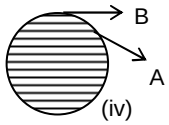
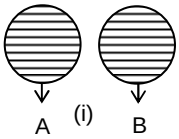
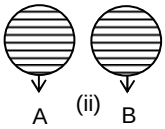
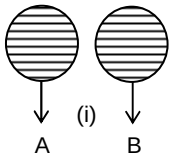
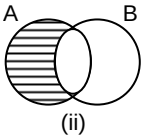
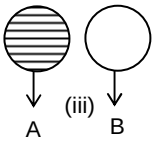
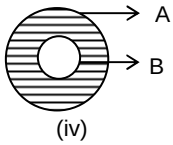
The statements, which contain the qualifiers 'All' and 'Some', are called affirmative statements and those containing the qualifiers 'No' and 'Some-not' are called negative statements.

The pairs of qualifies ('Some and No') and ('Some-not' and 'All'), for the same terms, from complementary pairs.

The following table shows different ways of representing a statement consisting of a qualifier, by using Venn Diagrams.

TABLE – I

Qualifier **Representations using Venn Diagram**

	Representation with minimum overlap	**Alternative Representation (AD)**		
(1) ALL: Eg: All A's are B's				
(2) SOME: Eg: Some A's are B's				
(3) NO: Eg: No A is B				
(4) SOME, NOT: Eg: Some A's are not B's				

Let us call the representation with minimum overlap as "Basic Diagrams" (BD) and the rest "Alternative Diagrams" (AD).

Basic Diagram (BD): This is a diagram which represents the least possible situation for a given statement.
In table-I, for statement (1), figure (i) has lesser overlapping than figure (ii). Hence, figure (i) forms the BD for statement (1). Similarly, figure (i) for statement (2) has least overlapping among all possible diagrams for that statement. Hence, figure (i) forms BD for statement (2). Similarly, figure (i) for statement (4) is the BD for it. For statement (3) only one diagram is possible.

Alternative Diagram (AD):

Any diagram, other than BD for the given statements, is an alternative diagram. For each set of statements several alternative diagrams are possible.

Method to draw Venn Diagrams for the given statements:

Each question contains two or more statements. The Venn diagrams, that we draw to represent these statements, should be a combined diagram i.e., the diagram should link all the given statements.

Analysis of Conclusions:

If an affirmative conclusion, i.e. "All A's are B's" and "some A's are B's", is true in B.D, it will be true in every possible diagram. Hence, we need not check its validity in an alternative diagram.

If an affirmative or a negative conclusion is false in B.D, we cannot consider it as an answer as it is already false.

If a negative conclusion is true in B.D, there is a possibility that it may be false in an A.D. We should check if there is a possible A.D, where the negative conclusion is false ie., if "No A is B" is true in B.D, we should try to prove "some A's are B's". If "some A's are B's," is true in A.D., it means that the negative conclusion is false and hence cannot be taken as an answer. If it is not possible to create a situation to show that "some A's are B's" it means that the negative conclusion is always true. Similarly, in case "some A's are not B's", is true in B.D, then we need to check if "All A's are B's" can be shown in an A.D.

Apart from this, there other patterns of conclusions as discussed in the table given below,

Pattern of Conclusion	Follows	Does not follow
All A's are B's Or Some A's are B's Or No A is B Or Some A's are not B's } is a possibility	If it can be shown in at least one diagram	If it cannot be shown in any diagram
All A's are B's Or Some A's are B's Or No A is B Or Some A's are not B's } is not a possibility	If it cannot be shown in any diagram	If it can be shown in at least one diagram

Directions for questions 1 to 5: Each of these questions consists of two statements followed by two conclusions I and II. Consider the statements to be true even though they seem to be at variance with commonly known facts and decide which of the conclusion(s) logically follow/s the given statements, disregarding the commonly known facts. Mark your answer as

(1) if only conclusion I follows.
(2) if only conclusion II follows.
(3) if either I or II follows.
(4) if neither I nor II follows.
(5) if both I and II follow.

1. Statements:
All seas are bees.
Some teas are bees.

Conclusions:
I. All teas are seas.
II. Some seas are teas.

2. Statements:
All villages are towns.
No country is a village.

Conclusions:
I. No town is a country.
II. No country is a town.

3. Statements:
Some wealthy are healthy.
Some healthy are not stealthy.

Conclusions:
I. All wealthy are stealthy.
II. Some wealthy are not stealthy.

4. Statements:
All weddings are writings.
All weddings are wirings.

Conclusions:
I. Some writings are wirings.
II. No wiring is a writing.

5. Statements:
Some zeroes are not heroes.
All zeroes are poor.

Conclusions:
I. All heroes are poor.
II. Some poor are not heroes.

Directions for questions 6 to 10: In each of these questions, two statements are given followed by four conclusions. Consider the statements to be true even though they seem to be at variance with commonly known facts and decide which of the conclusion(s) logically follow(s) the given statements, disregarding the commonly known facts. Choose the correct alternative from the given choices.

6. Statements:
Some different are difficult.
No deterrent is different.

Conclusions:
I. Some different are deterrent.
II. Some difficult are not different.
III. Some difficult are not deterrent.
IV. Some different are not deterrent.
(1) Only I follows.
(2) Only IV follows.
(3) Only III and IV follow.
(4) Only III follows.
(5) None follows

7. Statements:
All cats are dogs.
No dog is a rat.

Conclusions:
I. Some dogs are cats.
II. No cat is a rat.
III. No rat is a cat.
IV. All dogs are cats.
(1) Only I and II follow.
(2) Only I, II and III follow.
(3) Only III and IV follow.
(4) Only II and IV follow.
(5) Only III follows.

8. Statements:
Some crazy are lazy.
Some lazy are not hazy.

Conclusions:
I. Some hazy are lazy.
II. Some crazy are hazy.
III. No hazy is crazy.
IV. All lazy are crazy.

(1) Only II follows.
(2) Only III follows.
(3) Only IV follows.
(4) Either II or III follows.
(5) I and either II or III follow.

9. Statements:
All actors are dancers.
All singers are dancers.
Conclusions:
I. Some actors are singers.
II. All actors are singers.
III. All dancers are singers.
IV. No actor is a singer.
(1) Only I and III follow.
(2) Only I follows.
(3) Only II and III follow.
(4) Either I or IV follows.
(5) None follows

10. Statements:
No Maruti is a Fiat.
Some Fiats are Toyotas.

Conclusions:
I. Some Marutis are not Toyotas.
II. Some Fiats are not Toyotas.
III. All Marutis are Toyotas.
IV. No Fiat is a Maruti.
(1) Only I, II and III follow.
(2) Only I and II follow.
(3) Either I or III and IV follow.
(4) Only II and IV follow.
(5) All follow.

Directions for questions 11 to 15: In each of the questions below, three statements followed by four conclusions are given. Consider the statements to be true even though they seem to be at variance with commonly known facts and decide which of the conclusion(s) logically follow/s the given statements, disregarding the commonly known facts. Choose the correct alternative from the given choices.

11. Statements:
No port is a harbour.
Some ports are capitals.
All harbours are aerodromes.

Conclusions:
I. Some aerodromes are not ports.
II. No port is an aerodrome.
III. No harbour is a capital.
IV. Some capitals are not harbours.
(1) Only I and IV follow.
(2) Only II and IV follow.
(3) Only III and IV follow.
(4) Only IV follows.
(5) None follows

12. Statements:
Some rubies are not diamonds.
All saphires are emeralds.
No emerald is a diamond.

Conclusions:
I. Some rubies are not saphires.
II. Some rubies are not emeralds.
III. No diamond is a sapphire.
IV. Some saphires are not diamonds.
(1) Only I and III follow.
(2) Only IV follows.
(3) Only III and IV follow.
(4) Only III follows.
(5) None of these

13. Statements:
No boxer is a shooter.
Some shooters are surfers.
All wrestlers are shooters.

Conclusions:
I. No boxer is a wrestler.
II. Some boxers are not wrestlers.
III. Some surfers are not boxers.
IV. Some wrestlers are not boxers.
(1) Only I and II follow.
(2) Only II and III follow.
(3) Only III and IV follow.
(4) Only I, III and IV follow.
(5) All follow.

14. Statements:
Some batsmen are bowlers.
All keepers are batsmen.
No coach is a keeper.

Conclusions:
I. No coach is a bowler.
II. No keeper is a bowler.
III. Some bowlers are coaches.
IV. Some batsmen are coaches.
(1) Only I and II follow.
(2) Only II and III follow.
(3) Only I and IV follow.
(4) None follows.
(5) None of these

15. Statements:
Some symbols are syllables.
Some syllables are not emblems.
Some lebels are not emblems.

Conclusions:
I. Some syllables are not lebels.
II. Some symbols are lebels.
III. Some emblems are symbols.
IV. All lebels are syllables.
(1) Only II and IV follow.
(2) Only II and III follow.
(3) Either I or III follows.
(4) Either I or IV follows.
(5) None of these

Directions* for *questions 16 to 20: Each of the following questions consists of four statements followed by four conclusions. Consider the statements to be true even if they vary with the commonly known facts and find out which of the conclusions logically follow(s) the given statements disregarding the commonly known facts and choose the proper alternative from the given choices:

16. Statements:
Some camps are bones.
Some flames are camps.
No bone is a cone.
No camp is a ramp.

Conclusions:
I. Some cones are not camps.
II. All flames being ramps is a possibility.
III. All cones are camps.
IV. Some bones being flames is a being possibility.
(1) None follows
(2) Only I and III follow
(3) Either I or II follows
(4) Only IV and either I or III follow
(5) Only III follows

17. Statements:
Some glasses are not classes.
All classes are coolers.
All coolers are heaters.
No heater is an engine.

Conclusions:
I. At least some heaters are classes.
II. Some classes being engines is not a possibility.
III. No engine being a class is a possibility.
IV. Some glasses are heaters.
(1) Only II and III follow
(2) Only I, II and III follow
(3) Only I and IV follow
(4) All follow
(5) Only I and either II or III follow

18. Statements:
All graphs are cakes.
Some cakes are sports.
All cakes are stones.
No report is a graph.

Conclusions:
I. Some graphs are sports.
II. Some sports are stones.
III. No report is a cake.
IV. Some sports are not stones.
(1) Only II follows
(2) Only I follows
(3) Only II, III and IV follow
(4) Only IV follows
(5) All follow

19. Statements:
Some dishes are fishes.
All edges are dishes.
Some doors are edges.
All designs are edges.

Conclusions:
I. Some dishes are doors.
II. Some edges are fishers.
III. Some doors are designs.
IV. All designs are dishes.
(1) All follow
(2) None follows
(3) Only I and IV follow
(4) Only II and IV follow
(5) Only I and III follow

20. Statements:
Some maps are caps.
No map is a parrot.
All caps are kings.
No pin is a map.

Conclusions:
I. All parrots being kings is a possibility.
II. Some pins being kings is a possibility.
III. Some kings are maps.
IV. Some parrots being caps is a possibility.
(1) All follow
(2) Only I and III follow
(3) Only III and IV follow
(4) Only III follows
(5) Only II and III follow

Practice Exercise – 11

Logical Connectives

Here "p" and "q" are simple statements.

Logical Connectives	Implications	Negations
If p, then q	$p \Rightarrow q$ $\sim q \Rightarrow \sim p$	p & ~q ~q & p
Whenever p, then q		
Only if p, then q	$q \Rightarrow p$ $\sim p \Rightarrow \sim q$	q & ~p ~p & q
Unless p, then q	$\sim p \Rightarrow q$ $\sim q \Rightarrow p$	~p & ~q ~q & ~p
Either p or q	$\sim p \Rightarrow q$ $\sim q \Rightarrow p$	~p & ~q ~q & ~p

Directions for questions 1 to 5: Each question below consists of a main statement followed by four statements. From the statements, select the one that logically follows the main statement.

1. If Sania wins, then her rank improves.
(A) Sania's rank improved, implies that she won.
(B) Sania did not win, hence her rank does not improve.
(C) Sania's rank did not improve, implies that she did not win.
(D) Sania won, hence her rank will not improve.

2. Whenever my parents are away, I have fun.
(A) I have fun, means that my parents are away.
(B) My parents are away, hence I will have fun.
(C) My parents are not away, hence I will not have fun.
(D) Both (B) and (C).

3. Only if the aesthetic sense prevails, will corruption vanish.
(A) Aesthetic sense prevailed, means that corruption will vanish.
(B) Corruption did not vanish, implies that aesthetic sense did not prevail.
(C) Aesthetic sense did not prevail, hence corruption vanishes.
(D) Corruption vanished, implies that aesthetic sense prevailed.

4. Unless the apple cart is full, there will be no balance.
(A) The apple cart is not full, hence there will be balance.
(B) There is balance, implies that the apple cart is full.
(C) The apple cart is not full, means that there will be no balance.
(D) Both (B) and (C).

5. Either the king is efficient or the subjects are disciplined.
(A) The king is efficient, because the subjects are disciplined.
(B) The king is not efficient, means that the subjects are disciplined.
(C) The subjects are disciplined, means that the king is efficient.
(D) The subjects are disciplined, implies that the king is not efficient.

Directions for questions 6 to 11: In each question, there is a main statement followed by four statements a, b, c and d. From the choices, choose the ordered pair or pairs in which the first statement implies the second statement and the two are logically consistent with the main statement.

6. If you attend the party, then I will introduce you to them.
a : You have attended the party.
b : You did not attend the party.
c : I will introduce you to them.
d : I will not introduce you to them.
(A) ab (B) bd (C) ca (D) db

7. Either Ram or Laxman will deliver the book.
a : Ram delivered the book.
b : Laxman delivered the book.
c : Ram did not deliver the book.
d : Laxman did not deliver the book.
(A) bc (B) da
(C) cd and ab (D) cb and ad

8. Unless your will is strong, you will not fulfil your dream.
a : Your will is not strong.
b : You will not fulfil your dream.
c : Your will is strong.
d : You will fulfil your dream.
(A) ab (B) cd (C) ba (D) ad

9. The government will be in place, only if there is fair poll.
a : The government is not in place.
b : There is fair poll.
c : The government is in place.
d : There is no fair poll.
(A) ad (B) bc (C) bd (D) cb

10. Rohit creates history, whenever he is in form.
a : Rohit is not in form.
b : Rohit did not create history.
c : Rohit creates history.
d : Rohit is in form.
(A) cd (B) ba
(C) cd and ab (D) dc and ba

11. The face of the world would be different, only if Cleo's nose was shorter.
a : Cleo's nose was not shorter.
b : Cleo's nose was shorter.
c : The face of the world was different.
d : The face of the world was not different.
(A) ad and cb (B) da and bc
(C) bc and ad (D) cb and da

Directions for questions 12 to 17: Each question given below has a statement followed by four different statements. Choose the one which is the correct negation of the given statement.

12. If Ronaldo does not score goals, his team will not win the match.
(A) Ronaldo scored the goals, but his team did not win the match.
(B) Ronaldo scored the goals and his team won the match.
(C) Ronaldo did not score goals and his team did not win the match.
(D) Ronaldo did not score goals but his team won the match.

13. The sales of the company will be very good, only if the profit margin of the company is less.
(A) The profit margin of the company is less and the sales of the company are not very good.
(B) The profit margin of the company is not less, but the sales of the company are very good.
(C) The profit margin of the company is less and the sales of the company are very good.
(D) The profit margin of the company is not less, but the sales of the company are not very good.

14. Either the glass bottles are popular or the pet bottles are costly.
(A) The pet bottles are not costly and the glass bottles are not popular.
(B) The glass bottles are popular but the pet bottles are not costly.
(C) The pet bottles are costly but the glass bottles are not popular.
(D) The pet bottles are costly and the glass bottles are popular.

15. There will be a change in the environment, unless the laws of nature are followed.
(A) The laws of nature are followed and there is no change in the environment.
(B) The laws of nature are followed but there is a change in the environment.
(C) The laws of nature are not followed but there is change in the environment.
(D) The laws of nature are not followed but there is no change in the environment.

16. The markets are booming and the economic growth is stunning.
(A) The markets are not booming or the economic growth is not stunning.
(B) The markets are not booming and the economic growth is stunning.
(C) The markets are booming and the economic growth is not stunning.
(D) The markets are not booming and the economic growth is not stunning.

17. The traffic is not heavy or I have not driven carefully.
(A) The traffic is heavy and I have not driven carefully.
(B) The traffic is heavy and I have driven carefully.
(C) The traffic is not heavy and I have not driven carefully.
(D) The traffic is not heavy and I have driven carefully.

Directions for questions 18 to 25: Each question below consists of a main statement followed by four statements. From the statements, select the one that logically follows the main statement.

18. If he gets a gift, then it is a pen or a pencil.
(A) He got a gift, means that it is a pen or a pencil.
(B) The gift is neither pen nor pencil, hence he did not get a gift.
(C) He got a gift but it is not a pen, hence it must be a pencil.
(D) All the above

19. If you help and forget then you will go to heaven.
(A) You helped and forgot, hence you will go to heaven.
(B) You did not go to heaven, implies that you did not help.
(C) You did not go to heaven, implies that you did not forget.
(D) All the above

20. If you want to succeed, then you must read and practise.
(A) You are successful, hence you must have read and practised.
(B) You read but you did not practise, hence you will not be successful.
(C) You did not read or practise, means that you will not be successful.
(D) All the above

21. If you push or pull, then it gets damaged.
(A) It was damaged, means that you pulled or pushed.
(B) You pulled, hence it got damaged.
(C) It is not damaged, implies that you neither pulled nor pushed.
(D) Both (B) and (C).

22. Only if you play, will your reflexes and flexibility improve.
(A) You played, implies that your reflexes and flexibility will improve.
(B) You did not play but your reflexes improved means that flexibility did not improve.
(C) Your reflexes or flexibility improved means that you played.
(D) Both (B) and (C).

23. The exam will be cancelled, only if the paper is leaked and it is known to all.
(A) The paper is not leaked; hence the exam will not be cancelled.
(B) The paper is leaked; hence the exam will not be cancelled.
(C) The exam is cancelled, means that the paper was leaked and it was not known to all.
(D) All the above

24. Unless you go to school, you will not pass or you will not have friends.
(A) You passed and have friends, means that you went to school.
(B) You did not go to school but you have friends, implies that you have not passed.
(C) You passed without going to school, means that you did not have friends.
(D) All the above

25. I will not go to a movie, unless I am bored or have no work.
(A) I am not bored and have work, means that I will not go to a movie.
(B) I went to a movie but I had work means that I am bored.
(C) I am not bored and I went to a movie, implies that I have no work.
(D) All the above

Practice Exercise – 12

Directions for questions 1 and 2: Answer the following questions.

1. Find the number of pieces obtained when a cube is cut by six cuts.

2. What is the maximum possible number of pieces into which a cube can be cut by
(i) 16 cuts
(ii) 11 cuts
(iii) 15 cuts
(iv) 19 cuts
(v) 20 cuts

Directions for questions 3 to 5: Answer the following questions.

3. How many cuts are required to cut a cube into 512 pieces?

4. What is the minimum possible number of cuts required to cut a cube into 180 pieces?

5. What is the minimum possible number of cuts required to cut a cube into
(i) 48 pieces
(ii) 150 pieces
(iii) 210 pieces
(iv) 294 pieces
(v) 343 pieces

Directions for questions 6 to 9: A cube is painted and cut into 216 smaller and identical pieces by making minimum possible number of cuts.

6. How many smaller pieces have exactly three painted faces?

7. How many smaller pieces have exactly two painted faces?

8. How many smaller pieces have exactly one painted face?

9. How many smaller pieces have no painted face?

Directions for questions 10 to 13: A cube is painted and cut into 210 smaller and identical pieces by making minimum possible number of cuts.

10. How many smaller pieces have exactly three painted faces?

11. How many smaller pieces have exactly two painted faces?

12. How many smaller pieces have exactly one painted face?

13. How many smaller pieces have no painted face?

Directions for questions 14 to 19: A pair of opposite faces of a cube is painted in blue, another pair of opposite faces in green and the remaining two faces are painted in red. The cube is then cut into 216 smaller and identical cubes.

14. How many smaller cubes have all the three colours on them?

15. How many smaller cubes have only red and green on them?

16. How many smaller cubes have exactly two colours on them?

17. How many smaller cubes have only red colour on them?

18. How many smaller cubes have exactly one colour on them?

19. How many smaller cubes have no colour on them?

Directions for questions 20 to 27: A cube is painted in red, blue and green colours on three, two and one face respectively, in such a way that no two faces printed in the same colour are opposite to each other. Now this cube is cut into 216 smaller cubes.

20. How many smaller cubes have all the three colours on them?

21. How many smaller cubes have only green and red on them?

22. How many smaller cubes have exactly two colours on them?

23. How many smaller cubes have exactly two painted surfaces and have exactly two colours?

24. How many smaller cubes have exactly one colour on them?

25. How many smaller cubes have exactly one painted surface and have exactly one colour?

26. How many smaller cubes do not have red colour on them?

27. How many smaller cubes have blue or green but not red colour on them?

Directions for questions 28 to 31: These questions are based on the following information.

A large cube is formed by stacking 64 smaller and identical cubes. These smaller cubes are numbered 1 to 64 in the following manner. The four cubes in the front row of the bottom layer are numbered 1 to 4 from left to right. The cubes in the second row of the bottom layer are numbered 5 to 8. This pattern of numbering continued till all the 16 cubes in the bottom layer are numbered. The numbering of the second layer is done in a similar fashion, by numbering the cubes in the front row from 17 to 20 from left to right. This pattern of numbering continues for all the layers from the bottom layer to the top layer

28. What is the sum of numbers on all the cubes in the front row of the bottom layer?

29. What is the sum of numbers on all the cubes in the left column of the front face?

30. What is the sum of the numbers on the cubes along the left column of the back layer?

31. What is the sum of the numbers on the cubes along the second row of the top layer?

Directions for questions 32 to 35: These questions are based on the following information.

A large cube is formed by stacking 125 smaller and identical cubes. These smaller cubes are numbered 1 to 125 in the following manner. The five cubes in the front row of the bottom layer are numbered 1 to 5 from left to right. The cubes in the second row of the bottom layer are numbered 6 to 10. This pattern of numbering continues till all the 25 cubes in the bottom layer are numbered. The numbering of the second layer is done in a similar fashion, by numbering the cubes in the front row from 26 to 30 from left to right. This pattern of numbering continues for all the layers from bottom layer to top layer.

32. What is the sum of numbers on the cubes along the column which has it's base in the cube which is second from the left end of the bottom row of the layer behind the front layer?

33. What is the sum of the numbers on the cubes along the diagonal from the cube at the left end of the front row of the top layer to the cube at the right end of the last row of the top layer?

34. What is the sum of the numbers on the cubes along the diagonal from the cube at the left end of the bottom row of the front face to the cube at the right end of the last row of the top layer?

35. What is the sum of the numbers on the cubes along the diagonal from the cube at the right end of the bottom row of the front layer to the cube at the left end of the top row of the back layer?

Practice Exercise – 13

Directions for questions 1 to 4: Answer the questions based on the following information.

A, B, C, D and E are five employees who invested amounts of ₹60,000, ₹80,000, ₹90,000, ₹1lakh and ₹1.2lakh (order may not be the same) in five different financial companies.

Each of these financial companies offers a different annual interest rate among 3%, 4%, 5%, 6%, and 8% (order may not be the same as mentioned).

The annual returns of these five employees are a different one among ₹4,000, ₹4,800, ₹3,600, ₹7,200 and ₹3,000. No two employees invested in the same financial company.

The following information is known:
(i) Neither A nor E got the highest annual returns.
(ii) B received an annual return of ₹3,600.
(iii) C invested in a financial company, which offers an annual interest rate of 5%.
(iv) E invested an amount of ₹1lakh.
(v) The employee who received the highest annual return didn't invest in the financial company which was offering the highest annual interest rate.

1. What was the amount invested by employee A?
(A) ₹60,000 (B) ₹80,000 (C) ₹1lakh (D) ₹1.2lakh

2. What were the annual returns received by employee E?
(A) ₹3000 (B) ₹4800 (C) ₹7200 (D) ₹3600

3. Which of the following statements is true?
(A) E invested in a financial company which offers an interest rate of 6%.
(B) D received an annual return of ₹4,000.
(C) B invested an amount of ₹90,000.
(D) None of these

4. Which of the following statements is false?
(A) A invested an amount of ₹80,000.
(B) C received an annual return of ₹4,000.
(C) E invested an amount of ₹1.2 lakhs.
(D) More than one of the above

Directions for questions 5 to 7: Answer the questions based on the following information.

P, Q, and R are three friends who started playing a game with some initial funds. The rules of the game are such that every time one of the member loses the game he has to pay the amount from his fund to each other player, which each of them was having at that time.

They have played three games. 1, 2 and 3, in which P, Q and R lost the game respectively. It was also observed that after the completion of game 3, the amount remained with each of the three members was equal to ₹640.

5. What was the initial amount with person P before game1?
(A) ₹1,120 (B) ₹1,040 (C) ₹1,080 (D) ₹1,240

6. What was the amount that remained with person Q after the completion of game 1?
(A) ₹1,040 (B) ₹640 (C) ₹1,340 (D) ₹1,120

7. What was the total amount that remained with the three persons after the completions of game 2?
(A) ₹1,960 (B) ₹2,120 (C) ₹1,920 (D) ₹2,040

Directions for questions 8 to 12: These questions are based on the following information.

In the year 2012, KBC Inc., started a GK training institute for general public. It offers certifications in five Grades. (In each grade there may be students newly enrolled, or students promoted from a lower grade, or students retained from the same grade of previous year.)

A consultant who wanted to perform an audit of the institute's performance collected the following data:

New enrollments:

(i) In the first year, 50 students each have enrolled in each of the grades. The number of enrollments in Grade I is the same every year.
(ii) In grades II, III, IV and V, there were no new enrollments in a grade whenever the number of students retained in that grade is more than or equal to the number of promotees to that grade. In all other cases, their number is equal to the difference of numbers of the students retained and the students promoted.
(iii) No student has left the institute.

Retention of Students:

(iv) The number of students retained in any grade is at most 50 and is a multiple of 10.
(v) Year 2015 has the lowest number of students retained i.e., 140.
(vi) In any year, no two grades have the same number of retained students.
(vii) For any grade, no two years have the same number of retained students.

Promotions:

(viii) Every student who is not retained is awarded the grade certificate and is promoted to the next higher grade for the next year.
(ix) In no grade among I, II, III and IV, in any year, all the students have been promoted. In grade V, only in 2014 all the students have been issued certificates.

Further, the following incomplete table is shared by one of the employees:

	2012	2013				2014				2015				2016			
	T	N	R	P	T	N	R	P	T	N	R	P	T	N	R	P	T
Grade I	50				100		40				30						70
Grade II	50				40						20		120		50		
Grade III	50						30										
Grade IV	50			30	60												
Grade V	50		30					10					20		10		40

N = New enrolments

R = Number of students retained from the same grade previous year

P = Students of one lower grade promoted from previous year

T = Total number of students

Directions for questions 8 to 12: Type in your answer in the input box provided below the question.

8. How many Grade V certifications were issued in all, during the given period?

9. What is the highest number of new enrollments in any grade across all years?

10. How many new enrollments were made in the year 2014?

11. What was the total strength of the students in the year 2015?

12. In which year KBC Ltd had seen the highest 'New total enrollments'?

Directions for questions 13 to 16: These questions are based on the following information.

P, Q, R and S are four friends and each of them has picked a certain number of coins from a group of twelve coins placed on the table. Each coin bears a different number among 20 to 31 on it. It is also known that no two friends have picked up the same number (count) of coins from the table.

The following information is known regarding them:

(i) The number of coins picked up by P is greater than the number of coins picked up by each of Q and R.
(ii) Neither Q nor S has picked up a coin, which bears a prime number on it.
(iii) Either Q or S has picked up a coin, which bears a multiple of 13 on it.
(iv) The number of coins picked up by P and S is equal to the number of coins picked up by Q and R.
(v) Neither P nor S has picked a coin, which has a multiple of 5 printed on it.
(vi) One among P and Q picked up all the coins which has multiples of 3 printed on it.

13. How many coins were picked up by Q?
(A) Six (B) Five (C) Four (D) Three

14. Of all the coins picked up by P, which is the smallest number?
(A) 27 (B) 24 (C) 23 (D) 22

15. What is the sum of the numbers printed on the coins picked up by Q?
(A) 132 (B) 119 (C) 102 (D) 109

16. Which of these following is the set of coins picked up by person R?
(A) (28, 25, 22) (B) (20, 25, 29)
(C) (20, 28) (D) (20, 25)

Directions for questions 17 to 20: These questions are based on the following information.

A, B, C, D and E are five friends each of whom answered five questions in an examination. Each question has five answer choices a, b, c, d and e. The answers marked by the five friends are given in the following table:

	Q.no.1	Q.no 2	Q.no. 3	Q.no. 4	Q.no. 5
A	b	c	a	e	d
B	b	e	b	b	d
C	e	c	b	e	a
D	b	c	a	b	d
E	b	b	a	e	d

The following information is known regarding them:

(i) Each person has answered at least one question correct/right in the examination.
(ii) Only one person has got all the answers correct in the examination.
(iii) But for B and E, no two among the others have got the same number of questions correct in the examination.
(iv) Each question has only one correct answer.

17. Which of the following persons has got all the questions correct?
(A) A (B) B (C) D (D) C

18. What is the right choice/ answer for Question 2?
(A) e (B) c (C) b (D) a

19. How many questions were answered correctly by B?
(A) Two (B) One (C) Four (D) Three

20. Which of the following combination is correct?
(A) A – 1 (B) D – 5 (C) B – 5 (D) C – 5

Directions for questions 21 to 23: These questions are based on the following information.

There are 10 boxes, each containing n balls. Each of the balls in nine boxes weigh 1 kg whereas each of the balls in the remaining box weighs 2 kg. A spring balance is used to weigh these balls and m is the minimum number of weighings required to find the box that contains the 2 kg balls.

21. If n = 10, then m =
(A) One (B) Two (C) Three (D) Four

22. If n = 2, then m =
(A) Two (B) Three (C) Four (D) Five

23. If n = 3, then m =
(A) Two (B) Three (C) Four (D) Five

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

24. The alphabets given below take values from 2 to 8. And also G + C + E = A + D + G = F + B + D = 15. Find the value of A.
(A) 5 (B) 6 (C) 7 (D) 8

25. Two persons A and B are playing a game in which three piles of coins containing 2, 3 and 4 coins respectively are placed. A person can pick one coin from a pile or all the coins of a pile. The person who picks the last coin is the loser. How many coins and from which pile should the first person pick to win?
(A) One coin from the pile of 3 coins.
(B) All the coins from the pile of 3 coins.
(C) All the coins from the pile of 4 coins.
(D) All the coins from the pile of 2 coins.

Practice Exercise – 14

Directions for questions 1 to 3: These questions are based on the following information.

Top 64 players participated in a knock out tennis tournament. This tournament has five knock out rounds before the final, i.e. first round, second round, third round, quarter finals and semifinals. In the first round, the highest seeded player (seed 1) plays the lowest seeded player (seed 64) and this match is designated as match no.1 of the first round; the 2nd seeded player plays the 63rd seeded player and this match is designated as match no.2 of the first round, and so on. Thus, for instance match no.32 of the first round is to be played between the 32nd seeded and the 33rd seeded players. In the second round, the winner of match no.1 of the first round plays the winner of match no.32 of the first round and this match is designated as match no.1 of the second round. Similarly, the winner of match no.2 of the first round plays the winner of match no.31 of the first round and this match is designated as match no.2 of the second round. Thus, for instance, match no.16 of the second round is to be played between the winner of match no.16 of the first round and the winner of match no.17 of the first round. The same pattern is followed for later rounds as well. An upset is said to be taken place if a lower seeded player beats a higher seeded player.

1. What is the maximum possible number of upsets in the tournament?
(A) 64 (B) 63 (C) 127 (D) 32

2. If there is no upset in the tournament, with whom does seed 3 play in the quarterfinals?
(A) Seed 6 (B) Seed 2 (C) Seed 4 (D) Seed 5

3. If seed 43 reaches the third round, who among the following players could he have played in that round?
(A) Seed 52 (B) Seed 36
(C) Seed 54 (D) Seed 38

Directions for questions 4 to 6: These questions are based on the following data.

Among five friends A, B, C, D and E, everyone receives an equal amount every month as pocket money and everyone spends an equal amount every month. But this month their receipts and expenditures varied from their normal receipts and expenditures. A received ₹10 more than the normal monthly pocket money and spent ₹5 more than the normal monthly expenditure. B received ₹5 less than the normal monthly pocket money and spent ₹5 less than the normal monthly expenditure. This month C received ₹15 more than A but saved ₹15 less than A. D received ₹10 more than B and saved the same amount as A. E received ₹45 less than what C received this month and could not save any money, since he had to spend the same amount of money he had spent in the previous months.

4. Who spent the maximum amount of money this month?
(A) A (B) B
(C) C (D) Cannot be determined

5. How much money did each of the boys save in the last month?
(A) ₹30
(B) ₹50
(C) ₹20
(D) Cannot be determined

6. Who received the maximum amount of money in this month?
(A) A (B) B (C) C (D) D

Directions for questions 7 to 10: These questions are based on the following data.

Ten tokens, numbered 1 through 10, are distributed among five boys – Jayaraj, Kamal, Lohit, Manish and Nihar. The numbers on the tokens that Kamal gets are perfect squares. The numbers on the tokens that Manish gets are all multiples of 3. Lohit is the only person who gets exactly one token and the number on his token is equal to the sum of the numbers on Nihar's tokens. Nihar gets exactly two tokens, both of which bear even numbers and one of which bears a number which is also a multiple of 3.

7. Which of the following is the sum of the numbers on Jayaraj's tokens?
(A) 22 (B) 20
(C) 15 (D) None of these

8. Which of the following is the number on Lohit's token?
(A) 6 (B) 8
(C) 10 (D) Either (B) or (C)

9. Which of the following gives the numbers on Kamal's tokens completely?
(A) 1 and 9 (B) 4 and 9
(C) 1 and 4 (D) 1, 4 and 9

10. Which of the following gives the numbers on Manish's tokens completely?
(A) 3 and 6 (B) 3 and 9
(C) 6 and 9 (D) 3, 6 and 9

Directions for questions 11 to 15: These questions are based on the following information.

Eight persons A, B, C, D, E, F, G and H are travelling to three different places among Hyderabad, Chennai and Bangalore by three different cars among Wagon R, Honda city and swift but not necessarily in the same order. The maximum number of persons travelling by any car is three. In each car there are atleast one male and one female. Each car is travelling to only one place.
Only G and F's sister are travelling to Bangalore. B and E are travelling by the same car but it is not Wagon R. C who is female and A are travelling to the same place, but not to Hyderabad. A and A's brother H are travelling by different cars. Two females are travelling by Honda City. D is not travelling by Wagon R. A is a female.

11. How many females are travelling in all the cars together?
(A) 8 (B) 4
(C) 5 (D) Either 3 or 4

12. Which of the following group of persons is travelling by Wagon R?
(A) CF (B) FG (C) ACF (D) AFG

13. To which city is F travelling?
(A) Hyderabad (B) Chennai
(C) Bangalore (D) Either (A) or (B)

14. Three of the following four are alike based on the given information in the arrangement and hence form a group. Find the one which does not belong to that group?
(A) A (B) B (C) C (D) F

15. Which of the following is true based on the given information?
(A) A is travelling to Hyderabad by Wagon R.
(B) B is travelling to Chennai by Honda City.
(C) Two females are travelling by Wagon R.
(D) D is travelling to Chennai by Swift.

Directions for questions 16 to 18: These questions are based on the following information.

Four persons A, B, C and D are sitting in a row I facing North and four persons. P, Q, M and N sitting in row II facing South but not necessarily in the same order. Each person is facing exactly one person from the other row. They all are wearing different coloured shirts. One of them is wearing a grey coloured shirt. Following information is known about them.

(i) C is second to the left of B but not at an extreme end.
(ii) A is opposite to the person who is wearing a black shirt and adjacent to the person who is wearing a yellow shirt.
(iii) Q is wearing a green shirt.
(iv) P is at an extreme end and diagonally opposite A.
(v) M is wearing a red shirt and second to the right of the person wearing a white shirt.
(vi) The person wearing a blue shirt is second to the left of the person wearing a magenta shirt.

16. Who is wearing a grey shirt?
(A) P (B) Q
(C) B (D) Cannot be determined

17. Which of the following is the correct combination of the person and the colour of the shirt he/she is wearing?
(A) A – Black (B) D – Magenta
(C) B – Yellow (D) C – Grey

18. Identify the odd one among the following.
(A) Yellow (B) Green
(C) Blue (D) Magenta

Directions for questions 19 to 21: These questions are based on the following information.

Each of the three persons Mamta, Madhuri and Mithu, belong to different city among Hyderabad, Delhi and Mumbai and also each work in a different city among the cities mentioned above. A person, who belongs to a city, does not work in the same city. When they were asked about themselves, they gave the following replies.

Mamta: I belong to Delhi. Mithu does not work in Delhi.
Madhuri: I work in Delhi. Mithu belongs to Mumbai.
Mithu: I do not work in Delhi. Mamta belongs to Mumbai.
It is also known that, each of them alternate between truth and lie in any order.

19. If Mamta works in Delhi, where does Mithu belong to?
(A) Hyderabad (B) Delhi
(C) Mumbai (D) Hyderabad or Delhi

20. If the first statement of the person, who belongs to Delhi is true, where does Mamta work?
(A) Mumbai
(B) Delhi
(C) Hyderabad
(D) Either (A) or (B)

21. Who belongs to Hyderabad?
(A) Madhuri (B) Mamta
(C) Mithu (D) Either (A) or (B)

Directions for questions 22 to 25: These questions are based on the following data.

Ten players – Kumble, Kambli, Gavaskar, Tendulkar, Raju, Agarkar, Siddhu, Raman, Srinath and Shastri – are at a round table conference. The table has exactly ten evenly spaced chairs around it. There are exactly two persons between Shastri and Kumble whereas Kambli is opposite Raju. There are exactly two persons between Kumble and Kambli. Srinath is opposite Shastri. There is only one person between Tendulkar and Gavaskar. Raman is opposite Kumble.

22. If Siddhu is two places away from Shastri, then who is between Kumble and Srinath?
(A) Tendulkar
(B) Gavaskar
(C) Agarkar
(D) Cannot be determined

23. If Agarkar is to the immediate left of Shastri, then who is to the immediate left of Raman?
(A) Shastri (B) Tendulkar
(C) Gavaskar (D) Siddhu

24. In how many different ways can the ten persons be arranged around the table, without violating any of the conditions given?
(A) 16 (B) 8 (C) 12 (D) 20

25. If Agarkar is to the right of Raju and opposite Tendulkar, then who is between Kumble and Srinath?
(A) Tendulkar (B) Gavaskar
(C) Siddhu (D) None of these

Directions for questions 26 to 30: These questions are based on the following data.

In a medical college, the courses being offered in a semester are Anatomy, Physiology, Pathology, Ophthalmology, Microbiology, Pharmacology, Biochemistry, Forensic Medicine and Cardiology. Every student is expected to enrol for 6 subjects, subject to the following conditions:

(i) The student must always choose only one subject between Anatomy and Pathology.
(ii) The student must enrol for two and only two subjects from among Physiology, Ophthalmology and Cardiology.
(iii) The student must also opt for Anatomy, Physiology and Biochemistry, if he or she enrols for Pharmacology.
(iv) The student cannot opt for Microbiology, if he or she has not chosen Pathology or Biochemistry.
(v) The student who does not enrol for Physiology or Pathology cannot choose Forensic Medicine.

26. If a student enrols for Cardiology and Forensic Medicine, then he or she must enrol for
(A) Biochemistry and Microbiology.
(B) Anatomy and Pharmacology.
(C) Ophthalmology and Microbiology.
(D) Biochemistry and Pharmacology.

27. If a student enrols for Microbiology, then the courses he or she cannot opt for are
(A) Pathology and Physiology.
(B) Microbiology and Biochemistry.
(C) Forensic Medicine and Microbiology.
(D) Anatomy and Pharmacology.

28. The two courses which can never be taken up together are
(A) Pharmacology and Microbiology.
(B) Physiology and Pathology.
(C) Biochemistry and Ophthalmology.
(D) Cardiology and Pathology.

29. If a student enrols for Microbiology and Forensic Medicine, then he or she must enrol for
(A) Ophthalmology.
(B) Cardiology.
(C) Pharmacology.
(D) Either (A) alone or (B) alone

30. If a student chooses Ophthalmology and Cardiology, then the maximum number of courses that he or she can enrol for are (given that the condition regarding number of courses to be selected could be violated)
(A) 6 (B) 5 (C) 4 (D) 3

Practice Exercise – 15

Directions for questions 1 to 3: These questions are based on the following information.

The top three rankers of the class, Pranav, Qureshi and Raja, not necessity in the same order, made the following statements about their ranks.

Pranav : (A) I am not the top ranker.
(B) Qureshi is not the second ranker.
(C) Raja is the third ranker.

Qureshi : (A) Pranav's first statement is false.
(B) I am the third ranker.
(C) I made two false statements.

Raja : (A) Pranav is the first ranker.
(B) Qureshi is not the second ranker.
(C) I am the second ranker.

It is known that each of Pranav and Raja made only one false statement. Qureshi made only one true statement.

1. Who is the first ranker?
(A) Pranav (B) Qureshi
(C) Raja (D) Cannot be determined

2. Which of the following represents the correct order of truth and false statements made by Raja?
(A) True, False, True
(B) True, True, False
(C) False, True, True
(D) Cannot be determined

3. Who is the third ranker?
(A) Pranav (B) Qureshi
(C) Raja (D) Cannot be determined

Directions for questions 4 to 7: These questions are based on the following information.

Eight persons – E, F, G, H, I, J, K, and L – sit around a circular table, in which three persons face away from the center and the remaining face the center but not necessarily in the same order. The following information is known about them.

Only G and H are facing each other. G sits to the immediate right of J and also L. I does not sit adjacent to J. E and F face the same direction. E does not sit in the opposite place to that of K. E sits third to the left of F, who sits to the immediate right of H.

4. Who sits second to the left of F?
(A) H (B) K (C) E (D) J

5. What is the position of E with respect to K?
(A) Immediate right
(B) Immediate left
(C) Second to the right
(D) Third to the left

6. How many persons sit between J and H when counted from the right of J?
(A) One (B) Two (C) Three (D) Four

7. Which of the following is false?
(A) H and K sit adjacent to each other.
(B) J sits in the opposite position to that of F.
(C) L sits to the immediate right of I.
(D) F faces the center.

Directions for questions 8 to 11: These questions are based on the following information.

A logician is telling his wife about four pieces of jewellery he has just seen in an exhibition. "I have seen a watch, a ring, a necklace and a brooch. The heavier of the necklace and the brooch is the costliest, while the costlier of the watch and ring is the lightest. The cheaper of the ring and the brooch is the heaviest, while the heavier of the necklace and the ring is the cheapest. Also, if the brooch is costlier than the necklace, then it is lighter than the watch." His intelligent wife immediately ranks them in terms of their cost and weight and says, "We cannot determine the ranks of two of the pieces in one of the comparisons."

8. Which of the following pairs is the wife of the logician talking about?
(A) Necklace and Brooch
(B) Brooch and Watch
(C) Watch and Ring
(D) Ring and Necklace

9. The logician then gave his wife an additional statement which was sufficient to determine the complete rank-list in both the comparisons. Which one of the following statements did the logician give his wife?
(A) If the Ring is lighter than the Necklace, then the Necklace is costlier than the Brooch.
(B) If the Necklace is lighter than the Brooch, then the Brooch is costlier than the Watch.
(C) If the Watch is cheaper than the Ring, then the Ring is heavier than the Watch.
(D) If the Ring is not lighter than the Watch, then the Watch is costlier than the Brooch.

10. Which of the following is the costliest?
(A) Necklace (B) Brooch
(C) Watch (D) Either (A) or (B)

11. Which of the following is the lightest?
(A) Ring (B) Watch
(C) Necklace (D) Either (B) or (C)

Directions for questions 12 to 14: These questions are based on the following information.

In a survey conducted in a city, it was found that 50% of the people see English movies, 40% see regional movies and 50% see Hindi movies. 100 people see all the three kinds of movies and 10% of the people see none of the movies.

12. If 30% see exactly two out of three movies, then the number of people who see exactly two out of three movies is
(A) 300 (B) 200 (C) 150 (D) 100

13. If 60% of the people see exactly one out of three movies, then the number of people who see exactly one movie is
(A) 600 (B) 400 (C) 300 (D) 500

14. What is the percentage of people who see exactly one movie, if the percentage of people who see all the three movies is maximum possible value?
(A) 75 (B) 70 (C) 65 (D) 60

Directions for questions 15 to 17: These questions are based on the following information.

There are eight boys – P, Q, R, S, T, U, V and W – who are to form two teams of four boys each. T and U cannot be together in the same team. R and S must be in the same team. If V and W are in the same team, then U must also be in that team.

15. In how many ways is it possible to form the teams?
(A) 12 (B) 8 (C) 11 (D) 6

16. If we know that W must always be with either V or Q, then how many possible ways are there to form the teams?
(A) 8 (B) 6
(C) 4 (D) None of these

17. Which of the following is a possible team?
(A) T, U, P and Q (B) T, R, S and V
(C) U, R, S and Q (D) None of these

Directions for questions 18 to 22: These questions are based on the following information.

Six football teams – Maharashtra, Tamilnadu, West Bengal, Delhi, Karnataka and Andhra Pradesh participated in a tournament. After the first two rounds, it is known that every team played with two different teams, one in each round and won one of the matches and lost the other.

Each team scored a different number of goals among – 2, 3, 4, 5, 6 and 7 in the first round of tournament and each team scored a different number of goals among 1, 3, 4, 5, 6 and 8 in their second round of tournament. We know the following information about their scores.

(1) West Bengal scored nine goals in total, but it scored less number of goals in the match they won with respect to that in the match they lost.
(2) The number of goals scored by Tamilnadu in the first round is the same as that conceded by it in the second round.
(3) The number of goals conceded by Karnataka is the same in both the rounds and in both the matches the difference of goals between the winner and the loser is two.
(4) The total number of goals scored in each of the two matches of Maharashtra is 10 but the total number of goals scored by Maharashtra is not 10.
(5) Delhi is the only team that scored the same number of goals in both the matches. But in total, it scored less number of goals than any of the other teams.

18. What is the maximum number of goals scored in any match?
(A) 14 (B) 11 (C) 12 (D) 13

19. Which team scored the least number of goals in a match?
(A) Delhi
(B) Karnataka
(C) Andhra Pradesh
(D) West Bengal

20. Which team scored the maximum number of goals in both the matches together?
(A) West Bengal (B) Tamilnadu
(C) Karnataka (D) Maharashtra

21. Against which team did Delhi win the match in the first two rounds?
(A) West Bengal (B) Maharashtra
(C) Tamilnadu (D) Andhra Pradesh

22. What is the number of goals scored by Maharashtra in the match it won?
(A) 6 (B) 5 (C) 7 (D) 4

Directions for questions 23 to 26: These questions are based on the following information.

Harish, Mahesh, Divya, Rohini, Dilip and Seema are a group of people, who are performing in six cities across India. The cities are Delhi, Mumbai, Kolkatta, Chennai, Bangalore and Hyderabad. All the six of them can sing, dance and play music. In each of the six cities they perform all the three items one after the other. They stage three shows in each city and in each show, they perform one of the items. Each of them here a fixed partner and perform only with their partners in any city or any show or in any item. Each pair performs only one item in a city. Further the following information is known.

(1) Divya sings in Delhi but does not dance in Bangalore.
(2) Rohini sings in Hyderabad and Harish who dances in Delhi sings in Chennai.
(3) Seema plays music in Delhi and Rohini plays music in Mumbai.
(4) Harish does not sing in Kolkatta and Mahesh does not sing in Hyderabad but sings in Bangalore.
(5) Divya plays music in two cities only and Harish sings in three cities.
(6) In Chennai, Dilip is one of the dancers.

23. Which pair dances in Mumbai?
(A) Harish – Mahesh
(B) Dilip – Divya
(C) Rohini – Seema
(D) Cannot be determined

24. Which of the following is true?
(A) Harish and Mahesh will dance in Kolkatta.
(B) Rohini and Seema Dance only in two cities.
(C) Dilip and Divya play music in Bangalore.
(D) None of the above

25. If Harish and Mahesh play music in Kolkatta, then who plays music in Hyderabad?
(A) Harish and Mahesh
(B) Dilip and Divya
(C) Rohini and Seema
(D) Cannot be determined

26. Which of the following statement is sufficient to know the complete schedule?
(A) Harish and Mahesh dance in Kolkalta.
(B) Dilip and Divya play music in Hyderabad.
(C) Rohni and Seema dance in Kolkatta.
(D) Harish and Mahesh dance in Hyderabad.

Directions for questions 27 to 30: These questions are based on the following information.

Seven people – P, Q, R, S, T, U and V – live on different floors of a seven-storeyed building. Each one lives on a different floor. The ground floor is numbered as 1, the floor above the ground floor is numbered as 2 and so on until the topmost floor is numbered as 7.

Each one is working in a different company, namely Google, Infosys, Virtusa, Infotech, Microsoft, Samsung and Cognizant but not necessarily in the same order.

(1) U lives on the second floors below the person who works in Google but does not live on an odd-numbered floor.
(2) The persons working in Cognizant and Samsung live on adjacent floors.
(3) T works in Cognizant and lives on an even-numbered floor.
(4) The number of floors between the one working in Infotech and the one working in Virtusa is the same as the number of floors between Infosys and Infotech.
(5) S lives immediately below Q who works in Infosys. Either U or S works in Infotech.
(6) P lives above R but does not work in Microsoft.

27. Who works in Virtusa?
(A) U (B) Q
(C) S (D) None of these

28. Who lives on the fifth floor?
(A) The person works in Infotech
(B) The person works in Microsoft
(C) S
(D) U

29. Who lives on the floor immediately above T?
(A) P (B) S (C) Q (D) V

30. How many persons live between the floors on which S and the one working in Cognizant live?
(A) Two (B) One (C) Three (D) Four

Directions for questions 31 to 35: These questions are based on the following information.

A Marketing company has surveyed 2800 people across five different cities in the country regarding their eating habits.
The following table gives the ratio of the number of people who are vegetarians to the total number of people surveyed in that city and the ratio of number of males surveyed in that city to total number of people surveyed in that city.

	Vegetarians	**Males**
Delhi	0.4	0.75
Mumbai	0.38	0.45
Bengaluru	0.56	0.6
Kolkata		0.34
Hyderabad	0.24	
Total	0.4	0.55

The ratio of the number of people surveyed in the cities – Bengaluru, Hyderabad, Kolkata, Delhi and Mumbai is 3 : 3 : 2 : 1 : 5 respectively.

31. In all the cities put together what is the minimum possible number of females who are non-vegetarians?
(A) 120 (B) 140
(C) 266 (D) None of these

32. If atleast 30% males in each city surveyed are vegetarians then in which of the following city is the maximum possible number of females who are vegetarians the least?
(A) Delhi (B) Hyderabad
(C) Kolkata (D) Bengaluru

33. If 50% of females in Hyderabad are vegetarians, then how many males in the city are non-vegetarians?
(A) 224 (B) 324 (C) 78 (D) 378

34. If the ratio of number of females who are vegetarians in Bengaluru to the number of males who are non-vegetarians in Hyderabad is 2 : 3, then what is the ratio of the number of males who are vegetarians in Hyderabad to the number of females who are non-vegetarians in Bengaluru?
(A) 3 : 2
(B) 4 : 5
(C) 7 : 9
(D) Cannot be determined

35. If the number of males who are vegetarians in Kolkata is equal to number of females who are non-vegetarians in Bengaluru, then which of the following cannot be the number of males who are vegetarians in Bengaluru?
(A) 143 (B) 157 (C) 97 (D) 78

Practice Exercise – 16

Directions for questions 1 to 3: These questions are based on the following information.

Among the eight persons S, T, U, V, W, X, Y and Z two are actors, three are doctors and the rest are engineers.

X is heavier than both S and V but lighter than T. Both U and Z are engineers. Y who is neither a doctor nor an actor is heavier than S but lighter than V. Only one person is heavier than W, who is not a doctor. Three persons are heavier than T, who is not an actor. Z is not the heaviest. The lightest is not a doctor.

1. How many engineers are heavier than X?
(A) 3
(B) 1
(C) 2
(D) Cannot be determined

2. If a team of four is to be selected containing atleast an actor, atleast an engineer and atleast a doctor such that doctor is the lightest, in how many ways can the team be selected?
(A) 9 (B) 6 (C) 5 (D) 7

3. If a team of three is to be selected containing atleast one person from each profession such that actor is the heaviest, then in how many ways can the team be selected?
(A) 3 (B) 7 (C) 9 (D) 6

Directions for questions 4 to 6: These questions are based on the following information.

Each of five friends A, B, C, D and E received some amount of money. D received ₹20 more than B. Each of them bought atleast one book. Cost of any book purchased by them is the same. The number of books bought by E is the maximum. The amount left with D is half of the amount left with B. B is left with an amount which is equal to the cost of exactly one book. The number of books bought by A is equal to the number of books bought by B and C. All of them together bought 9 books. The amount received by and the amounts left with each of them are integral values.

4. What is the cost of a book (in ₹)?
(A) 60 (B) 40 (C) 30 (D) 20

5. What is the amount received by D (in ₹)?
(A) 100 (B) 140 (C) 80 (D) 120

6. What is the number of books bought by E?
(A) 3 (B) 4
(C) 2 (D) Either (A) or (B)

Directions for questions 7 to 11: These questions are based on the following information.

The Dean of a college, Prof. Himanshu, asked Prof. Deodhar to provide him with the analysis of the results of recently completed semester exams in the college, which was written by 108 students. Prof. Deodhar analysed the performance of students in five different subjects-Business Statistics (BS), Micro Economics (ME), Supply Chain Management (SCM), Marketing Management (MM) and Consumer Behavior (CB). The following are some of his observations.

1. The students who passed in MM failed in all other subjects except CB.
2. The students who did not fail in BS, passed in ME.
3. The number of students who failed in four subjects is seven less than those who did not pass in ME. The number of students who passed in three subjects is 18.
4. The students who failed in CB passed in ME and none passed in both the subjects.
5. The number of students who passed only in ME is 17 and those passed in MM is 13.
6. The number of students who passed in SCM is 46 and the number of students who passed only in CB is 10.

7. How many students passed in exactly two subjects?
(A) 46 (B) 52 (C) 41 (D) 63

8. How many students who passed in BS also passed in atleast one of the other subjects?
(A) 22 (B) 40 (C) 18 (D) 57

9. How many students passed in all subjects except ME and MM?
(A) 21 (B) 11 (C) 10 (D) 0

10. How many students passed in SCM but not in BS?
(A) 18 (B) 28
(C) 38 (D) None of these

11. Which of the following statements is/are true?
I. The number of students who passed in atleast two subjects is 81.
II. The number of students who passed in only SCM and ME is 17.

(A) Only I (B) Only II
(C) Both I and II (D) Neither I nor II

Directions for questions 12 and 13: These questions are based on the following information.

Five persons P, Q, R, S and T are sitting in Row I facing South and other five persons U, V, W, X and Y are sitting in Row II facing North. Each person in Row I faces one person in Row II. V is adjacent to U, who is opposite Q. R is to the immediate right of Q but not opposite W. Y and X are equidistant from U. S is opposite X but not adjacent to P, who is not adjacent to T.

12. Who is second to the right of V?
(A) U (B) W (C) X (D) Y

13. Find the odd one out.
(A) P, V (B) W, S (C) R, Y (D) S, X

Directions for questions 14 to 17: These questions are based on the following data.

Last night five pet dogs, each belonging to a different person, were taken away by thieves and the sergeant was very busy taking complaints from the five owners. While taking the complaints he mixed up the information and could recollect only the following information. Neither the Labrador nor the Great Dane belongs to either Jack or Jimmy. The German Shepherd does not have long ears. Johnny does not own an Alsatian or a Labrador. Joel's dog has a cut tail, while the Alsatian has a brown scar above its nose. Jane does not own either the Great Dane or the German Shepherd. Neither the Labrador nor the Great Dane has a cut tail. Johnny's dog does not have a dot on its ear, while Jimmy's dog has long ears. There is a Spaniel and, finally, there is a single eyed dog. Each of the characteristics mentioned above is possessed by a different dog.

14. Which of the following statements is true?
(A) Joel owns the Labrador.
(B) The Great Dane has long ears.
(C) The German Shepherd has a cut tail.
(D) Jimmy owns the Alsatian.

15. Which of the following has long ears?
(A) Spaniel (B) Labrador
(C) Great Dane (D) Either (B) or (C)

16. Who among the following owns the German Shepherd?
(A) Joel (B) Jack
(C) Jane (D) Cannot be determined

17. Which of the following is the characteristic of Johny's dog?
(A) Brown scar (B) Dot on an ear
(C) Single eye (D) None of these

Directions for questions 18 to 21: These questions are based on the following information.

Eight Persons – K, L, M, N, O, P, Q and R belong to same family and sit around a circular table facing the center (not necessarily in the same order). Each person is related to N in some or the other way. There are two couples and no widow or widower in the family. Each couple has at least two children. The following information is known about them.

(1) N's father sits second to the right of his grand son who is three places away from his sister.
(2) N's husband sits opposite Q who is the only son of N.
(3) N's maternal uncle sits to the immediate left of N's brother.
(4) N's mother K sits opposite N and to the immediate left of her husband P.
(5) O is the brother – in – law of P and L is the niece of R.

18. Who among the following represent a couple?
(A) RN (B) KP (C) OK (D) OR

19. What is the position of N's brother with respect to N's mother?
(A) second to the right
(B) second to the left
(C) immediate right
(D) immediate left

20. Who among the following sits to the immediate left of N's father?
(A) K (B) L
(C) N's daughter (D) None of these

21. How is P related to R?
(A) Father (B) Uncle
(C) Mother (D) Son

Directions for questions 22 and 23: These questions are based on the following information.

Each of Mahesh, Mridu and Mouly applied for PG admission in all the 5 colleges – C_1, C_2, C_3, C_4 and C_5. Each college declared the list of selected people, the list for the people, who are in the waiting and the list of people who are rejected.

Mahesh is in the rejected lists of four colleges, Mridu is in the selected list of three colleges and Molly was in waiting list of two colleges. No person can be in two lists of a college and no two persons are in a particular list of any the college.

22. If Molly is in the waiting list of C_3 and C_4 and Mridu is in the selected list of C_5, then in which of the colleges is Mahesh in the waiting list?
(A) C_1 (B) C_2 (C) C_3 (D) C_5

23. In how many colleges is Mridu in the rejected list?
(A) One (B) Two (C) Three (D) Zero

Directions for questions 24 to 27: These questions are based on the following information.

Eight people – P, Q, R, S, W, X, Y and Z – sit in a row, not necessarily in the same order. Some of them are facing north and some south. The following information is known about their seating arrangements:

Two people sit between Q and Y, who face different directions but neither Q nor Y is the fourth one to sit from either end of the row. R faces south and sits adjacent to neither P nor Q. X sits second to the left of S. R and S face different directions. W sits between Q and Y but sits adjacent to neither X nor Y. P sits third to the left of W. Y and W face the same direction. X and Q face the same direction. P and S face the same direction. P and Z face different directions.

24. Who sit at the ends of the row?
(A) RX (B) RS (C) SP (D) RP

25. How many persons sit facing south?
(A) Three (B) Four
(C) Five (D) Either Three or Four

26. What is the position of W with respect to Z?
(A) Second to the right
(B) Immediate right
(C) Second to the left
(D) Immediate left

27. Four of the following five are alike in a certain way, hence form a group. Find the one which does not belong to that group.
(A) W (B) R (C) X (D) Y

Directions for questions 28 to 31: These questions are based on the following information.

Each of the seven students – G to M – studies exactly one subject among – mathematics, physics and chemistry and plays exactly one game among – cricket, hockey and tennis. At least two students study each subject and play each game. No two students who study the same subject play the same game. The following information is known about them.

Either H or M studies physics but neither of them plays tennis. J plays either cricket or hockey but does not study chemistry. Neither G nor K studies mathematics and neither of them play cricket. J and K study the same subject. M and I study the same subject. L plays either tennis or hockey but not the same game which K plays. Neither M nor H plays cricket.

28. Who among the following studies chemistry?
(A) J (B) G (C) M (D) N

29. Which subject does M study?
(A) Mathematics
(B) Chemistry
(C) Physics
(D) Either physics or chemistry

30. Which of the given 'person – subject – game' combination is true?
(A) H – physics – cricket
(B) G – chemistry – hockey
(C) I – mathematics – cricket
(D) L – physics – tennis

31. Four of the following five are alike in a certain way and hence form a group. Find the one which does not belong to that group.
(A) H – hockey
(B) J – physics
(C) M – hockey
(D) L – mathematics

Directions for questions 32 to 35: Each question consists of six statements followed by four options, each consisting of three statements put together in a specific order. Choose the option in which the three statements are logically related.

32. A. Rats are slow
B. Cat is not dog.
C. All dogs are not rats.
D. All dogs are slow.
E. No cat is rat.
F. Many cats are slow.
(A) ACD
(B) BCE
(C) AEF
(D) None of these

33. A. Some key are not doors.
B. Some locks are not doors.
C. All levers are doors.
D. No lock is lever.
E. All keys are levers.
F. No lever is door.
(A) BCD (B) AEF
(C) DEB (D) BDF

34. A. All sobs are cries.
B. Some sobs are mourns.
C. All mourns are weeps.
D. Some weeps are sobs.
E. All weeps are cries.
F. All mourns are cries.
(A) ADE (B) FEC
(C) ABF (D) BDF

35. A. Some monuments are beautiful.
B. All flowers are beautiful.
C. No monument is flower.
D. Some fruits are not flowers.
E. All monuments are fruits.
F. Some fruits are not beautiful.
(A) ABC
(B) BDF
(C) CDE
(D) More than are of the above