CHAPTER – 12
ALL AREAS

Exercise – 12(a)

Directions for questions 1 to 15: Select the correct alternative from the given choices.

1. A, B, C, D, E and F are six persons who have to be accommodated on three chairs and three benches in such a way that E takes a chair, A and D sit on the bench and C does not sit on the same type of furniture as B and F sit. Who will occupy the three chairs?
(A) E, B and C
(B) F, B and D
(C) E, B and F
(D) E, C and F

2. Among the five numbers A, B, C, D and E, A is greater than C but less than E, whereas, B is greater than D but not less than E. Which of the following can be the greatest of the five?
(A) D (B) A
(C) C (D) B or E

3. A, B, C, D and E are five software engineers working on an IT problem. A is an error specialist and hence is the last person to see the problem. C can take up the problem only after B, whereas B or E can take up the problem only after D. If E takes up the problem and sends to B, to whom does B send it so that it goes to A finally?
(A) D (B) C (C) A (D) E

4. Four children P, Q, R and S go to four different schools A, B, C and D, not necessarily in that order. Each child goes to only one school. P goes neither to school B nor to school D. S goes neither to school A nor to school C. Which of the following children can be in any of the schools?
(A) Only R (B) Only Q
(C) Only S (D) Both Q and R

5. Seven persons consisting of two children Anup and Bittu, two men Chinki and Danny, and three women Eshawari, Falguni and Ganga are sitting in a row. Chinki and Danny have only one person that too a child sitting between them. Only Anup sits between Ganga and Eshawari. No two children, no two males, and no two females sit next to each other. Eshawari sits to the immediate left of Chinki. Who is sitting at the extreme left of the row?
(A) Ganga (B) Eshawari
(C) Falguni (D) Chinki

6. Two lawyers, three doctors and two engineers attend an interview which is conducted to select five executives. If the company wants only one lawyer and two doctors, then, which of the following is definitely true?
(A) There are totally eight ways of selecting the five executives.
(B) The two engineers are sure to get selected.
(C) Only one engineer is selected.
(D) More than one of the above

7. A teacher distributes some five-rupee notes, some ten rupee notes and four twenty-rupee notes to three of her students. The total amount that each boy receives is the same. How many minimum number of notes were distributed by the teacher in all?
(A) 6 (B) 7 (C) 9 (D) 10

8. Each of the four friends M, N, O and P sit at each of the four tables placed in the form of a square. Inside the square area enclosed by the four tables, four persons A, B, C and D sit at each corner. A sits at the corner between M and N. B and D sit at opposite corners. P sits to the immediate left of N. Which of the following pairs is not opposite each other?
(A) A and C (B) B and D
(C) M and P (D) M and O

9. A, B and C are three films that are screened by three theatres P, Q and R in three consecutive slots. No film should be screened in the same slot by any two theatres. If Q screens film B in the first slot and P exhibits film C in the third slot, then which of these must be TRUE?
(A) P screens A in the second slot.
(B) Q exhibits C in the third slot.
(C) R exhibits A in the second slot.
(D) R exhibits C in third slot.

10. Kapil, Munni, Rishi, Jagat and Lavanya have five houses in different buildings of five different colours –Blue, White, Red, Orange and Green. The Green building is the shortest of all the buildings and Jagat's house is in it. The building in which Lavanya's house is located, is neither Blue nor White in colour and is taller than the building in which Munni's and Rishi's houses are located. One person's name starts with the same letter as the first letter of the buildings colour of the building in which he resides and it is the second tallest of all. Which of the following is TRUE about the resident of the building, its colour and its height?
(A) Lavanya – Blue – Shortest
(B) Munni – Red – Tallest
(C) Lavanya – Orange – Tallest
(D) Jagat – Green – Tallest

11. Each of the three boys gets at least one pencil out of 6 pencils, at least one pen out of 6 pens and at least one book out of 6 books so that the total number of the items that each of them gets is the same. No one gets the same number of pens, pencils and books. Then which of the following can be TRUE?
(A) Each boy gets 2 pens, 2 pencils and 2 books.
(B) Each boy gets 2 pens and 2 pencils.
(C) Each boy gets 1 pencil, 2 books and 3 pens.
(D) The number of pens, pencils and books that each boy gets is 1, 2 and 3 not necessarily in that order.

12. P and Q play Volleyball, whereas R and S play Football. T and U play Handball, but V and W play Basketball. Having won their respective games, they sit in a row for a photograph session. T sits to the immediate right of W and P sits at one extreme end. One Volleyball player is at the fifth place from the left end of the row. W and T do not sit between R and U, who have only two persons seated between them, while no one sits to the left of R. The number of persons seated between P and U is the same as the number of persons sitting between
(A) R and W (B) S and V
(C) U and T (D) R and Q

13. Five delegates P, Q, R, S and T are forwarding their files to one another. P sends his file to Q, S and to T, who sends his files to R while P and R exchange their files with each other. Q sends his file to S who sends his files to T. If P has to forward his files to R, thus in how many ways can he forward?
(A) Two (B) Three (C) Four (D) One

14. A, B, C, D and P, Q, R, S are eight persons seated four each at two tables of different shapes, round and square. P and Q do not sit at the same table. A and B do not sit at the same table. B sits between R and S at the square table. Who sits opposite B?
(A) P (B) Q (C) P or Q (D) A or C

15. Five boys Ganesh, Hitesh, Ishan, Jaikee and Kailash always compete with one another. Ishan gets more marks than Kailash and Jaikee gets less marks than Ganesh. Hitesh gets more marks than Jaikee and Kailash. Whose marks among the following could be the lowest?
(A) Ganesh (B) Hitesh
(C) Ishan (D) Jaikee

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

Five persons P, Q, R, S and T stand in a row. R does not stand next to either P or T, while P and T have three persons standing in between them.

16. Who is standing in the middle of the row?
(A) P (B) Q (C) T (D) R

17. Who are standing at the extreme ends of the row?
(A) P and S (B) T and Q
(C) Q and S (D) P and T

18. Which of the following pairs has as many persons standing between them as P and S have, if P stands at the extreme left end?
(A) Q and R (B) R and T
(C) S and Q (D) Q and T

19. If T stands to the immediate right of S, then who will stand to the left extreme end?
(A) T (B) P (C) S (D) Q

Directions for question 20 to 23: Read the following data and answer the questions that follow.

The following details regarding the age, weight and height of six different individuals are available. The six persons are Bradman, Andrews, Christopher, Dheeraj, Florence, and Elantra.

(1) Bradman is the oldest person and taller than Christopher but shorter than Andrews and heavier than Dheeraj.
(2) Florence is not heavier than Christopher but heavier than Elantra and older than Dheeraj, who is older than Andrews, who is the youngest person.
(3) Andrews is the heaviest person and shorter than Florence, who is shorter than Dheeraj.
(4) Christopher is taller and older than Elantra but not heavier than Dheeraj.

20. Who is the tallest person?
(A) Dheeraj (B) Florence
(C) Andrews (D) Christopher

21. Which of the following cannot be the order of the names of the persons from the oldest to the youngest?
(A) Bradman, Florence, Dheeraj, Christopher, Elantra, Andrews
(B) Bradman, Christopher, Florence, Dheeraj, Elantra, Andrews
(C) Bradman, Florence, Christoper, Andrews, Dheeraj, Elantra
(D) Bradman, Christopher, Florence, Elantra, Dheeraj, Andrews

22. How many persons are taller, heavier as well as older than Florence?
(A) 1 (B) 0 (C) 4 (D) 2

23. If at most two persons are older than Elantra, then how many persons are younger than Dheeraj?
(A) 2 (B) 1 (C) 3 (D) 4

Directions for questions 24 to 27: These questions are based on the following information.

Dhananjoy asks Michael to select 6 fruits from 10 different types – Apple, Mango, Banana, Pineapple, Guava, Orange, Papaya, Watermelon, Blackberry and Grapes.
Dhananjoy laid down certain conditions for Michael, as mentioned below.
(1) If Michael selects Orange, then he cannot select Watermelon.
(2) If Michael selects Banana, then he must select Apples also, and vice versa.
(3) If Michael selects the Watermelon, then he must select Papaya, and vice versa.
(4) Exactly one of Mango and Blackberry is selected.

24. If Michael selects the Oange, then he must select
(A) Apple (B) Papaya
(C) Mango (D) Blackberry

25. If Michael does not select Guava or Grapes then he must not select
(A) Apple (B) Banana
(C) Watermelon (D) None of these

26. Which of the following cannot be the list of fruits selected by Michael?
(A) Apple, Banana, Watermelon, Papaya, Mango, Grapes
(B) Guava, Grapes, Apple, Banana, Blackberry, Orange
(C) Apple, Guava, Watermelon, Papaya, Mango, Orange
(D) Banana, Grapes, Apple, Orange, Mango, Guava

27. Which of the following statements can confirm the selection of fruits?
(A) Orange and Mango are selected.
(B) Blackberry and Watermelon are not selected.
(C) Apple and Blackberry are not selected.
(D) Grapes and Guavas are selected.

Directions for questions 28 to 30: These questions are based on the data given below.

Amitabh and Binod are two marketing heads. Each of the two marketing heads has to take marketing executives with him from among Jetendra, Tapan, Shahrukh, Irfan, Rafeek and Zayeed in such a way that if one selects two executives, then the other selects four. Neither Jetendra and Tapan together nor Shahrukh and Irfan together can go with the same marketing head.

28. If Irfan goes with Binod as one of his two executives, then in how many ways can Amitabh choose his four executives?
(A) Two (B) One (C) Four (D) Six

29. If Jetendra goes with Amitabh and Shahrukh goes with Binod, then in how many ways can they choose their representatives?
(A) Two (B) One (C) Three (D) Four

30. Which of the following can be a possible combination of persons selected by Amitabh or Binod?
(A) Jetendra, Shahrukh, Zayeed, Tapan
(B) Shahrukh, Tapan, Rafeek, Irfan
(C) Tapan, Irfan, Zayeed, Rafeek
(D) Either (A) or (B)

Exercise – 12(b)

Directions for questions 1 to 15: Select the correct alternative from the given choices.

1. There are three boxes of three different colours – Green, Blue and Red, and 6 toys of which 2 are of Green colour, 2 are of Blue colour and 2 are of Red colour. The toys are packed in the three boxes such that each box has 2 toys of different colours in it and also the colour of the box is different from the colour of the toys packed in it. Now, 10 chocolates are kept in these boxes in such a way that the Green box has the maximum possible chocolates in it whereas, the Red box has the least possible chocolates in it. Each box should have at least one chocolate and no two boxes have the same number of chocolates. Which of the following is true?
(A) The Green box, the Blue box and the Red box have 6, 3 and 1 chocolate/s in them respectively.
(B) The box which has the toys of Red and Blue colours has 8 chocolates in it.
(C) The box which has the toys of Blue and Green colours has 3 chocolates in it.
(D) The box which has the toys of Green and Red colours has 2 chocolates in it.

2. Five pens P, Q, R, S and T are of five different colours, taken from the six colours red, green, blue, yellow, white and orange. P is of green colour and T is not a pen of red colour. Q is costlier than the pen which is of green colour and cheaper than the pen which is of yellow colour whereas, yellow coloured pen is cheaper than the white coloured pen. S is of white colour and T is the costliest of all the pens. Which of the following must be FALSE?
(A) The colour of pen Q is red or blue or orange.
(B) The cheapest pen is P.
(C) The colour of pen T is yellow.
(D) Pen R must be costlier than pen P.

3. P, Q, R, S and T are the five corners of a table with five sides. Chairs A, B, C, D and E are placed along the sides joining the angular corners. Neither P, Q, R, S and T nor A, B, C, D and E are necessarily in that order. Chair A is along the side joining the corners P and R. S is to the immediate right of P, and R is between P and T. Chair B is along the side of Q and T. Chairs D and E are next to B on either side. The corners that join the side where the chair C is placed are
(A) P and R (B) S and Q
(C) S and T (D) P and S

4. A road network between six places A, S, R, Q, P and T is as follows: A, S, T are on a straight line. P, R, Q are on a straight line. The pairs of places – AP, AQ, PS, SR, PR, ST, TQ – are connected. All the connecting links are two-ways. How many pairs have to be connected still, so that every pair of A, S, R, Q, P, T are connected?
(A) 3 (B) 4
(C) 5 (D) None of these

5. An executive wears dresses of different colours on five days of the week from Monday to Friday. He uses five shirts and five trousers for his weekday dressing. Each shirt is of exactly one colour from among five colours – Blue, White, Yellow, Red and Green. The trousers are of exactly one colour from among five colours – Orange, Maroon, Black, Silver and Blue. He wears a shirt and trousers of the same colour on one of the five days. Green shirt and Black trousers are used together on Tuesdays. White and Orange combination is used on Fridays. Red and Silver is not one of his dress combinations and he prefers to have a Red shirt on Thursdays. The Silver trousers are used by him on the day immediately after Tuesday. He must be using the Blue dress on a
(A) Wednesday.
(B) Monday.
(C) Thursday.
(D) Sunday.

6. Sunil, Anil, Raman, Raj, Venu are five boys in a class whose level of intelligence and heights are compared. It is found that Sunil holds the same place in the order of cleverness and height among the five people. Raj is taller than Anil and cleverer than Raman. Anil is the cleverest of all but shorter than Raman. Venu is cleverer than Raj but less clever than Sunil. Which of the following is definitely FALSE?
(A) Venu is shorter than Anil.
(B) Raman is cleverer than Raj.
(C) Sunil is second in order of height from the tallest to the shortest as well as second in order of cleverness, from the cleverest to the least clever.
(D) Anil is the only person cleverer than Sunil.

7. Five items - TV, Fridge, Music System, Radio and Computer - are packed in five cartons 1 to 5, which are kept from left to right in a row. It is found that TV's carton is to the left of the Computer's carton, which is to the immediate left of the carton in which fridge is packed. Music System's carton is kept at the left extreme and there is one carton between that and the TV's carton. Which item's carton is to the immediate right of the TV's carton?
(A) Radio (B) Computer
(C) Fridge (D) Music System

8. A rectangular table has one chair each on its smaller sides and two chairs each on its longer sides. Six persons Anuj, Bittu, Charli, Dinesh, Eshan and Farhan sit on the six spaced chairs around a table for a board meeting. Bittu sits to the immediate left of Dinesh and opposite Eshan. Charli and Farhan sit opposite each other and Dinesh is alone on one side. Who sits opposite to Dinesh?
(A) Anuj (B) Bittu (C) Eshan (D) Charli

9. A bookie has to inspect five horses A, B, C, D and E. If he inspects B, he cannot inspect C immediately. If he inspects A, he cannot go to E after that. Which of the following can be the correct order of his inspection?
(A) A, B, C, D, E (B) D, B, C, E, A
(C) D, C, B, A, E (D) D, C, B, E, A

10. P, Q, R, S, T, U and V are seven players in a team. R is taller than only four of them. P is shorter than Q, but taller than T, who is taller than U but shorter than V, who is shorter than Q, who is shorter than S. Who is the tallest of all?
(A) P (B) Q (C) S (D) R

11. Three theatres exhibit different kinds of films from among Romance, Thriller, Documentary, Drama, Horror, Children, Nature, Adventure and Cartoon. Each theatre exhibits only three films of different kinds. A Documentary film should be screened by the theatre that screens the Children's film. Film on Romance and film on Adventure should be exhibited by different theatres and neither of these is screened by the theatre that screens a Nature film. A Cartoon film should be followed by an Adventure film in the same theatre and a Romance film should be preceded by a Horror film in the same theatre. Which of the following cannot be a set of three films that is screened by one of the theatres?
(A) Thriller, Romance and Horror
(B) Cartoon, Adventure and Drama
(C) Children, Nature and Documentary
(D) Thriller, Drama and Horror

12. Five persons - P, Q, R, S and T - sit in five different rooms - A, B, C, D and E - each in a different room. Neither T nor Q is in Room A. P and S are in Room B and Room C, in any order. Who is in room A?
(A) P (B) Q (C) R (D) S

13. Ajay, Bablu, Chinti, Dev, Elish and Faijal are six persons in six chairs around a table with only six chairs. Ajay is opposite Dev. Chinti is to the immediate right of Ajay and is next to Elish. Which of the following is definitely FALSE?
(A) Ajay and Elish are not opposite each other.
(B) Elish is between Chinti and Dev.
(C) Chinti is between Ajay and Elish.
(D) Bablu and Faijal are opposite each other.

14. A, B, C, D and E are five apartments on a floor. Each pair of apartments have a path connecting them. How many paths are there in all?
(A) 12 (B) 10 (C) 5 (D) 2

15. A doctor, a lawyer and an engineer meet at a place. The doctor has not come from the hotel or the club. Each of them has come from only one of the following places, the club, the hotel and the theatre. Also no two people have come from the same place. If the engineer has come from the hotel, then the lawyer has not come from
(A) the theatre or the hotel.
(B) the theatre or the club.
(C) the club or the hotel.
(D) the club or the theatre or the hotel.

Directions for questions 16 to 18: Read the data given below carefully and then answer the questions that follow.

A, B and C are three speakers at a function seated on the dias facing two semicircular tables one behind the other at which the media persons P, Q, R, S, T and U sit, three in each row. P and R are not at the same table.

R is at one end of the second semicircular table.
S sits behind P who is facing A on the dais.
Q sits behind U who is exactly opposite B, who is not at the ends, on the dais

16. Who among the following sits facing C?
(A) T (B) U (C) S (D) P

17. Who are the three persons seated at the second semi circular table?
(A) S, Q and R (B) S, P and U
(C) S, T and U (D) S, Q and T

18. Which of the following is the order of the persons seated on the dais from left to right?
(A) A, B and C (B) A, C and B
(C) B, C and A (D) Cannot be determined

Directions for questions 19 to 22: These questions are based on the data given below.

A robot is fed with certain types of instructions, which are coded as follows.

Code	Meaning
α	Run at 5 kmph
β	Run at 6 kmph
γ	Run at 8 kmph
θ	Take a left turn
$\in$	Take a right turn

Any of the two codes "θ" or "$\in$" is followed immediately by α or β or γ. It is represented as $\theta\ \alpha$ or $\theta\ \beta$ or $\theta\ \gamma$ or $\in \alpha$, $\in \beta$ or $\in \gamma$.
For example, $\in \alpha$ means "Take a right turn and run at 5 kmph".
A robot is initially positioned at point P and follows the sequence of codes as specified below.
At point P: β
40 minutes after the robot starts: γ
1.5 hours after the robot starts: $\theta\alpha$

200 minutes after the robot starts: $\in \beta$
4 hours after the robot starts: $\theta\gamma$
4.5 hours after the robot starts: $\theta\beta$
417 minutes after the robot starts: Stop at Q

19. What is the approximate shortest distance (in km) between P and Q?
(A) 13 (B) 4 (C) 9 (D) 15

20. What was the average speed (in kmph) of the robot from the start till the 100th minute?
(A) 6.7 (B) 6.9 (C) 5.5 (D) 7

21. What was the overall approximate average speed of the robot from the start till the end?
(A) 7 (B) 7.5 (C) 6 (D) 5.5

22. Before finally stopping at Q, if the robot travelled in Westward direction, then in which direction, did the robot start?
(A) North (B) East
(C) South-west (D) North-east

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

In a colony of not more than 2000 people, every person plays at least one game among Cricket, Football and Hockey. The number of people who play only Cricket and Football is half the number of people who play only Hockey. The number of people who play only Cricket is half the number of people who play all the three games. The ratio of the number of people who play only Football to those who play only foot ball and Hockey is 4 : 5. The ratio of the number of people who play only Hockey to those who play only Cricket is 5 : 2. The ratio of the total number of people in the colony to the number of people who play only Cricket and Hockey is 10 : 1.

23. If the number of people who play only Cricket is same as those who play only Football, then find the ratio of the total number of people in the colony to those who play only Cricket?
(A) 10 : 1 (B) 9 : 1
(C) 11 : 1 (D) 8 : 1

24. If the number of people who play only Cricket and Football is a perfect cube, then find the total number of people who play only Cricket.
(A) 800 (B) 100
(C) 125 (D) 150

25. If the number of people who play only Hockey is a perfect square, then which of the following can never be the number of people who play all the three games?
(A) 80 (B) 720 (C) 780 (D) 450

26. Using information given in Q.37, find the maximum possible number of people who play only Hockey?
(A) 100 (B) 800 (C) 400 (D) 1600

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

22 apples were distributed among seven persons M, N, O, P, Q, R and S seated in a row in the same order from left to right. Just after the distribution was over, no one knew the exact number of apples received by others. However, each one knew that at least one apple was received by each of them. Each one of them, except R and S asked exactly one question to the person sitting on his immediate right. (For e.g. M asked exactly one question to N followed by N asking one question to O and so on. The question asked by each of M, N, O, P, Q to respective neighbour was same and as follows.

"Do you have more number of apples than I do?" every one, except R and S, made the reply which was as follows:

"I do not know". But, R replied, "yes".
At the end of the conversation, exact number of apples with every one is known. Each of the seven persons was a great logician. If any of them asks a question, this implies that the answer to the question could not have been found using the information they had so far.
If any of them did not ask a question, this implies that the answer to the question could be obtained with the information they possessed so far.

27. Who had the maximum number of apples?
(A) R (B) S (C) P (D) Q

28. Who had exactly one apple?
(A) M (B) S
(C) R (D) Both (A) and (B)

29. Who had exactly five apples?
(A) M (B) S
(C) R (D) None of these

30. Find the total number of apples possessed by the persons O and P?
(A) 7 (B) 8 (C) 6 (D) 9

Exercise – 12(c)

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

A chemical crusher unit has five different mills P, Q, R, S and T of different capacities. The crusher unit operates 24 hours per day in three shifts 01st – 08th hour, 09th – 16th hour and 17th – 24th hours.

The time during which the mill is running is called uptime. For any mill each uptime is of exactly one hour duration. In a period of 24 hours each mill has at least four hours of total uptime. The time period between two successive uptimes is called downtime. It is measured in hours and is always a whole number.

The downtime of a mill is directly proportional to its capacity and a constant. No two mills have the same downtime duration between successive uptimes.

During his visit in the third shift on a particular day, the new maintenance engineer observed that the mills P, Q , R , S and T were in uptime in the first five hours of the third shift, in that order. He was given a slip of paper indicating history of functioning of the mills, observed during their uptime.

Mill	Day	Time
P	Yesterday	5th hour of the third shift.
Q	Two days ago	6th hour of the third shift.
R	Two days ago	3rd hour of the third shift.
S	Yesterday	2nd hour of the day.
T	Yesterday	Last hour of the day.

The engineer kept thinking if he could determine the uptimes and downtimes of each of the mill.

1. Which mill has the highest capacity?
(A) P (B) S
(C) R (D) Cannot be determined

2. If different ranks from 1 to 5 were given to the mills in the descending order of their downtimes, then which mill will be ranked the second?
(A) P (B) T
(C) R (D) Cannot be determined

3. If mill R has lesser downtime than P, but not the lowest amongst all, then what is the downtime of mill R?
(A) 4 hours (B) 6 hours
(C) 3 hours (D) 8 hours

4. If mill R has greater downtime than mill S, which of the following is true for the mills P, Q, R ,S and T to be in their uptime in the first five hours of a day respectively?
(A) This is possible at least once in a week.
(B) This is possible at most once in a week.
(C) Cannot be determined.
(D) Such a case is not possible.

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

A tour operator operates one tour package each in four different circuits. Each tour starts at 7 am from the office in a bus on the first day of the tour package and ends by dropping the tourists back at the office at 7pm on the last day of the tour package. The four tour packages are (i) Circuit A – Seven days duration which starts every Wednesday and Thursday (ii) Circuit B – Three days duration which starts every Thursday and Friday (iii) Circuit C – Four days duration which starts every Wednesday and Saturday, and (iv) Circuit D – A daily tour of 12 hour duration.

5. If a person has started his tour with Circuit A, then what is the minimum number of days required for him to completely tour all the circuits?
(A) 18 days (B) 17 days
(C) 16 days (D) 15 days

6. To completely tour all the four circuits in the shortest possible time, with which tour does a person shall start his touring?
(A) Circuit C on Saturday
(B) Circuit B on Friday
(C) Circuit C on Wednesday
(D) Circuit B on Thursday

7. On which day of the week, will there be the least activity at the tour operator's office?
(A) Sunday (B) Friday
(C) Monday (D) Saturday

8. If a person wants to complete all the circuits in the shortest possible time but with one day rest between any two tour packages, what is the best day for a person to start touring?
(A) Friday (B) Monday
(C) Sunday (D) Wednesday

Directions for questions 9 to 12: These questions are based on the following information.

A kid is promised by his father that starting the following Monday, a pocket money of five rupees per day will be given everyday in the morning. The kid has school for five days in a week from Monday to Friday, and wants to spend that amount for purchasing snacks during break in the school. He equally likes the chocolate (₹5), Samosa (₹10) and the pastry (₹15). He purchases not more than one item on any day. He makes a purchase if he has sufficient amount to purchase an item and he will not purchase the same item in the next two purchases.

(Assume the kid did not have any other money and there are no holidays other than Saturdays and Sundays)

9. Which of the following is true with regard to the pattern in which the kid makes his purchases?
I. More data is required to identify a pattern.
II. The pattern of the purchases is repetitive.
III. If the first purchase of the kid is known, then the pattern will be repetitive.
(A) Only I and III (B) Only II
(C) Only I (D) Either I or III

10. What is maximum possible amount available with the kid on any Monday?
(A) ₹15 (B) ₹20
(C) ₹25 (D) Cannot be determined

Additional information for questions 11 and 12: During the second week, the kid tasted a complimentary fruit worth ₹5, decided to add to the fruit his purchase list from the following Monday, along with the other three such that the price of every next purchase increases and decreases alternately.

11. Which of the following is definitely true?
(A) The kid does not purchase on a Wednesday.
(B) The kid does purchase on a Thursday
(C) The kid does not purchase on a Friday
(D) The kid does purchase on a Tuesday

12. What is maximum possible amount available with the kid on any Monday (after he decided to eat the fruit)?
(A) ₹15. (B) ₹20.
(C) ₹25. (D) Cannot be determined

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

Annie, Ben, Cain, Dan and Engel are five friends who purchased a book each that were related to one of the following fields: Architecture, Biotechnology, Criminology, Demography and Economics. Further, the following information is known.
(a) No friends first letter of the name matches with the field to which the book purchased is related.
(b) Annie and Dan love to read books related to Criminology apart from the books they purchased.
(c) Engel hates Criminology and Biotechnology and hence did not purchase them.

(d) The first letter of the field to which the book that Ben purchased pertains to, matches with the first letter of the name of the friend who purchased a book pertaining to Biotechnology.

13. After a month of reading, Annie exchanges her book with Dan and then Dan exchanges this book with Engel. The exchanges resulted in the first letter of the friends matching with the field to which the book belonged without violating conditions (b) to (d). Which of the following is true?
(A) Engel bought the book related to Demographics.
(B) Annie bought the book related to Demographics.
(C) Dan bought the book related to Economics.
(D) Engel bought the book related to Architecture.

14. Which of the following is not necessarily true?
(A) Either Annie or Ben bought a book related to Criminology.
(B) Dan bought the book related to either Architecture or Economics.
(C) Either Dan or Engel bought the book related to Architecture.
(D) Either Engel or Cain bought the book related to Demographics.

15. While delivering the books, the sales man interchanged the books of two friends in such a manner that the field to which the book belonged and the starting letter of only one of the friends matched. However, conditions (b) to (d) were not violated.
Which of the following conditions lets you to completely determine the fields of the books possessed by the five friends?
(A) Annie's and Engel's books were interchanged.
(B) Neither Annie nor Engel possess the book related to Economics after the sales man interchanged their books.
(C) Neither Dan nor Engel had books related to Biotechnology after the interchange.
(D) Interchange happened between the books of Annie and Dan.

16. While delivering the books, the sales man interchanged the books of two friends in such a manner that the field to which the book belonged and the starting letter of only one of the friends matched. However, conditions (b) to (d) were not violated. Then which pair of statements among (a), (b), (c) and (d) cannot be true simultaneously?
(a) Dan did not posses books related to Economics after the interchange.
(b) Engel did not possess book related to Architecture after the interchange.
(c) Neither Dan nor Annie possess the book related to Economics after the interchange.
(d) Interchange took place between Annie and Dan.
(A) a and b (B) b and d (C) c and d (D) a and c

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

A company conducted a survey among 75 households to know how many households own the electronic devices laptop, smart phones and tablets during the years 2015 and 2016.

1. In 2015 it was found that the number of households owning exactly one device, exactly two devices and exactly three devices are in the ratio 3 : 2 : 1
2. The households that own both laptop and tablet also own a smart phone.
3. In 2015, ten households owned both laptop and tablet.
4. In 2015 the number of households owning only laptop is the same as the number of households owing only smart phones, which is one less than the number of households owning all the three.
5. The number of households owning all the three devices in 2016 is three times of those that were owning all three devices in 2015.
6. The number of households owning exactly two devices is decreased by five and the number of households owning exactly one device remained the same.
7. In all it was found that none discarded any of the products already owned by them and no one purchased more than one new electronic device mentioned.
8. In 2016, the total number of households owning tablets increased by 50% and that owning laptop increased by 60% as compared to 2015.
9. Each household owning only smart phone in 2015 purchased tablets.

17. What was the number of households owning laptops or tablets in 2015?

18. What is the increase/decrease in the number of households owning smart phone, from 2015 to 2016?

19. What is the increase in the number of households owning only smart phones?

20. In which year was the difference in the number of households owning only laptop and smart phones, and the number of households owning tablet and smart phone higher?

21. What is the number of households that purchased smart phone in 2016, as their second device?

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

A test consists of two parts. Part I consists of five questions and for any question the student will score two marks for a correct answer and zero for a wrong answer. Part II consists of four questions, in which for any question, the student will score ten marks for a correct answer, five marks for a partially correct answer and zero for a wrong answer.

22. Which of the following scores is not possible for the test?
(A) 29 (B) 31 (C) 47 (D) 41

23. If Virat scored 33 marks then which of the following is not necessarily true?
(A) Virat got at least one question wrong in part I.
(B) Virat answered less than six questions in all.
(C) Virat did not answer any question of part II wrong.
(D) Virat gave wrong answer to atleast one question of part II.

24. Each of Rahul, Beena, Johan and Bijaya attempted seven questions and did not get zero in any question. No two of them scored the same marks. What is the maximum possible difference of the total marks scored by Rahul and Beena, and that of marks scored by Bijaya and Johan?
(A) 51 (B) 43 (C) 52 (D) 44

25. If both U and V attempted six questions each, the marks scored by each of them are unique and the marks received for any question is other than zero, what is the minimum possible difference between their respective scores?
(A) 1 (B) 2 (C) 3 (D) 4

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

A library assistant has marked four racks for shelving the books of four different specializations – marketing, operations, systems and human resource. There are 24 textbooks in all. The librarian arranged the textbooks in such a way that each rack contained even number of textbooks and they are unique and are non-empty. The students often misplace the textbooks among any of the racks. The following information about the books in various racks on a particular day are as follows.

1. Half the textbooks are placed incorrectly. But each rack has the same number of textbooks as there was originally.
2. The number of textbooks in Marketing rack is equal to the sum of the number of textbooks in the other three racks.
3. One third of the textbooks in the marketing rack originally belong to the operations rack.
4. All but two textbooks that are there in the human resource rack originally belonged to a different rack.
5. The number of textbooks in the operations rack is twice that of the number of textbooks in the systems rack.
6. The textbooks from a rack are misplaced into at most one rack.

26. How many textbooks belonging to operations rack are placed in human resource rack?

27. How many textbooks belonging to systems, rack are placed correctly?

28. How many textbooks belonging to human resource rack are in the operations rack?

29. Which rack has all the books correctly placed?
(A) Marketing (B) operations
(C) Systems (D) None of these

30. How many text books related to operations are in the systems rack?

Key

Exercise – 12(a)

1. C	6. B	11. D	16. D	21. C	26. C
2. D	7. C	12. D	17. D	22. B	27. C
3. B	8. D	13. C	18. D	23. B	28. A
4. D	9. C	14. C	19. B	24. A	29. A
5. A	10. C	15. D	20. A	25. D	30. C

Exercise – 12(b)

1. D	6. B	11. D	16. A	21. C	26. C
2. C	7. B	12. C	17. A	22. B	27. A
3. D	8. A	13. D	18. D	23. A	28. D
4. D	9. D	14. B	19. A	24. B	29. D
5. B	10. C	15. A	20. B	25. B	30. A

Exercise – 12(c)

1. D	6. A	11. D	16. C	21. 6	26. 0
2. A	7. C	12. A	17. 51	22. C	27. 2
3. C	8. D	13. A	18. 17	23. B	28. 4
4. D	9. B	14. D	19. 2	24. D	29. C
5. B	10. C	15. B	20. 2016	25. A	30. 0