1. A horse can pull an empty cart at the speed of 18km per hour and the reduction in its speed is directly proportional to the square root of the number of boxes it can carry of equal weight of 10kg each. If the speed of the cart is 12km per hour when 9 boxes are loaded in the cart, find the maximum weight that can be carried if the speed of the cart is to be maintained at least 10km per hour.
   1. 16 kg 2. 160 kg 3. 100 kg 4. 159
2. In Kerala, students go to school by boat. The distance between the school and house is 21 km. A boat leaving the students to school returns back in 270 minutes. In which 60 min is taken to drop the students near School. What is speed of boat in still water, if the speed of river is 2.5 km/hr?
   1 10.4 km/hr 2 12.5 km/hr 3 22.5 km/hr 4. 11.5 km/hr
3. Two trains, 200 km apart, are moving toward each other at the speed of 50 km/hour each. A fly takes off from one train flying straight toward the other at the speed of 75 km/hour. Having reached the other train, the fly bounces off it and flies back to the first train. The fly repeats the trip until the trains collide and the bug is squashed. What distance has the fly travelled until its death?
4. The pace length P is the distance between the rear of two consecutive footprints. For men, the formula, n/P = 144 gives an approximate relationship between n and P where, n = number of steps per minute and P = pace length in meters. Bernard knows his pace length is 164cm. The formula applies to Bernard's walking. Calculate Bernard's walking speed in kmph.
   a. 23.62 b. 36.4 c. 28.5 d. None
5. An engineer undertakes a project to build a road 15 km long in 300 days and employs 46 men for the purpose. After 100 days, he finds only 2.5 km of the road has been completed. Find the number of extra men he must employ to finish the work in time?
   1. 46 2. 23 3. 69 4. 115
6. If a hen and a half lays an egg and a half in a day and a half, how many eggs will half a dozen hens lay in half a dozen days?
   1. 6 2. 18 3. 24 4. 36
7. Two pipes can fill a cistern in 14 and 16 hours respectively. The pipes are opened simultaneously and it is found that due to leakage. 32 minutes extra is taken to fill the cistern. In what time will the leak empty the full tank?
   1. 114 2. 112 3. 100 4. 82
8. A can do a certain job in 120 days and B can do the same in 150 days. They together worked for 20 days. Then B leaves and A continues for 20 days. Thereafter C joins and the work and the work is completed in 32 days. In how many days will C alone completed work
   1. 80 2. 100 3. 90 4. 120
9. There are two water tanks A and B, A is much smaller than B. While water fills at the rate of 1 liter every hour in A, it gets filled up like, 10, 20, 40, 80, 160 in tank B. (At the end of first hour, B has 10 liters, second hour it has 20 liters and so on). If tank B is 1/32 filled of the 21 hours, what is total duration of hours required to fill it completely?
   a. 26 b. 25 c. 5 d. 27
10. A and B enter into a partnership. A puts in Rs. 3000/ and at the end of 4 months withdraws Rs. 1500 whereas B brought in additional capital of Rs. 1000 after 3 months. Out of the total profit of Rs. 390 at the end of the year, if A's share is Rs. 240. Find the initial capital of B.
    1. Rs. 1000 2. Rs. 500 3. Rs. 2000 4. None of these
11. Three friends A, B, C started a joint venture by investing money in the ratio of 2:3:4 respectively. A withdrew half of his money after some months. A few months before the end

of the year, C too withdrew one-fourth of his money. If they distributed profits in the ratio 2:4:5 respectively, then after how many months did C withdraw one-fourth of his money?

1. 6 2. 9 3. 4 4. Cannot be determined

12. If the height and base radius of a cone were increased by 50%, then the volume of the cone increases by

1. 225% 2. 280.5% 3. 250% 4. 237.5%

13. Ram spent 12½% of his money. After spending 75% of the balance he had Rs.175 with him. Find the amount he had in the beginning.

1. Rs. 800 2. Rs. 900 3. Rs. 1,000 4. Rs. 1,100

14. If $(1.001)^{1259} = 3.52$ and $(1.001)^{2062} = 7.85$, then $(1.001)^{3321} =$

A. 2.23 B. 4.33 C. 11.37 D. 27.64

15. There are eight bags of rice looking alike, seven of which have equal weight and one is slightly heavier. The weighing balance is of unlimited capacity. Using this balance, the minimum number of weighings required to identify the heavier bag is

A. 2 B. 3 C. 4 D. 8

16. A call center agent has a list of 305 phone numbers of people in alphabetic order of names (but she does not have any of the names). She needs to quickly contact Deepak Sharma to convey a message to him. If each call takes 2 minutes to complete, and every call is answered, what is the minimum amount of time in which she can guarantee to deliver the message to Mr Sharma.

a. 610 minutes b. 18 minutes c. 206 minutes d. 34 minutes

17. Ram is twice as old as Rahim was when Ram was as old as Rahim is now. And he combined age of Ram and Rahim is 210 years. What is Ram's age now

1. 120 2. 126 3.130 4. 80

18. What is the value of $6+\cfrac{1}{6+\cfrac{1}{6+\cfrac{1}{6+\cfrac{1}{6+.....}}}}$

1. $6\frac{2}{3}$ 2. $3+\sqrt{10}$ 3. $6+\sqrt{6}$ 4. 7

19. A trader quotes Rs. 45 for an article whose cost price is Rs. 30. The customer agrees to buy and pays him with a fifty rupee note. The trader does not have change to give back Rs. 5 to the customer. He therefore goes to the neighbouring shop and gets change for this fifty rupee note. The customer collects Rs. 5 as change and returns with the article. The next day the neighbouring shop owner realizes that the fifty rupee note received from the trader was fake and demanded 50 rupees back from the trader. The trader had no option but to give him fifty rupees. What is the total loss to the trader?

1. Rs. 80 2. Rs. 85 3. Rs. 35 4. Rs. 30

20. Middle – earth is a fictional land inhabited by Hobbits, Elves, dwarves and men. The Hobbits and the Elves are peaceful creatures who prefer slow, silent lives and appreciate nature and art. The dwarves and the men engage in physical games. The game is as follows . A tournol is one where out of the two teams that play a match, the one that loses get eliminated. The matches are played in different rounds where in every round , half of the teams get eliminated from the tournament. If there are 8 rounds played in a knock-out tournol how many matches were played?

1. 257 2. 256 3. 72 4. 255

21. Alok and Bhanu play the following coins in a circle game. 99 coins are arranged in a circle with each coin touching two other coin. Two of the coins are special and the rest are

ordinary. Alok starts and the players take turns removing an ordinary coin of their choice from the circle and bringing the other coins closer until they again form a (smaller) circle. The goal is to bring the special coins adjacent
to each other and the first player to do so wins the game. Initially the special coins are separated by two ordinary coins O1 and O2. Which of the following is true ?

1. In order to win, Alok should remove O1 on his first turn.
2. In order to win, Alok should remove one of the coins different from O1 and O2 on his first turn.
3. In order to win, Alok should remove O2 on his first turn.
4. Alok has no winning strategy.

22. Fifty minutes ago if it was four times as many minutes past 3'O clock' as it is from now to 6'O clock, how many minutes is it to 6'O clock now?
23. On the planet Oz, there are 8 days in a week- Sunday to Saturday and another day called Oz day. There are 36 hours in a day and each hour has 90 min while each minute has 60 sec. As on earth, the hour hand covers the dial twice every day. Find the approximate angle between the hands of a clock on Oz when the time is 9:40 am.

1. 251 2.111 3.29

24.In the following correctly solved problem, each letter represents a different digit.

A B C D * 4

D C B A

Find ABCD

Data sufficiency

Directions for questions 1 - 6: Each question is followed by two statements, I and II. Mark the answer

1. If the question can be answered by using one of the statements alone, but cannot be answered using the other statement alone.
2. If the question can be answered by using either statement alone.
3. If the question can be answered by using both statements together, but cannot be answered using either statement alone.
4. If the question cannot be answered even by using both statements together.

1. What is the sum of 2 numbers?

I. The LCM of the numbers is 51. II. One of the numbers is 17.

2. Is $(a^2 - b^2)$ even?

I. (a + b) is odd. II. (a - b) is odd.

3. What is the value of (c + d)? where c and d are positive integers

I. $c^2 - d^2 = 5$ II. c-d = 1

4. Is g greater than h?

I. (g + 3) is greater than (h + 2). II. The cube of g is greater than the cube of h.

5. Is Arun taller than Sachin?

I. Dinesh is of the same height as Arun and Sachin. **II.** Sachin is not shorter than Dinesh.

6. In a certain code language, '13' means 'stop smoking' and '59' means 'injurious habit'. What is the meaning of '9' and '5' respectively in that code?

I. '157' means 'stop bad habit' **II.** '839' means 'smoking is injurious'

Logical Reasoning

Directions for questions 1 - 6: Read the following data and answer the questions

A genealogist has determined that M, N, P, Q, R, S and T are the father, the mother, the aunt, the brother, the sister, the wife and the daughter of X, but she has been unable to determine which person has which status. She does know :

1. P and Q are the same sex. 2. M and N are not of the same sex.

3. S was born before M. 4. Q is not the mother of X.

1. How many of seven people - M, N, P, Q, R, S and T - are female?
1. 3 2. 4 3. 5 4. 6

2. Which of the following must be true?
1. M is a female. 2. N is a female. 3. P is a female. 4. T is a female.

3. If T is the daughter of X, which of the following must be true?
1. M and P are of the same sex 2. M and Q are of the same sex
3. P is not of the same sex as N 4. R is not of the same sex as S

4. If M and Q are sisters, all of the following must be true EXCEPT
1. N is a male 2. M is X's mother 3. Q is X's aunt 4. T is X's daughter

5. If S is N's grandfather, then which of the following must be true?
1. R is N's aunt 2. X is P's son 3. M is X's brother 4. Q is S's husband

6. If M is X's wife, all of the following could be true EXCEPT
1. S is X's daughter 2. P is X's sister 3. Q is X's sister 4. R is X's father

Directions for questions 7 - 11: Read the following data and answer the questions

At the end of the soccer season, every player had scored a prime number of goals and the average of the 11 players was also a prime number. No player's individual tally was the same as anyone else's or as the average. Nobody had scored more than 45 goals.

7. What was the average of their goals scored?
1. 27 2. 23 3. 29 4. 31

8. What was the maximum number of goals scored by a single player?
1. 43 2. 41 3. 37 4. 29

9. What was the minimum number of goals scored by a single player?
1. 5 2. 7 3. 11 4. 13

10. How many players had scored above 20 goals individually?
1. 6 2. 5 3. 7 4. None of these

11. What was the second minimum number of goals scored by a single player?
1. 2 2. 5 3. 11 4. 7

Directions for questions 12 - 15: Read the following data and answer the questions

Four families decided to attend the marriage ceremony of one of their colleagues. One family has no kids, while the others have at least one kid each. Each family with kids has at least one kid attending the marriage. Given below is some information about the families, and who reached when to attend the marriage.

- The family with 2 kids came just before the family with no kids
- Shanthi who does not have any kids reached just before Sridevi's family
- Sunil and his wife reached last with their only kid
- Anil is not the husband of Joya
- Anil and Raj are fathers
- Sridevi's and Anita's daughters go to the same school.
- Joya came before Shanthi and met Anita when she reached the venue.
- Raman stays the farthest from the venue
- Raj and his son could not come because of his exams

12. Which woman arrived third?
1. Shanthi 2. Sridevi 3. Anita 4. Joya

13. Name the correct pair of husband and wife?
1. Raj and Shanthi 2. Sunil and Sridevi 3. Anil and Sridevi 4. Raj and Anita

14. Of the following pairs whose daughters go to the same school?
1. Anil and Raman 2. Sunil and Raman 3. Sunil and Anil 4. Raj and Anil

15. Whose family is known to have more than one kid for certain?
1. Raman's 2. Sunil's 3. Anil's 4. Raj's