**LOGARITHM**

1. log2 64

a. 6 b. 8 c. 16 d. 32

2. 

a) 7 b) -3 c) –4 d) 9

3. 49log74  
  
a. 7 b. 14 c. 16 d. 18

4. 

a. 0 b. 1 c. 2 d. abc

5. Simplify: log43 × log24364

a. 3/5 b. 2/5 c. 3/4 d. 1/3

6. The value of 25 log5 6 is

A. 5 B. 36 C. 25 D. 6

7. If log9 x + log 3 x = 9, then the value of x is

A. 27 B. 81 C. 243 D. 729

8. (log5 5)(log4 9)(log3 2) is equal to

A. 2 B. 5 C. 1 D. 3

9. log 360 is equal to

A. 3log 2 + 2log 3 B. 3log 2 - 2log 3 + log5 C. 3log 2 + 2log 3 + log5 D. 2log 2 + 3log 3

10. If log10 2 = 0.3010, the value of log10 80 is

A. 1.9030 B. 1.6020 C. 9.9030 D. 3.6020

**PROBABILITY**

31. A box contains 20 electric bulbs, out of which 4 are defective. Two bulbs are chosen at random from this box. The probability that at least one of these is defective is

(a) 7/19 (b) 32/95 (c) 3/95 (d) 7/95

32. A speaks truth in 75% of cases and B in 80% of cases. In what percentage of cases are they likely to contradict each other, narrating the same incident

(a) 25% (b) 50% (c) 35% (d) 45%

33. Tickets numbered 1 to 20 are mixed up and then a ticket is drawn at random. What is the probability that the ticket drawn has a number which is a multiple of 3 or 5?

(a) 6/20 (b) 9/20 (c) 10/20 (d) None of these

34. A box contains 5 green, 4 yellow and 3 white balls. Three balls are drawn at random. What is the probability that they are not of same color?

(a) 3/44 (b) 3/55 (c) 52/55 (d) 41/44

35. The odds in favour of standing first of three students Amit, Vikas and Vivek appearing at an examination are 1:2, 2:5 and 1:7 respectively. What is the probability that either of them will stand first (assume that a tie for the first place is not possible)?

(a) 168/178 (b) 122/168 (c) 5/168 (d) 125/168

36. A box contains 6 red balls, 7 green balls and 5 blue balls. Each ball is of a different size. The probability that the red ball selected is the smallest red ball is

(a) 1/18 (b) 1/3 (c) 1/6 (d) 2/3

37. A five-digit number is formed by using digits 1, 2, 3, 4 and 5 without repetition. What is the probability that the number is divisible by 3?

(a) 1/4 (b) 1/3 (c) 1/2 (d) 1

38. Three dice are thrown simultaneously. Find the probability that all of them show the same number.

(a) 1/216 (b) 1/36 (c) 4/216 (d) 3/216

39. If four coins are tossed at random, what is the chance that these will turn up head and tail alternately but not necessarily head in the first toss?

(a) 1/8 (b) 1/4 (c) 7/8 (d) 3/8

40. What is the probability that there are 52 Thursdays in a normal year?

(a) 0 (b) 1/2 (c) 1/7 (d) 1

**PERMUTATIONS AND COMBINATIONS**

41. In how many different ways can the letters of the word 'LEADING' be arranged in such a way that the vowels always come together?

(a) 650 (b) 700 (c) 760 (d) 720

42. A college has 10 basketball players. A 5-member team and a captain will be selected out of these 10 players. How many different selections can be made?

(a) 1040 (b) 1400 (c) 1260 (d) 1160

43. In how many different ways can the letters of the word 'DETAIL' be arranged in such a way that the vowels occupy only the odd positions?

(a) 25 (b) 49 (c) 36 (d) 64

44. When four fair dice are rolled simultaneously, in how many outcomes will at least one of the dice show 3?

(a) 620 (b) 625 (c) 567 (d) 671

45. In how many ways can the letters of the word EDUCATION be rearranged so that the relative position of the vowels and consonants remain the same as in the word EDUCATION?

(a) 4! × 4! (b) 5! × 5! (c) 4! × 5! (d) 3! × 4!

46. How many ways can a child climb 8 steps in such a way he/she either climbs 1 or 2 steps at a time?

(a) 31 (b) 32 (c) 33 (d) 34

47. In how many ways digits be arranged for 8-digit phone number where the first three numbers are 1, 3 and 5 and the repetition of number is not allowed?

(a) 18002 (b) 2520 (c) 15120 (d) 13550

48. How many can you arrange 6 boys B1, B2, B3, B4, B5 and B6 around a circular table in such a way that B1 and B2 are always together?

(a) 120 (b) 24 (c) 48 (d) 96

49.Derek must choose a four-digit PIN number. Each digit can be chosen from 0 to 9. How many different possible PIN numbers can Derek choose?

(a) 5040 (b) 9000 (c) 10000 (d) 6561

50. A coach invited 9 players of the team on dinner. All 10 persons seated in a circular table. In how many ways team can seat, if caption and vice-captain seat either side of coach.

(a) 80640 (b) 5040 (c) 10080 (d) 40320

**ARRANGEMENTS**

**Direction for Q1 to Q5**

Read the given information carefully and answer the questions that follow.

Eleven friends M, N, O, P, Q, R, S, T, U, V and W are sitting in the first row of the stadium watching a cricket match.

T is to the immediate left of P and third to the right of U.

V is the immediate neighbour of M and N and third to the left of S.

M is the second to the right of Q, who is at one of the ends.

R is sitting next to the right of P and P is second to the right of O.

1. Who is sitting in the center of the row?

a. N b. O c. S d. U

2. Which of the following people are sitting to the right of S?

a. OTPQ b. OTPR c. UNVM d. UOTPR

3. Which of the following statements is true with respect to the above arrangement?

a. Three persons sitting between P and S b. W is between M and V.

c. N is sitting between V and U d. S and O are neighbors sitting to the immediate right of T

4. Who are the immediate neighbors of T?

a. O, P b. O, R c. N, U d. V, U

5. If Q and P, O and N, M and T, and W and R interchange their positions then which of the following pairs of friends is sitting at the ends?

a. P and Q b. Q and R c. P and W d. W and R

**Direction for Q6 to Q10**

Read the following information given below and answer the questions that follow.

P, Q, R, S, T, U and V are seven friends and are sitting in a circle facing the center of the circle.

V is second to the left of S and is the neighbor of T and U.

S is not a neighbor of R or T.

P is neighbor of Q and R.

6. Which of the following is correct?

1. Q is between P and S. 2. S is between U and P.

3. T is to the immediate right of V. 4. U is to the immediate left of V.

7. Which of the following has the pair with the second person sitting to the immediate right of the first person?

a. QU b. VU c. TR d. PT

8. Which of the following will be S’s position after T and S interchange their places?

a. Neighbor of V and R b. To the immediate left of R

c. To the immediate right of U d. Neighbor of R and P

9. What is the position of R?

a. Second to the left of Q b. Third to the right of U

c. To the immediate left of P d. None of these

10 Which of the following has the second person sitting between the first and third persons?

a. SPQ b. VRT c. QRP d. VUS

**MEANINGFUL SEQUENCE**

Arrange the words given below in a meaningful sequence.

1. Key 2. Door 3. Lock 4. Room 5. Switch on

a) 5, 1, 2, 4, 3 b) 4, 2, 1, 5, 3 c) 1, 3, 2, 4, 5 d) 1, 2, 3, 5, 4

2. Arrange the words given below in a meaningful sequence.

1. Word 2. Paragraph 3. Sentence 4. Letters 5. Phrase

a) 4, 1, 5, 2, 3 b) 4, 1, 3, 5, 2 c) 4, 2, 5, 1, 3 d) 4, 1, 5, 3, 2

3.Arrange the words given below in a meaningful sequence.

1. Police 2. Punishment 3. Crime 4. Judge 5. Judgement

a) 3, 1, 2, 4, 5 b) 1, 2, 4, 3, 5 c) 5, 4, 3, 2, 1 d) 3, 1, 4, 5, 2

4.Arrange the words given below in a meaningful sequence.

1. Family 2. Community 3. Member 4. Locality 5. Country

a) 3, 1, 2, 4, 5 b) 3, 1, 2, 5, 4 c) 3, 1, 4, 2, 5 d) 3, 1, 4, 5, 2

5.Arrange the words given below in a meaningful sequence.

1. Poverty 2. Population 3. Death 4. Unemployment 5. Disease

a) 2, 3, 4, 5, 1 b) 3, 4, 2, 5, 1 c) 2, 4, 1, 5, 3 d) 1, 2, 3, 4, 5

**4. TIME AND WORK**

1. Work can be completed by A, B, and C in 10, 20, and 40 days, respectively. If B and C help A every third day, how many days would it take him to complete the task?

a) 9 days b) 7 3/7days c) 8 days **d) 8 2/7days**

2. Two persons Venkat and Purvi can construct a wall in 36 days and 45 days respectively. Another person Rajan can demolish the same wall in 30 days. First, Venkat and Purvi are started the work. After 7 days, Rajan also joined. How long will it take for them to complete the work?

(a) 43 minutes b) 41 minutes **c) 46 minutes** d) 40 minutes

3. Pavi and Ravi can do a piece of work in 24 days. Ravi and Nivi can do it in 30 days. Pavi and Nivi can do it in 40 days. In how many days, can Ravi alone finish the work?

a) 36 days **b) 40 days** c) 60 days d) 20 days

4. 10 women can complete a piece of work in 24 days. Four days later, 10 more women join them. How many days will they take to complete the remaining work?

a) 5 days b) 7 days c) 8 days **d) 10 days**

**5.** Sam needs six days while Tam needs eight days to finish the same piece of work. Sam and Tam spent 2400 rupees on this project. The work was finished in three days after Josh joined them. How much was given to Josh?

**a) Rs. 300**  b) Rs. 400 c) Rs. 800 d) Rs. 500

6. Time taken by Gautam to finish a piece of work is four times the time taken Hari and eight times the time taken by Greeshma. If all three of them work together, it takes them 8 days to complete the entire work. How much work was done by Hari alone?

a) 42 days b) **26 days**  c) 32 days d) 25 days

7. Jaya starts off working quickly enough to complete a task in 24 hours, but she only keeps up this pace for 16 hours. She then continues to work at a pace that allows her to do the entire task in 18 hours. How many hours will Jaya need to complete this task if she works on it continuously?

a) 12 hrs b) 18 hrs c) 11½ hrs **d) 22 hrs**

8. Anu, Banu and Khana together can do a piece of work in 20 days. All the three started working at it together and after 8 days, Anu left. Then, Banu and Khana together completed the work in 20 more days. In how many days can Anu complete a work alone? (solu in note)

a) 29 b) 48 **c) 50** d) 42

9. 5 men or 8 women can complete a work in 4 days. The same work can be completed by 3 women and 4 boys in 8 days. How long would 1 man, 2 women and 8 boys take to complete the same work?

(Application 13 Qa4)

**a) 5 5/7 days**  b) 3 3/7 days c) 5 days d) 3 days

10. A cistern is serviced by two inlet pipes and one outlet pipe. While inlet pipe I takes 8 hours to fill an empty tank all by itself, inlet pipe II takes 10 hours to do the same. The outlet pipe can empty a full tank in 15 hours when no simultaneous filling takes place. If all the three pipes are kept open simultaneously, in how many hours would the cistern be full given that it was empty to start with?

(Application 14 Qa4)

a) 6 hours **b) 6 6/19 hours** C) 7 hours d) 7 7/9 hours

**5. TIME, SPEED AND DISTANCE**

1. A car and a bike start from the same point at 9 a.m. and reach the same destination at 10 a.m. and 10:30 a.m. respectively. If the average speed of the car is 60 km/h, what is the average speed of the bike?

a) 45 km/hr b) 38 km/hr **c) 40 km/h** d) 48 km/hr

2. Three persons – P, Q and R start from one of the points A and B and move in their cars towards the other point. The distance between A and B is 450 km. P and Q start at 9 a.m. from A and B respectively whereas R starts from A at 10 a.m. P, Q and R maintain constant speed of 50 km/h, 40 km/h and 60 km/h respectively. Which pair PQ, QR or PR would meet first?

**a) PQ** b) QR c) PR d) Cannot be determined

3. A boy leaves home at 8 a.m. for school in his cycle pedalling 20 km/h. At 8:30 a.m., his mother finds the boy has left behind his History book and chases him in her scooter at 30 km/h. At what time would the mother catch up with her son?

a) 9 am **b) 9:30 am** c) 10 am d) 8.45 am

4. How long does it take for a train of length 800 m moving at 80km/h to cross a train of length 1200 m coming at a speed of 100km/h from the opposite direction?

a) 20 secs b) 35 sec c) 25 secs **d) 40 secs**

5. Three friends Ajay, Vijay and Vinay get into an escalator going up. The Ajay reaches the top in 15 seconds taking 4 steps, but the Vijay reaches 5 seconds ahead of Ajay. Vinay who did not take any step of his own reaches the top 5 seconds after Ajay reached.

Determine

(a) the number of steps taken by the Vijay,

(b) the distance between the two points and

(c) the speed of the escalator.

**a) 8, 16, 0.8** b) 5, 10, 0.5 c) 8, 20, 1.8 d) None of these

6. P, Q and R run at speeds of 4 m/s, 5 m/s and 6 m/s respectively around a circular track of length 50 m. If they start from the same point and at the same time, after how many seconds would they meet for the first time?

a) 45 secs b) 25 secs c) 30 secs **d) 50 secs**

7. Cordelia, a famous ship went on a voyage. After it had travelled 330 miles, a war plane started with 12 times the speed of the ship. Find the distance from the starting point at which the plane is vertically above the ship.

a) 350 miles **b) 360 miles** c) 375 miles d) 400 miles

8. A gets down from a moving escalator stepping down 15 steps. If B gets down from another escalator with a speed of 2 steps less than twice that of A and reaches down in the same time, find the number of steps moved by the escalator given that the total number of steps is 50.

a) 30 b) 28 c) 25 d) 22

9. Starting from the same point at the same time, Sachin, Sajith and Survesh run on a circular path at the speed of 20 m/s, 30 m/s and 50 m/s respectively in the same direction. The circumference of the track (or path) is 600 m. When will they meet for the first time at the starting point? (counting time from the start)

a) 30 sec **b) 60 sec** c) 90 sec d) 12 sec

10. While driving from Chennai to Bangalore, I covered half of the journey at an average speed of 80 km/h, half of the 2nd half of the journey at an average speed of 40 km/h and the rest at 60 km/h. It took 5 hours and 30 minutes to reach Bangalore. How far is Bangalore from Chennai?

a) 310 km b) 350 km **c) 330 km** d) 360 km

SYLLOGISM

**1. Statements:**

All the locks are keys.

All the keys are bats.

Some watches are bats.  
**Conclusions:**

1. Some bats are locks.
2. Some watches are keys.
3. All the keys are locks.

a. Only (1) and (2) b. Only (1) c. Only (2) d. Only (1) and (3)

2. **Statements:**

Some keys are staplers.

Some staplers are stickers.

All the stickers are pens.  
**Conclusions:**

1. Some pens are staplers.
2. Some stickers are keys.
3. No sticker is key.
4. Some staplers are keys.

a) Only (1) and (2) b) Only (2) and (4) c) Only (2) and (3) d) Only (1) and (4) and either (2) or (3)

3. **Statements:**

Some questions are answers.

Some answers are writers.

All the writers are poets.  
**Conclusions:**

1. Some writers are answers.
2. Some poets are questions.
3. All the questions are poets.
4. Some poets are answers

a) Only (1) and (2) b) Only (1) and (4) c) Only (1) and (3) d) Only (2) and (4)

4. **Statements:**

Some envelops are gums.

Some gums are seals.

Some seals are adhesives.  
**Conclusions:**

1. Some envelopes are seals.
2. Some gums are adhesives.
3. Some adhesives are seals.
4. Some adhesives are gums.

a) Only (3) b) Only (1) c) Only (2) d) Only (4)

5. **Statements:**   
All the papers are books.

All the bags are books.

Some purses are bags.  
**Conclusions:**

1. Some papers are bags.
2. Some books are papers.
3. Some books are purses.

a) Only (1) b) Only (2) and (3) c) Only (1) and (2) d) Only (1) and (3)

6. **Statements:**

Some rats are cats.

Some cats are dogs.

No dog is cow.

**Conclusions:**

1. No cow is cat.
2. No dog is rat.
3. Some cats are rats.

a) Only (1) b) Only (2) c) Only (1) and (3) d) Only (3)

**7. Statements:**

All the books are papers.

Some papers are journals.

Some journals are calendars.  
**Conclusions:**

1. Some journals are books.
2. Some calendars are papers.
3. Some books are journals.
4. Some books are calendars.

a) Only (1) b) Only (2) c) Only (c) d) None of these

8. **Statements:**

All the bottles are boxes.

All the boxes are bags.

Some bags are trays.  
**Conclusions:**

1. Some bottles are trays.
2. Some trays are boxes.
3. All the bottles are bags.
4. Some trays are bags.

a) Only (3) and (4) b) Only (1) and (2) c) Only (2) and (3) d) Only (1) and (4)

9. **Statements:**

Some cars are jeeps.

All the boxes are jeeps.

All the pens are cars.  
**Conclusions:**

1. Some cars are boxes.
2. No pen is jeep.
3. Some boxes are cars.

a) None of three b) Only (1) and (2) c) Only (1) and (3) d) Only (2) and (3)

10.**Statements:**

All the papers are books.

All the bags are books.

Some purses are bags.

**Conclusions:**

1. Some papers are bags.

2. Some books are papers.

3. Some books are purses.

a) Only (1) b) Only (2) and (3) c) Only (1) and (2) d) Only (1) and (3)

**WORD ANALOGY**

1.CUP : LIP :: BIRD : ?

BUSH

GRASS

FOREST

BEAK

2.

Flow : River :: Stagnant : ?

Rain

Stream

Pool

Canal

3.

Paw : Cat :: Hoof : ?

Lamb

Elephant

Lion

Horse

4.

Ornithologist : Bird :: Archaeologist : ?

Islands

Mediators

Archaeology

Aquatic

5.

Peacock : India :: Bear : ?

Australia

America

Russia

England