

SECTION I : LOGICAL REASONING

1. In the following letter series, some of the letters are missing which are given in that order as one of the alternatives. Choose the correct alternative.

___ c ___ bd ___ cbcda ___ a ___ db ___ a

- (A) adabcd (B) cdbbca (C) daabbc (D) bdbcba

2. If MINJUR is coded as 312547 and TADA as 6898, how can MADURAI be coded ?

- (A) 3498178 (B) 3894871 (C) 3849781 (D) 3894781

3. Pointing to a lady in the photograph, Shaloo said, "Her son's father is the son-in-law of my mother." How is Shaloo related to the lady ?

- (A) Aunt (B) Sister (C) Mother (D) Cousin

4. Choose the odd numeral pair/group.

- (A) 8 (34) 9 (B) 48 (120) 12 (C) 7 (144) 11 (D) 20 (270) 115

5. If 'A \$ B' means 'A is the father of B', 'A ★ B' means 'A is the mother of B', 'A @ B' means 'A is the wife of B', then which of the following means 'M is the grandmother of N' ?

- (A) M ★ T \$ N @ R (B) M ★ T \$ R @ S (C) M ★ R \$ T @ N (D) M ★ R @ T @ N

6. Johnson left for his office in his car. He drove 15 km towards north and then 10 km towards west. He then turned to the south and covered 5 km. Further, he turned to the east and moved 8 km. Finally, he turned right and drove 10 km. How far and in which direction is he from his starting point?

- (A) 2 km west (B) 5 km east (C) 6 km south (D) 2 km east

7. In the following series of letters, some definite order determines. Which of the following are next two letters in the correct order ?

A J K T U B I L S V C H M R W D G N Q X E F O ? ?

- (A) PY (B) PZ (C) YZ (D) ZA

8. Choose the missing term from the given alternatives.

BZA, DYC, FXE, ?, JVI

- (A) HUG (B) HWG (C) UHG (D) WHG

9. In a row of forty children, P is thirteenth from the left end and Q is ninth from the right end. How many children are there between P and R if R is fourth to the left of Q ?

- (A) 12 (B) 13 (C) 14 (D) 15

10. If > denotes '+', < denotes '-', + denotes '÷', - denotes '=', = denotes 'less than' and × denotes 'greater than', which of the following is a correct statement ?

- (A) $3 + 2 > 4 = 9 + 3 < 2$ (B) $3 > 2 > 4 = 18 + 3 < 1$ (C) $3 > 2 < 4 \times 8 + 4 < 2$ (D) $3 + 2 < 4 \times 9 + 3 < 3$

11. Choose the odd numeral pair/group.

- (A) 13 – 21 (B) 19 – 27 (C) 15 – 23 (D) 16 – 24

12. If South-east becomes North, North-east becomes West and so on, what will West become ?
 (A) North-east (B) North-west (C) South-east (D) South
-
13. Select the correct set of symbols which will fit in the given equation $5 \square 0 \square 3 \square 5 = 20$.
 (A) \times, \times, \times (B) $-, +, \times$ (C) $\times, +, \times$ (D) $+, -, \times$
-
14. If it is possible to form a number with the second, the fifth and the eighth digits of the number 31549786, which is the perfect square of a two-digit even number, which of the following will be the second digit of that even number ?
 (A) 2 (B) 4 (C) 6 (D) 5
-
15. Choose the correct alternative that will continue the given pattern.
 0.5, 0.55, 0.65, 0.8, ?
 (A) 0.9 (B) 0.82 (C) 1 (D) 0.95
-
16. If 453945 stands for DECIDE, then 8978 stands for _____.
 (A) BHEE (B) CDEH (C) GHEE (D) HIGH
-
17. In the given series, count the number of 9's, each of which is not immediately preceded by 5 but is immediately followed by either 2 or 3. How many such 9's are there ?
 1 9 2 6 5 9 3 8 3 9 3 2 5 9 2 9 3 4 8 2 6 9 8
 (A) One (B) Three (C) Five (D) Six
-
18. P, Q, R and S are playing cards. P and Q are partners and sitting in front of each other. Similarly R and S are partners and sitting in front of each other. S faces towards North and if P faces towards West, then who faces towards South ?
 (A) Q (B) R (C) S (D) Data inadequate
-
19. If \div implies '=', \times implies '<', $+$ implies '>', $-$ implies ' \times ', $>$ implies ' \div ', $<$ implies '+', $=$ implies '-', identify the correct expression.
 (A) $1 - 3 > 2 + 1 - 5 = 3 - 1 < 2$ (B) $1 - 3 > 2 + 1 \times 5 = 3 \times 1 > 2$
 (C) $1 \times 3 > 2 + 1 \times 5 \times 3 - 1 > 2$ (D) $1 - 3 > 2 + 1 \times 5 + 3 - 1 > 2$
-
20. Each of these letters gets a numerical value based on its position in M K K I D N E T T Q O B F H A A G T U U X W L S R I, such as, 1 for M, 2 for K, 4 for I and so on.
 What is the sum of the values of the group of letters ARM ?
 (A) 32 (B) 33 (C) 41 (D) 35

SECTION II : MATHEMATICAL REASONING

21. Simplify : $\sqrt[5]{4\sqrt{(2^4)^3}} - 5\sqrt[5]{8} + 2\sqrt[5]{4\sqrt{(2^3)^4}}$.
 (A) $-2\sqrt[5]{(2)^3}$ (B) $\sqrt[5]{(2)^3}$ (C) $2\sqrt[5]{(2)^3}$ (D) $-\sqrt[5]{(2)^3}$
-
22. Probability of an event can be
 (A) -0.7 (B) $\frac{11}{9}$ (C) 1.001 (D) 0.6

23. If the perpendicular distance of a point P from x -axis is 5 units, then the point P has

- (A) x -coordinate = -5 or 5 (B) y -coordinate = 5
 (C) y -coordinate = -5 (D) y -coordinate = 5 or -5

24. A cube of side 6 cm is painted on all its 6 faces with red colour. It is then broken up into 216 smaller identical cubes. What is the ratio of $N_0 : N_1 : N_2$.

Where, $N_0 \rightarrow$ number of smaller cubes with no coloured surface.

$N_1 \rightarrow$ number of smaller cubes with 1 red face.

$N_2 \rightarrow$ number of smaller cubes with 2 red faces.

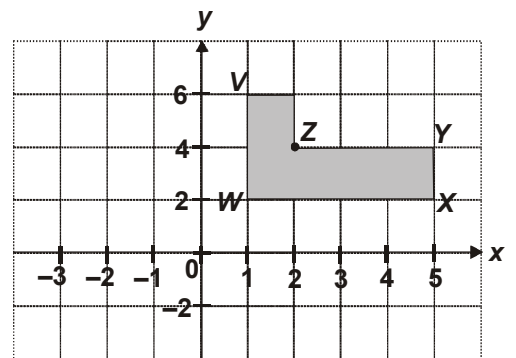
- (A) $3 : 4 : 6$ (B) $3 : 4 : 5$ (C) $4 : 6 : 3$ (D) $6 : 4 : 3$

25. If $a + b + c = 0$, then $x^{a^2b^{-1}c^{-1}} x^{a^{-1}b^2c^{-1}} x^{a^{-1}b^{-1}c^2} =$ _____

- (A) $x^{a^2b^2c^2}$ (B) $x^{1/a^2b^2c^2}$ (C) $x^{1/2}$ (D) x^3

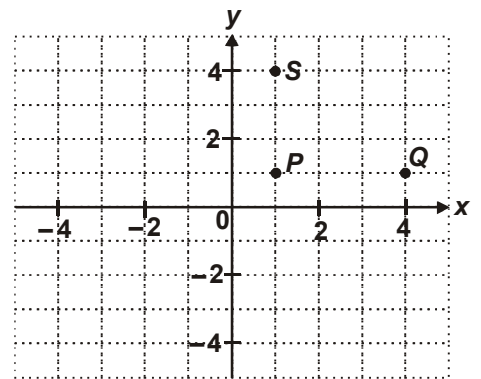
26. In the adjoining diagram, the area of the shaded figure is _____.

- (A) 20 cm^2
 (B) 10 cm^2
 (C) 18 cm^2
 (D) 24 cm^2



27. Based on the diagram, if $PQRS$ forms a rectangle, find the co-ordinates of R .

- (A) $(4, 4)$
 (B) $(4, 5)$
 (C) $(6, 4)$
 (D) $(6, 2)$



28. A person's present age is two-fifth of the age of his mother. After 8 years, he will be half of the age of his mother. How old is the mother at present ?

- (A) 32 years (B) 36 years (C) 40 years (D) 48 years

29. Set of values of x , if $\sqrt{(x+8)} + \sqrt{(2x+2)} = 1$, is _____.

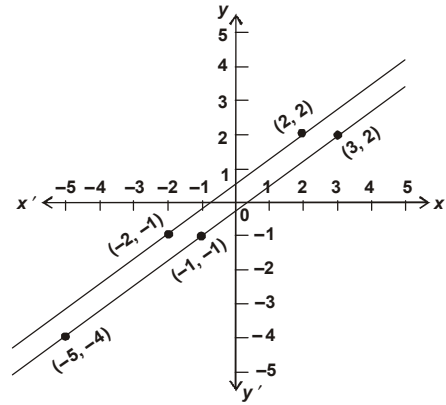
- (A) $\{1\}$ (B) $\{1, 17\}$ (C) $\{17\}$ (D) ϕ

30. The perimeter of a circle is equal to the perimeter of a square. Then, the ratio of their areas respectively, is _____.

- (A) $4 : 1$ (B) $11 : 7$ (C) $14 : 11$ (D) $22 : 7$

31. The equation representing the given graph is

- (A) $7x + 2y = 11$; $y - 2x = 3$
 (B) $2x + 7y = 11$; $4x + (35y/2) = 25$
 (C) $3x - 7y = 10$; $8y - 6x = 4$
 (D) $3x - 4y = 1$; $8y - 6x = 4$

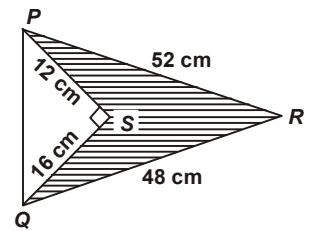


32. If $x = \frac{\sqrt{3} + \sqrt{2}}{\sqrt{3} - \sqrt{2}}$ and $y = \frac{\sqrt{3} - \sqrt{2}}{\sqrt{3} + \sqrt{2}}$, then find the value of $x^2 + y^2$.

- (A) 32 (B) 98 (C) 40 (D) 0

33. In the adjoining figure, the area of shaded portion is ____.

- (A) 98 cm^2
 (B) 480 cm^2
 (C) 384 cm^2
 (D) 380 cm^2



34. The given below question is followed by three statements. You have to study the question and the statements and decide which of the statement(s) is/are necessary to answer the question.

What is the capacity of the cylindrical tank ?

- I. The area of the base is $61,600 \text{ sq. cm}$.
 II. The height of the tank is 1.5 times the radius.
 III. The circumference of base is 880 cm .

- (A) I and II (B) II and III
 (C) Any two of the three (D) II and either I or III

35. The probability of guessing the correct answer to a certain test question is $\frac{x}{2}$. If the probability of not guessing the correct answer to this question is $\frac{2}{3}$, then $x =$

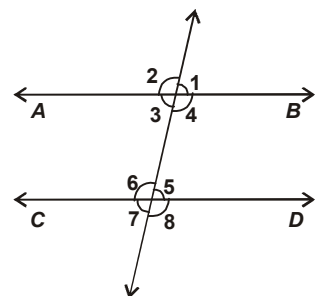
- (A) 2 (B) 3 (C) $\frac{2}{3}$ (D) $\frac{1}{3}$

36. The mean of 40 items is 35 and if each item is multiplied by 'a' then the new mean will be

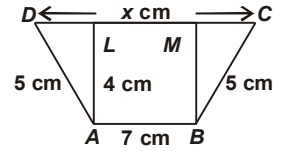
- (A) $35a$ (B) $35 + a$ (C) 40 (D) $40 + a$

37. In the given figure, $AB \parallel CD$. If $\angle 1 = (2x + y)^\circ$ and $\angle 6 = (3x - y)^\circ$, then the measure of $\angle 2$ in terms of y is ____.

- (A) $(108 - y)^\circ$
 (B) $(2 - y)^\circ$
 (C) $(1 - y)^\circ$
 (D) $(100 + y)^\circ$



38. In the given figure (not drawn to scale), $ABCD$ is a trapezium in which $AB = 7$ cm, $AD = BC = 5$ cm, $DC = x$ cm and the distance between AB and DC is 4 cm. Then the value of x is _____.
- (A) 13 cm
(B) 16 cm
(C) 19 cm
(D) 15 cm



39. Find the remainder when $9x^3 - 3x^2 + x - 5$ is divided by $x - \frac{2}{3}$.

(A) 3 (B) -3 (C) 2 (D) -2

40. If $4^{44} + 4^{44} + 4^{44} + 4^{44} = 4^x$, then x is _____.

(A) 45 (B) 44 (C) 176 (D) 11

SECTION III : EVERYDAY MATHEMATICS

41. A hollow garden roller of height 63 cm, with a girth of 440 cm is made of iron 4 cm thick. The volume of the iron used is

(A) 54982 cm³ (B) 56372 cm³ (C) 57636 cm³ (D) 107712 cm³

42. An article is sold at a certain price. By selling it at $\frac{2}{3}$ of that price one loses 10%. Find the gain percent at original price.

(A) 35% (B) 40% (C) 45% (D) 50%

43. 1100 boys and 700 girls are examined in a test; 42% of the boys and 30% of the girls pass. The percentage of the total students who failed is _____.

(A) 58% (B) $62\frac{2}{3}\%$ (C) 64% (D) 78%

44. A group of students decided to collect as many paise from each member of the group as the number of members. If the total collection amounts to ₹ 59.29, the number of members in the group is _____.

(A) 57 (B) 67 (C) 77 (D) 87

45. A library has an average of 510 visitors on Sundays and 240 on other days. The best estimate average number of visitors per day in a month of 30 days beginning with a Sunday is _____.

(A) 250 (B) 276 (C) 280 (D) 285

46. If the radius of a circle is decreased by 50%, find the percentage decrease in its area.

(A) 60% (B) 75% (C) 70% (D) 80%

47. In how many years will a sum of ₹ 800 at 10% per annum compounded semi-annually become ₹ 926.10 ?

(A) $1\frac{1}{3}$ (B) $1\frac{1}{2}$ (C) $2\frac{1}{3}$ (D) $2\frac{1}{2}$

48. Arun and Sajal are friends. Each has some money. If Arun gives ₹ 30 to Sajal, then Sajal will have twice the money left with Arun. But, if Sajal gives ₹ 10 to Arun, then Arun will have thrice as much as is left with Sajal. How much money does Arun and Sajal have ?

- (A) ₹ 62, ₹ 34 (B) ₹ 60, ₹ 34 (C) ₹ 60, ₹ 30 (D) ₹ 62, ₹ 30
-

49. A boy multiplied 12345679 by second, third and seventh multiple of 9, then the average of their total is _____.

- (A) 444444444 (B) 44444444 (C) 4444444 (D) 444444
-

50. If the cost of x metres of wire is ₹ d , then what is the cost of y metres of wire at the same rate ?

- (A) ₹ $\left(\frac{xy}{d}\right)$ (B) ₹ (xd) (C) ₹ (yd) (D) ₹ $\left(\frac{yd}{x}\right)$
-

SPACE FOR ROUGH WORK

