SECTION - I
MENTAL ABILITY AND LOGICAL REASONING

SINGLE ANSWER TYPE QUESTIONS
This section contains multiple choice questions. Each question has 4 choices (A), (B), (C) and (D), out of which ONLY ONE is correct. Each correct answer carries 4 marks. No negative marks. Zero marks if not attempted.

1. If E is coded as V, D is coded as Q, N is coded as Z, G is coded as T , R is coded as I and A is coded as M, which of the following will be the correct form of the word DANGER?
   A. QMZTIV   B. QMZTVI   C. QMZITV   D. QZMTVI

2. D is A's son. C is the mother of P and Wife of D. How is A related to C?
   A. Father   B. Uncle
   C. Father-in-law   D. Data Inadequate

3. Four of the following five are alike in a certain way and hence form a group. Which is the one that doesnot belong to that group.
   A. Bucket   B. Tap   C. Bottle   D. Glass

4. Deepika tells shraddha "your mother's father's son is the husband of my sister". How is Deepika related to Shraddha?
   A. Sister-in-law   B. Cousin
   C. Aunt   D. Data Inadequate

5. If '+' means ' ÷ ', ' ÷ ' means 'x', 'x' means '-', '-' means '+'. What will be the value of the following expression ?
   15 ÷ 5 x 9 +3 - 6 = ?
   A. 78   B. 72   C. 28   D. 30

Directions (Q.No 6-10)

Each of the following questions below consists of a question and two statements numbered I and II given below it. You have to decide if the data provided in the statements are sufficient to answer the question. Read both statements and

Give answer A.

    If the data in both the statements I and II together are necessary to answer the question.

Give answer B.

    If the data in statement II alone is sufficient to answer the question, while the data in statement I alone are not sufficinet to answer the question.

Give answer C.

    If the data either in statement I alone or in statement II alone are sufficinet to answer the question.

Give answer D.

    If the data given in both the statements I and II together are not sufficient to answer the question.

6. Who is in the middle of the row comprising A, B, C, D and E?
    I. B is to right of C, who is second from the left.
    II. A is standing to the left of C, who is D's neighbour.

7. What is Shilpa's rank in the class?
    I. The class strength is 45.
    II. Shilpa is eight ranks below Mahesh who stood 17th.

8. Who runs the fastest among L,M, N and P?
    I. P runs faster than L, who is the slowest.
    II. M runs faster than N but slower than P.

9. One which day of the week did Satish watch a movie?
    I. Satish only watches movies with his friends.
    II. satish went out for dinner on Tuesday.

10. How is Gita related to Ganesh?
    I. Gita's brother is Ganesh's father's eldest son.
    II. Ganesh's wife's mother - in - law is Gita's mother.

11. What should come in place of the '?' in the following number series.
    8 20 50 125 ? 781.25
    A. 300   B. 295.5   C. 315   D. 312.5

12. 18 men can complete a piece of work in 5 days. In how many days can 21 men complete the same piece of work?

    A. $3\frac{17}{21}$ B. $4\frac{2}{7}$ C. 4   D.Cant be determined

13. The population of a town is 189000. It decreases by 8% in the 1st year and increases by 5% in the 2nd year. What is the populationin the town at the end of 2 years.
    A. 193914   B. 185472
    C. 182574   D. 191394

14. The product of two consecutive odd numbers is 19043. Which is the smaller number?
    A. 137   B.131   C. 133   D. 129

15. Out of the three given numbers, the first number is twice the second and thrice the third. If the average of the three numbers is 154, what is the difference between the first and the third number?
    A. 126   B. 42   C. 166   D. None of these.

SECTION - II

SINGLE ANSWER TYPE QUESTIONS

This section contains 5 multiple choice questions. Each question has 4 choices (A), (B), (C) and (D), out of which ONLY ONE is correct. Each correct answer carries 4 marks. No negative marks. Zero marks if not attempted.

16.   which set has only one sub - set ?

A) {1,2}   B) {1,2}   C) {2}   D) { }

17.   If [$(3^{x+1})^y (3^{2x})(3^{x})$]/ [$(3^{y+1})^x (3^y)$] = 1 , then y = ?

A)1   B) 0   C) 2x   D) x

18.   Of the following triangles given by the lengths of their sides, which one has the greatest area.

A) 5,12, 12   B)5,12,13   C) 5,12,14   D) 5,12,15

19.   The percentage increase from -240 to 120 is

A) 150   B) 50   C) 100   D) 200

20.   The number of factros of 2160 that are multiples of 6 are

A) 40   B) 24   C) 39   D) 38

SECTION – III

MULTIPLE ANSWER QUESTIONS
This section contains 5 multiple correct answer (s) type questions. Each question has 4 choices (A), (B), (C) and (D), out of which ONE OR MORE is/are correct. Each correct answer carries 4 marks. No negative marks. Zero marks if not attempted.

21.   **Pick out the correct statements, if** $A \neq \phi$

A) $A \Delta B = B \Delta A$ B) $A \Delta \phi = A$

C) $A \Delta A = \phi$ D) $A \Delta B = B - A \text{ if } B \subseteq A$

22.   **If a > b > 0; c> d > 0 then**
A) a + c > b + d   B) ad > bc

C) $a^{-\frac{c}{d}} > b^{-\frac{c}{d}}$ D) $\dfrac{a}{d} > \dfrac{b}{c}$

23.   **For any n** $\in z^+ > 6$; $n^2 (n^2 + 16) \div 144$ **if**
A) n is even numbher   B) n is odd number
C) n is multiple of 12   D) n is odd prime

24.   **(a + 1/a)² is greater than**
A) zero   B) 2   C) 4   D) 8

25.   **If a² + b² + c² = D where a, b are consecutive positive integers and c = ab then** $\sqrt{D}$ **is**

A) Always an even integer

B) Always an odd integer

C) Sometimes an even integers

D) Always irrational

SECTION - IV
INTEGER TYPE QUESTIONS

This section contains 5 questions. The answer to each question is a single digit integer ranging from 0 to 9. The correct digit below the question number in the OMR is to be bubbled. You will be awarded 4 marks for the correct answer and zero mark if no bubbles are darkened. No negative marks.

26. The units digit of $3^{1001}7^{1002}13^{1003}$ is 3K. Here K is ....

27. If $\Delta PAB \sim \Delta PCA, PC = 3K$. Here K is...........
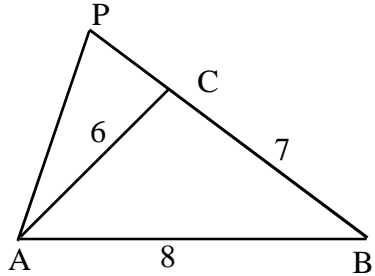
28. If $1 - \dfrac{4}{x} + \dfrac{4}{x^2} = 0,$ then $\dfrac{2}{x}$ ....

29. $\dfrac{3}{2} + \dfrac{5}{4} + \dfrac{9}{8} + \dfrac{17}{16} + \dfrac{33}{32} + \dfrac{130}{64} - 7 = $ ....

30. If we add 329 to the three digit number 2x4, we get 5y3. If 5y3 is divisible by 3, the greatest positive value of x is.....

SECTION - V
MATRIX MATCHING

This Section contains 5 questions. Each question has four statements (A, B, C and D) given in Column I and four statements (P, Q, R and S) in Column II. Any given statement in Column I can have correct matching with one or more statement(s) given in Column II. For example, if for a given question, statement B matches with the statements given in Q and R, then for that particular question, against statement B, darken the bubbles corresponding to Q and R in the ORS. You will be awarded 1 marks for each correct answer. There is no negative marks awarded for incorrect answer(s).

31.   **Region**   **Notation**

         A) $Q - (R \cup P)$ P) VII

         B) $(R \cap Q)$ but not P   Q) I & II

         C) $P \cap Q$ R) VI

         D) Only R   S) IV
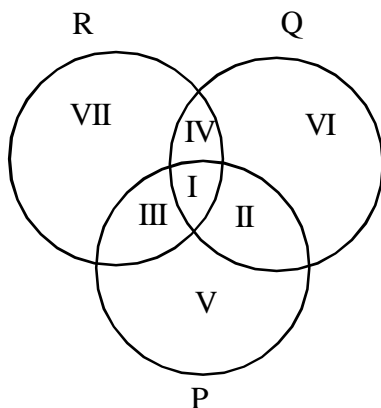
A) A -S ; B- R; C- Q; D-P;

B)A -P ; B- Q; C- R; D-S;

C) A -S ; B- Q; C- R,Q ; D-P;

D) A -S ; B- P; C- R; D-Q;

32.   **Column –I**   **Column –II**

A) $Q_1 \cap Q_3$ P) OY - Axis
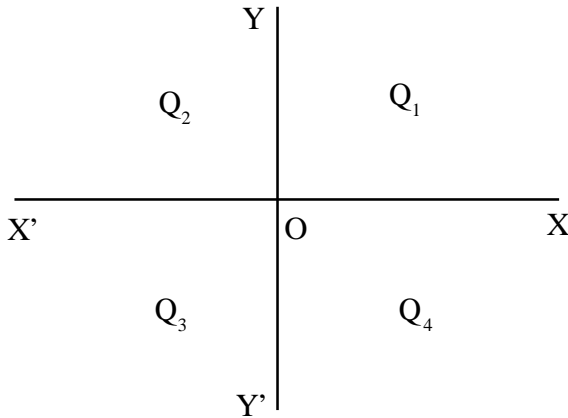
B) $Q_1 \cap Q_4$ Q) O

C) $Q_3 \cap Q_4$ R) OX - Axis

D) $Q_2 \cap Q_1$ S) OY' - Axis

A) A -S ; B- Q; C- R; D-P;
B) A -Q ; B- R; C- S; D-P;
C) A -S ; B- Q; C- R,Q ; D-P;
D) A -S ; B- P; C- R; D-Q;

33.   **Column –I**   **Column –II**

A) Least number when   P) 500
    divided by 18,27,36 leave
    remainder 5,14,23 is

B) Number of zeros at   Q) 60
    end of 2009 !

C)Greatest number which   R) 95
    can divide 284, 698, 1618

leaving the same remainder

8 in each case is

D) Least number exactly   S) 46

divisible by 12, 15, 20

A) A -S ; B- Q; C- R; D-P;

B)A -R ; B- P; C- S; D-Q;

C) A -S ; B- Q; C- R,Q ; D-P;

D) A -S ; B- P; C- R; D-Q;

34.   **Column –I**   **Column –II**

A) $2^{x-3} \cdot 3^x = 8\sqrt{6}$ then x =   P) 3

B) $a = 2^{1/3} - 2^{-1/3}$ then $2a^3 + 6a =$ Q) 9/4

C) $\left(x\sqrt{x}\right)^x = x^{\left(x\sqrt{x}\right)}$ then x =   R) 1

D) $a + b = 0$ then $\left(1 + x^a\right)^{-1} + \left(1 + x^b\right)^{-1} =$ S) 1/2

A) A -S ; B- Q; C- R; D-P;

B)A -P ; B- Q; C- R; D-S;

C) A -S ; B- P; C- Q ; D-R;

D) A -S ; B- P; C- R; D-Q;

35.   **Locus of a point equidistant from**

Column –I   **Column –II**

A) A fixed point   P) Angle bisector

B) Ends of line segment   Q) Circle

C) Sides of an angle   R) Incircle

D) A point in a triange   S) Perpendicular bisector

A) A -S ; B- Q; C- R; D-P;

B)A -P ; B- Q; C- R; D-S;

C) A -S ; B- Q; C- R,Q ; D-P;

D) A -S ; B- Q; C- P; D-R;

SECTION- VI
COMPREHENSION TYPE

This section contains 2 paragraphs. Based upon each paragraph, 5 multiple choice questions have to be answered. Each question has 4 choices (A), (B), (C) and (D), out of which ONLY ONE is correct. Each correct answer carries 4 marks. No negative marks. Zero marks if not attempted.

A line segment is said to be directed if one of its end points is designated as the initial point and the other as terminal point. For $\overline{AB}$, $A(x_1, y_1)$ be intial and $B(x_2, y_2)$ be terminal point and X,Y be projections of $\overline{AB}$ on y-axis and x-axis then $X = X_2 - X_1$ and $Y = y_2 - y_1$. Thus to find length of $\overline{AB}$, we have

$$AB = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

36. **x = 5, y=-4, A = (-2,3) then B = ...**

    A) (3,-1)   B) (-3,1)   C) (3,1)   D) (-3,-1)

37. **x = 4, y = -5, B = (1,-3) then A =............**

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

38. **AB = 5, y = 4, X = ... If it makes an obtuse angle with y - axis**

    A) -3   B) 3   C) 2   D) none

39. **AB = 13, A = (3, -2) Y = -12, B = ... if $\overline{AB}$ makes an acute angle with Y - axis.**

    A) (-9,-7)   B) (9,3)   C) (9,-7)   D) (-9,3)

40. **AB = 17, B = (-7,3) , X = 15, A = ... If $\overline{AB}$ makes obtuse angle with x - axis**

    A) (-15,-12)   B) (1,-12)   C) (15,-12)   D) (-1,-12)

SECTION – VII
ASSERTION & REASONING

This section contains 5 reasoning type questions. Each question has 4 choices (A), (B), (C) and (D), out of which ONLY ONE is correct. Each correct answer carries 4 marks. No negative marks for wrong answers. Zero marks if not attempted.

   Codes:
   (A) Both Assertion and Reason are true and the Reason is correct explanation of the Assertion.
   (B) Both Assertion and Reason are true but the Reason is not correct explanation of the Assertion.
   (C) Assertion is true, but the Reason is false.
   (D) Assertion is false, but the Reason is true.

41. **Assersion :** $2903^n - 803^n - 464^n + 261^n \div 1897$;
$$1897 = 271 \times 7$$

Reasin : $a^n - b^n \div (a - b)$

42. **Assersion:** $P \subseteq Q \text{ and } P \neq Q$

Reason : $P \subset Q \text{ and } Q \subset P$

43. **A :-** $x^{1/3} + y^{1/3} + z^{1/3} = 0 \Rightarrow (x + y + z)^3 = 3xyz$.

R : $a + b + c = 0; a^3 + b^3 + c^3 = 3abc$

44. **A :-** *Rectangle is a parallelogram*

   R :- *A Parallelogram is a quadrilateral in which diagonals bisect each other.*

45. **A :-** $a^m = a^n \Rightarrow m = n \ \forall a \neq 1$

   R :- $3^{x^2-3} = 3^6 \Rightarrow x \pm 3$.

SECTION – VIII

CONCEPTUAL QUESTIONS

This section contains 5 reasoning type questions. Each question has 4 choices (A), (B), (C) and (D), out of which ONLY ONE is correct. Each correct answer carries 4 marks. 1 mark will be deducted for wrong answer. Zero marks if not attempted.

46.   **If the diagonals bisect each other at right angles the quadrilateral is**

 A) Rectangle   B) square
 C) Rhombus   D) Parallelogram

47.   **A rhombus inscribed in a circles is**

 A) trapezium   B) square
 C) rectangle   D) Parallelogram

48.   **G.C.D of 24,35 is 1. Hence they are**

 A) Relatively prime   B) compoisite

 C) Twin prime   D) adjuncts

49.   **If distance between (x, -1) & (3,2) is 5, x = ...**

 A) 7 or 1   B) -7 or 1   C) 7 or -1   D) -7 or -1

50.   **$2^n+1 \div 3$ If and only if $(-1)^n + 1 \div 3$, Here n is**

 A) Even   B) Odd   C) Irrational   D) Imaginary

ALL THE BEST