

Note : There are THREE sections in this paper I.e. Section A , B and C.

Attempt Section -A on the same paper and return it to the superintendent within the given time.

No marks will be awarded for Cutting ,Erasing or Overwriting. Marks of Identification will lead to UFM Case.Mobile Phone etc are not allowed in the examination hall.

Q1. Write the correct option ie, A, B, C or D in the empty Box provided opposite to each part.

- i. Solution of $4\sqrt{16}$ is
A. 16 B. 4 C. 2 D. None of these. (B)
- ii. Diagonals of a square are to each other.
- iii. Perpendicular B. Parallel C. Congruent D. Both A and C. (D)
- iv. Two perpendicular segments meet in angle.....
A. 180° B. 90° C. 60° D. 45° (B)
- iv. $(a-b)^2 = \dots\dots\dots$
A. a^2-ab+b^2 b. a^2+ab+b^2 c. $a^2+2ab+b^2$
d. $a^2-2ab+b^2$ (D)
- V. Characteristic of $\log(325)$ is
A. 1 B. 2 C. 4 D. 3 (D)
- vi. sides of the parallelogram are congruent.
A. All B. Adjacent c. Opposite d. None of these (C)
- vii. if $A = \begin{bmatrix} 1 & 3 \\ 2 & -2 \end{bmatrix}$ then A^{-1} equals.....

A. $\frac{-1}{8} \begin{bmatrix} -1 & -3 \\ -2 & 2 \end{bmatrix}$ B. $\frac{-1}{8} \begin{bmatrix} -1 & -3 \\ -2 & -2 \end{bmatrix}$ C. $\frac{-1}{8} \begin{bmatrix} -2 & -3 \\ -2 & 1 \end{bmatrix}$

D. none of these. (C)

viii. $2x^2 + x$ is a..... A. Binomial B. Zero polynomial C. Linear Expression D. rational algebraic expression (A)

ix. If $A^t = A$, then matrix A is called.....

A. Diagonal Matrix B. Scalar matrix C. square matrix

D. symmetric matrix (D)

x. How may right angles are there is a triangle? A . At most one B. At least one C. Two D. None of these. (A)

xi. Factors of $x^2+2x-24$ are..... A. $x+u, x-3$ B. $x-4, x+6$ c. $x+4, x-6$ D. $x+3, x-8$ (B)

xii. H.C.F of a^3-b^3 and a^2+ab+b^2 is A. $(a-b)^2$ B. $(a-b)$

C. $a+b$ d. None of these. (D)

xiii. The tow coordinate axis intersect at an angle of.....

A. 30° B. 60° C. 45° D. 90° (D)

xiv. The additive inverses of $\sqrt{5}$ is A. -3 B. $\sqrt{-3}$ C.

$\frac{1}{\sqrt{5}}$ D. $\sqrt{3}$ (D)

xv. The solution set of $\sqrt{x} = -10$ is A { } B. { -10 }

c. {10} d. {100}

Note: Time allowed for section -B and section -C is 2 hours and 40 minutes.

QII. Attempt any Nine parts. Each part carries four Marks.

Section B

1. Sho that $(AB)^t = B^t A^t$, where

$$A = \begin{bmatrix} 2 & 5 \\ & 4 \end{bmatrix} \quad B = \begin{bmatrix} -1 & 1 \\ 2 & 3 \end{bmatrix}$$

2. If $A = \begin{bmatrix} -1 & 1 \\ 2 & 3 \end{bmatrix}$ then compute A^{-1} .

3. Simplify $\frac{2^{p+1} \cdot 3^{2p-q} \cdot 5^{p+q} \cdot 6^4}{6^p \cdot 10^{q+2} \cdot 15^p}$.

4. Simplify $\frac{(84.5)^3 \sqrt{39.7}}{23.4}$ with help of logarithm.

5. Find the value of $(a^3 - b^3)$, when $(a-b)=2$ and $ab=15$.

6. If $x = \sqrt{10} + 3$, then find the value of

$$x - \frac{1}{x} \text{ and } x^2 + \frac{1}{x^2}.$$

7. Factorize $x^9 + y^9$.

8. If product of two polynomials is

$$(x^4 + 5x^3 - 6x^2 - 2x - 28) \text{ and their H.C.F is } (x-2)$$

find their L.C.M.

9. Simplify $\frac{x^3 - 8}{2x^2 - 5x + 6}$.

10. Simplify $\frac{x}{x+y} + \frac{2y}{x+y}$.

11. Solve the radical equation $2\sqrt{5x-1} = \sqrt{2x+4}$.

12. Draw the graph of the equation $x+2y=6$.

Section C

Marks:24

Note: Attempt any three questions. All question carry equal marks.

QIII. Show that the point(3.2), (4,1) and (6, 3) are the vertices of a parallelogram.

QIV. Prove that if two angles of a triangle are congruent. Then the sides opposite to them are also congruent.

QV. Prove that in a right angle triangle, the square of the length of hypotenuse is equal to the sum of the squares of the lengths of the others two sides.

QVI. Construct a $\triangle ABC$, where

$$m\overline{AB} = 7cm, m\overline{CA} = 6cm \text{ and } m\angle B = 45^\circ$$