



Total Time: 2 Hours

MATHEMATICS (IX)

Max. Marks: 75

SECTION "A" MULTIPLE CHOICE QUESTIONS

NOTE: (i) Attempt all the questions of this section.

(ii) Do not copy down the questions, write only the answer against the proper number of the question and its part according to the question paper.

(iii) Each question carries TWO Marks.

Q.1 Choose the best answer from the given options: (36 Marks)

- (i) $(A')' = \underline{\hspace{2cm}}$.
a) A' b) A c) \cup d) ϕ
- (ii) $\{0, 1, 2, 3, \dots\}$ is the set of :
a) Prime No. b) Integers c) Whole No. d) Even No.
- (iii) The set $\{1, 3, 5, 7, \dots\}$ is closed for:
a) Addition b) Multiplication c) Subtraction d) Division
- (iv) $8^{1/3} \times 36^{1/2} = \underline{\hspace{2cm}}$.
a) 8 b) 12 c) 16 d) 18
- (v) The characteristics of $\log 0.0456$ is $\underline{\hspace{2cm}}$.
a) $\bar{3}$ b) 3 c) $\bar{2}$ d) 2
- (vi) If $\log_{10} 1000 = y$, then $y = \underline{\hspace{2cm}}$.
a) 10 b) 2 c) 3 d) 0
- (vii) The common logarithm has the base $\underline{\hspace{2cm}}$.
a) π b) e c) 10 d) 0
- (viii) $(\sqrt{x} - \sqrt{y})(\sqrt{x} + \sqrt{y}) = \underline{\hspace{2cm}}$
a) $\sqrt{x} - \sqrt{y}$ b) $\sqrt{x} + \sqrt{y}$ c) $\sqrt{x} + \sqrt{y}$ d) $x - y$
- (ix) The degree of polynomial $8x^2y^3 - 5x^2y^5 - x^3y^7$ is $\underline{\hspace{2cm}}$.
a) 5 b) 7 c) 3 d) 9



- (x) It should be added to $x^2 + \frac{1}{x^2}$ to make it perfect square:
a) xy b) x^2y^2 c) $2xy$ d) 2
- (xi) The H.C.F of $x^4 - y^4$ and $x^2 + y^2$ is _____.
a) $x^4 - y^4$ b) $(x^2 + y^2)(x^2 - y^2)$ c) $x^2 + y^2$ d) $x^2 - y^2$
- (xii) The additive inverse of $\begin{bmatrix} -2 & 4 \\ 3 & -6 \end{bmatrix}$ = _____.
a) $\begin{bmatrix} 2 & -4 \\ -3 & 6 \end{bmatrix}$ b) $\begin{bmatrix} -2 & 4 \\ -3 & 6 \end{bmatrix}$ c) $\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$ d) $\begin{bmatrix} 0 & 0 \\ 0 & 0 \end{bmatrix}$
- (xiii) If $A = \begin{bmatrix} 2 & -3 \\ 4 & 5 \end{bmatrix}$ and $B = \begin{bmatrix} 9 & 4 \\ -2 & 7 \end{bmatrix}$, $A+B =$ _____.
a) $\begin{bmatrix} 2 & -3 \\ 4 & 5 \end{bmatrix}$ b) $\begin{bmatrix} 9 & 4 \\ -2 & 7 \end{bmatrix}$ c) $\begin{bmatrix} 11 & 1 \\ 2 & 12 \end{bmatrix}$ d) $\begin{bmatrix} 7 & -7 \\ -6 & 12 \end{bmatrix}$
- (xiv) If $\begin{bmatrix} 2 & 3 \\ 4 & p \end{bmatrix}$ is a singular matrix, then $p =$ _____.
a) 2 b) 3 c) 4 d) 6
- (xv) A triangle having no side congruent is called _____ triangle.
a) Isosceles b) Scalene c) Acute d) Right
- (xvi) $(a - b + c)^2 =$ _____.
a) $a^2 + b^2 + 2ab + 2bc + 2ca$ b) $a^2 + b^2 + c^2 + 2ab - 2bc + 2ca$
c) $a^2 + b^2 + c^2 - 2ab - 2bc + 2ca$ d) None of these
- (xvii) The measure of each angle of an equilateral triangle is _____.
a) 90° b) 45° c) 30° d) 60°
- (xviii) The complement of 40° is _____.
a) 60° b) 140° c) 90° d) 50°



SECTION 'B' SHORT ANSWERS QUESTIONS (Marks: 25)

NOTE: Attempt any **FIVE** questions. All questions carry equal marks.

2. If $A = \{a, b\}$, $B = \{2, 3\}$ and $C = \{3, 4\}$, find the value of $A \times (B \cup C)$.
3. If $A = \{1, 2, 3, 4\}$ and $B = \{2, 4, 6, 8\}$ prove that $(A \cup B) - (A \cap B) = A \Delta B$.
4. Simplify: $\sqrt[4]{\frac{a^x}{a^y}} \cdot \sqrt[4]{\frac{a^y}{a^r}} \cdot \sqrt[4]{\frac{a^r}{a^x}}$
5. If $p = 3 + 2\sqrt{2}$ find the value of $p^2 + \frac{1}{p^2}$.
6. Solve with the help of logarithm: $\frac{0.87}{(28.9)(0.785)}$
7. Find the value of $a^3 + b^3 + c^3 - 3abc$ when $a + b + c = 15$ & $ab + bc + ca = 74$
8. If $A = \begin{bmatrix} 2 & -1 \\ -3 & 2 \end{bmatrix}$ then find the multiplicative inverse of A.
9. Find the value of $x^3 + y^3$, when $x + y = 4$ and $xy = 5$
10. For what values of a & b the expression $4y^4 + 12y^3 + 25y^2 + 4ay + b$ will be a perfect square.



SECTION “C” (DESCRIPTIVE–ANSWER QUESTIONS) (Marks: 14)

NOTE: Attempt any TWO questions from this section. All questions carry equal marks.

11. Factorize any TWO of the following:

i. $x^4 + x^2 + 1$

ii. $12x^2 - 17xy + 6y^2$

iii. $x^3 - 8y^3 + 1 + 6xy$

iv. $x^3 - x^2 + 2$

12. If two lines intersect each other, then vertically opposite angles are congruent. Prove it.

13. Prove that the sum of the measures of the angles of a triangle is 180° .

14. If a transversal intersects two coplanar lines such that the pair of alternate angles are congruent, then the lines are parallel

