MATHEMATICS MOCK TEST

Class: IX | Set: 11

Time: 1 Hour 30 Minutes | Written Marks: 35 | Viva: 5 | Total: 40 Marks

NAME: _____ **ROLL NO:** _____

SECTION A

(1 Mark Each)

1. Simplify the radical expression: $\sqrt{2} \times \sqrt{8}$.
2. Find the zero of the linear polynomial $f(x) = ax + b$, where $a \neq 0$.
3. On which axis does the point $(0, -3)$ lie?
4. Write one solution for the linear equation $2x + y = 10$.
5. Is the number π a rational or irrational number? Justify in one word.

SECTION B

(2 Marks Each)

6. Rationalize the denominator of $\frac{1}{3+\sqrt{2}}$.
7. Factorize the quadratic polynomial $x^2 - 7x + 12$ by splitting the middle term.
8. If $(2, 2)$ is a solution of the equation $3x + ky = 10$, find the value of k.
9. Find the coordinates of the points where the line $x - y = 5$ cuts the x-axis and y-axis.
10. Expand $(x + 2y)^3$ using a suitable algebraic identity.

SECTION C

(3 Marks Each)

11. If $x = 7 + 4\sqrt{3}$, find the value of $\sqrt{x} + \frac{1}{\sqrt{x}}$.
12. Factorize $x^3 - 3x^2 - 9x - 5$ completely using the Factor Theorem.
13. Plot the points $A(1, 1), B(5, 1),$ and $C(5, 4)$ on a graph paper. Find the coordinates of point D such that $ABCD$ is a rectangle. Also, find its area.
14. Find three different solutions for the linear equation $\frac{x}{2} + \frac{y}{3} = 1$.

SECTION D

(4 Marks Each)

15. If $a + b + c = 0$, prove that $\frac{a^2}{bc} + \frac{b^2}{ca} + \frac{c^2}{ab} = 3$.

16. A taxi charges a fixed fare of ₹10 for the first kilometer and ₹5 per kilometer for the subsequent distance. Taking the distance covered as x km and total fare as ₹y, write a linear equation and draw its graph.

VIVA VOCE

(5 Marks)

- **Surds:** What is the conjugate of $\sqrt{a} + \sqrt{b}$?
- **Polynomials:** Define the term 'Leading Coefficient' of a polynomial.
- **Coordinate Geometry:** What is the common name for the point $(0, 0)$?
- **Linear Equations:** How many variables are there in the equation $x = 4$ if treated as an equation in two variables?
- **Identities:** Recite the identity for $(a - b)^2$.