MATHEMATICS MOCK TEST

Class: IX | Set: 15

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

NAME: _____ **ROLL NO:** _____

SECTION A

(1 Mark Each)

1. Simplify: $(216)^{2/3} \div (36)^{1/2}$.
2. Find the value of k if $(x-1)$ is a factor of $p(x) = kx^2 - 3x + k$.
3. Find the distance of the point $(4, -3)$ from the x-axis.
4. Express the linear equation $y = \frac{x}{5}$ in the form $ax + by + c = 0$.
5. Find an irrational number between $\sqrt{2}$ and $\sqrt{3}$.

SECTION B

(2 Marks Each)

6. Rationalize the denominator: $\frac{1}{\sqrt{5}+\sqrt{3}}$.
7. Factorize $6x^2 + 17x + 5$ by splitting the middle term.
8. Find the coordinates of the midpoint of the line segment joining $A(-2, 3)$ and $B(4, 3)$.
9. If $(1, 2)$ is a solution of the equation $x + 2y = k$, find the value of k.
10. Evaluate $(101)^2$ using the identity $(a+b)^2$.

SECTION C

(3 Marks Each)

11. If $x = \frac{1}{2-\sqrt{3}}$, find the value of $x^2 - 4x + 1$.
12. Factorize the cubic polynomial $x^3 - 2x^2 - 5x + 6$ using the Factor Theorem.
13. Plot the points $A(0,0), B(6,0), C(6,4)$, and $D(0,4)$ on a graph paper. Join them in order to form a figure and find its perimeter.
14. Find three different solutions for the linear equation $2x - 3y = 6$.

SECTION D

(4 Marks Each)

15. If $x + y + z = 8$ and $x^2 + y^2 + z^2 = 30$, find the value of $xy + yz + zx$. Hence, calculate $x^3 + y^3 + z^3 - 3xyz$.

16. A student saves ₹5 on the first day of the month and ₹2 more than the previous day for every subsequent day. If x is the number of days and y is the total amount saved on the x^{th} day, write a linear equation and draw its graph.

VIVA VOCE

(5 Marks)

- **Roots:** According to the Rational Root Theorem, what determines the possible numerators of a rational root?
- **Polynomials:** What is the degree of a zero polynomial? Is it defined?
- **Coordinate Geometry:** What are the signs of coordinates for a point in the second quadrant?
- **Linear Equations:** What does the graph of $y = k$ (where k is a constant) look like?
- **Identities:** Recite the expansion for $(x + y + z)^2$.