MATHEMATICS MOCK TEST

Class: IX | Set: 6

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

NAME: _____ **ROLL NO:** _____

SECTION A

(1 Mark Each)

1. Find the value of m if $(x-1)$ is a factor of x^2+x+m.
2. If $(3,-2)$ is a solution of the equation $kx-3y=12$, find the value of k.
3. Write the coordinates of the point that lies on both the x-axis and the y-axis.
4. Simplify the expression: $(3+\sqrt{2})(3-\sqrt{2})$.
5. What is the zero of the polynomial $p(x)=ax$, where $a \neq 0$?

SECTION B

(2 Marks Each)

6. Evaluate $(999)^2$ using a suitable algebraic identity.
7. Rationalize the denominator: $\frac{\sqrt{3}+1}{\sqrt{3}-1}$.
8. Find the value of a if $x=1$ and $y=6$ is a solution of $8x-ay+a^2=0$.
9. Factorize $x^3-8y^3-36xy-216$, given that $x-2y=6$.
10. If $a^2+\frac{1}{a^2}=102$, find the value of $a-\frac{1}{a}$.

SECTION C

(3 Marks Each)

11. If $x=2+\sqrt{3}$, find the value of $x^3+\frac{1}{x^3}$.
12. Find the values of p and q so that $x^4+px^3+2x^2-3x+q$ is divisible by (x^2-1).
13. A point lies on the x-axis at a distance of 7 units from the y-axis. What are its coordinates? What will be the coordinates if it lies on the y-axis at a distance of -7 units from the x-axis?
14. Simplify the expression: $\frac{1}{1+x^{a-b}}+\frac{1}{1+x^{b-a}}$.

SECTION D

(4 Marks Each)

15. Determine the rational numbers a and b if:

$$\frac{4+3\sqrt{5}}{4-3\sqrt{5}} = a + b\sqrt{5}$$

16. Find the coordinates of the vertices of a rectangle whose length and breadth are 5 and 3 units respectively, one vertex at the origin, the longer side lies on the x-axis, and one of the vertices lies in the third quadrant.

VIVA VOCE

(5 Marks)

- **Polynomials:** Can a polynomial have more than one zero? Give an example.
- **Identities:** Recite the identity for $(a+b+c)^2 - (a-b-c)^2$.
- **Coordinate Geometry:** If the abscissa is negative and the ordinate is positive, which quadrant is the point in?
- **Linear Equations:** How many linear equations in x and y can be satisfied by $x = 1, y = 2$?
- **Exponents:** What is the value of $(x+y)^{-1}(x^{-1}+y^{-1})$ when simplified?