MATHEMATICS MOCK TEST

Class: VIII | Set: 30

Time: 2 Hours | Written Marks: 35 | Viva: 5 | Total: 40 Marks

NAME: _____ **ROLL NO:** _____

SECTION A

(1 Mark Each)

1. Solve the inequation $x + 1 \geq 4$ for $x \in \{1, 2, 3, 4, 5\}$.
2. What is the relationship between the radius (r) and the diameter (d) of a circle?
3. Find the coordinates of the point that lies 3 units to the right of the origin on the x-axis.
4. Find the volume of a cube whose edge is 10 cm.
5. A die is thrown once. What is the probability of getting a number less than 2?

SECTION B

(2 Marks Each)

6. Solve $2x - 5 < 3$ and represent the solution on a number line for $x \in \mathbb{N}$ (Natural numbers).
7. Find the circumference of a circle whose radius is 3.5 cm. (Take $\pi = 22/7$)
8. Plot the points $A(4, 0)$ and $B(-4, 0)$ on a coordinate plane. What is the coordinate of the midpoint of segment AB?
9. Find the total surface area of a cuboid with dimensions 10 cm $\times$ 5 cm $\times$ 2 cm.
10. A card is drawn from a well-shuffled pack of 52 cards. Find the probability that the card drawn is a 'Black card'.

SECTION C

(3 Marks Each)

11. Solve the linear inequation $3(x - 2) \leq 12$ and list the solution set if the replacement set is the set of whole numbers $\mathbb{W}$.
12. A circular track of width 7 m is constructed around a circular pond of radius 7 m. Find the area of the track in square metres.
13. Draw the graph of the linear equation $y = x + 3$ by finding at least three solutions.
14. A solid metallic cylinder of base radius 7 cm and height 10 cm is melted and recast into small cubes of edge 2 cm. How many such cubes can be formed? (Take $\pi = 22/7$)

SECTION D

(4 Marks Each - Case Study)

Case Study 1: The Probability of Drawing Marbles
A bag contains 3 blue marbles, 2 red marbles, and 5 green marbles. A marble is drawn at random from the bag.

(i) Find the probability that the marble drawn is red. (2 Marks)

(ii) Find the probability that the marble drawn is **not** green. (2 Marks)

Case Study 2: Construction of a Water Tank
A rectangular water tank is 5 m long, 4 m wide, and 3 m deep.

(i) Calculate the volume of the tank in litres. (1 m$^3 = 1000$ litres). (2 Marks)

(ii) Find the total surface area of the four internal walls that need to be painted. (2 Marks)

VIVA VOCE

(5 Marks)

- **Inequations:** What is the difference between an equation and an inequation?
- **Circles:** Define a 'Sector' of a circle and how it is different from a 'Segment'.
- **Graphs:** In which quadrant does the point $(-2, -5)$ lie?
- **Solids:** What is the formula for the volume of a right circular cylinder?
- **Probability:** What is the range of values that the probability of any event can take?