Class 10 Mathematics Examination

Time: 2 Hours **Total Marks: 50**

Part A: Objective Type Questions (10 Marks)

Instructions: Choose the correct answer. Each question carries **1 mark**.

1. What is the HCF of 18 and 24?

(a) 6
(b) 12
(c) 18
(d) 24

2. The roots of the quadratic equation $x^2 - 5x + 6 = 0$ are:

(a) 2, 3
(b) -2, -3
(c) 1, 6
(d) -1, -6

3. The value of $\sin 60^\circ$ is:

(a) $\frac{1}{2}$
(b) $\frac{\sqrt{3}}{2}$
(c) $\frac{1}{\sqrt{2}}$
(d) 1

4. The distance between points (2, 3) and (5, 7) is:

(a) 3
(b) 4
(c) 5
(d) 6

5. If the radius of a circle is 7 cm, its area is:

(a) $22\,\text{cm}^2$
(b) $44\,\text{cm}^2$
(c) $154\,\text{cm}^2$
(d) $49\,\text{cm}^2$

6. The mode of the data 3, 5, 7, 5, 2, 5, 1 is:

(a) 3
(b) 5
(c) 7
(d) 1

7. The probability of getting an even number when a die is rolled is:
(a) $\frac{1}{6}$
(b) $\frac{1}{2}$
(c) $\frac{2}{3}$
(d) $\frac{1}{3}$

8. The sum of the angles of a triangle is:
(a) 90°
(b) 180°
(c) 270°
(d) 360°

9. If $2x + 3 = 7$, then x is:
(a) 1
(b) 2
(c) 3
(d) 4

10. The volume of a cube with side 4 cm is:
(a) 16 cm^3
(b) 64 cm^3
(c) 32 cm^3
(d) 128 cm^3

Part B: Descriptive Type Questions (40 Marks)

Instructions: Answer all questions. Show all steps.

Section 1: Algebra (10 Marks)

11. Solve the equation: $3x - 7 = 2x + 5$ (2 Marks)

12. Find the roots of the quadratic equation: $x^2 - 4x + 4 = 0$ (3 Marks)

13. The sum of two numbers is 15 and their difference is 3. Find the numbers. (5 Marks)

Section 2: Geometry (10 Marks)

14. Prove that the angles opposite to equal sides of a triangle are equal. (4 Marks)

15. In a right-angled triangle ABC, right-angled at B, if AB = 6 cm and BC = 8 cm, find AC. (3 Marks)

16. Find the area of an equilateral triangle with side 6 cm. (3 Marks)

Section 3: Trigonometry (8 Marks)

17. Prove that: $\sin^2\theta + \cos^2\theta = 1$ (4 Marks)

18. If $\tan\theta = \frac{3}{4}$, find $\sin\theta$ and $\cos\theta$. (4 Marks)

Section 4: Mensuration (7 Marks)

19. Find the volume of a cylinder with radius 7 cm and height 10 cm. (3 Marks)

20. A wire is bent into a circle of radius 14 cm. Find its area. (4 Marks)

Section 5: Statistics & Probability (5 Marks)

21. Find the mean of the data: 5, 8, 10, 12, 15. (2 Marks)

22. A bag contains 5 red and 3 blue balls. What is the probability of drawing a red ball? (3 Marks)