

CLASS XI MATHEMATICS SAMPLE PAPER – 1

Time: 3 Hours **Maximum Marks:** 80

Instructions: Attempt all questions. Show complete working. Use of calculators is not permitted unless specified.

Section A – MCQs ($10 \times 1 = 10$)

1. The domain of $f(x)=\sqrt{x-2}$ is ____.
2. Number of subsets of a set having 5 elements is ____.
3. $\sin^2\theta + \cos^2\theta =$ ____.
4. Value of $\log_{10}100 =$ ____.
5. The slope of a horizontal line is ____.
6. Which of the following is an odd function?
7. If $A \cap B = \emptyset$ then A and B are called ____.
8. Degree measure of $\pi/3$ radians is ____.
9. The distance between (0,0) and (6,8) is ____.
10. Number of permutations of 5 distinct objects is ____.

Section B – Very Short Answer ($5 \times 2 = 10$)

11. Find the range of $f(x)=x^2$ for $x \geq 0$.
12. Evaluate: $\sin 30^\circ + \cos 60^\circ$.
13. Solve: $\log_{10}x = 5$.
14. Find the equation of a line passing through (2,3) with slope 4.
15. State De Morgan's Laws.

Section C – Short Answer ($6 \times 3 = 18$)

16. Prove that $\tan^2\theta + 1 = \sec^2\theta$.
17. Solve the inequality: $3x-5 > 10$.
18. Find nPr when $n=8$ and $r=3$.
19. Find the equation of the circle with centre (2,-1) and radius 5.
20. Find the sum of first 25 terms of the AP: 4, 7, 10, ...
21. Evaluate determinant-like expression using algebraic simplification: $(x+2)(x-2)$.

Section D – Long Answer ($4 \times 5 = 20$)

22. Solve a real-life problem involving linear inequalities and represent the solution on a number line.
23. Prove the distance formula using coordinate geometry.
24. A committee of 4 members is to be selected from 7 men and 5 women. Form suitable counting questions using combinations.
25. Solve a trigonometric equation in the interval 0° to 360° .

Section E – Case Study / HOTS ($2 \times 11 = 22$)

26. A survey records daily study hours of students. Prepare a grouped frequency table and answer suitable statistical questions.

27. A triangular park is represented on a coordinate plane. Using coordinate geometry, determine side lengths and verify whether it is an isosceles triangle.