

Mathematics (Class X)

Time: 3 Hours

Maximum Marks: 80

Section A: MCQs

(1 × 20 = 20 marks)

1. The zeroes of the quadratic polynomial $x^2 - 5x + 6$ are: a) 1, 6 b) 2, 3 c) $-2, -3$ d) 3, 5
2. The HCF of 306 and 657 is: a) 9 b) 18 c) 27 d) 51
3. The distance between the points $(-2, 3)$ and $(2, -3)$ is:
a) $2\sqrt{13}$ b) $4\sqrt{3}$ c) $6\sqrt{2}$ d) 10
4. If $\sin A = 1/2$, then A equals: a) 30° b) 45° c) 60° d) 90°
5. The value of $\tan 45^\circ + \sin 30^\circ$ is: a) 1 b) $3/2$ c) 2 d) $1/2$
6. The pair of linear equations has no solution if the lines are:
a) Intersecting b) Coincident c) Parallel d) Perpendicular
7. The sum of first 10 natural numbers is: a) 45 b) 50 c) 55 d) 60
8. The area of a circle of radius 7 cm is: a) 154 cm^2 b) 44 cm^2 c) 308 cm^2 d) 77 cm^2
9. The degree of the polynomial $3x^4 - 2x + 7$ is: a) 2 b) 3 c) 4 d) 5
10. The probability of getting a tail when a coin is tossed once is: a) 0 b) 1 c) $1/2$ d) $1/4$
11. If two triangles are similar, then their corresponding sides are:
a) Equal b) Unequal c) Proportional d) Perpendicular
12. The value of $\cos 0^\circ$ is: a) 0 b) 1 c) -1 d) $1/2$
13. The coordinates of the origin are: a) (1, 0) b) (0, 1) c) (0, 0) d) $(-1, -1)$
14. The curved surface area of a cone is: a) πr^2 b) $2\pi r^2$ c) $\pi r l$ d) $2\pi r l$
15. The mean of first 10 natural numbers is: a) 5 b) 5.5 c) 6 d) 10
16. If the diameter of a circle is 14 cm, its radius is: a) 14 cm b) 7 cm c) 21 cm d) 28 cm
17. The value of $\sin^2 30^\circ + \cos^2 30^\circ$ is: a) 0 b) 1 c) $1/2$ d) 2
18. The number of solutions of a quadratic equation is determined by:
a) a b) b c) c d) Discriminant
19. The graph of a linear equation in two variables is a:
a) Curve b) Circle c) Straight line d) Parabola
20. The probability of an impossible event is: a) 0 b) 1 c) $1/2$ d) -1

Section B: Very Short Answer

(2 × 5 = 10 marks)

21. Find the zero of the polynomial $x-5$.
22. Write the formula for the distance between two points.
23. Find the value of $\sin 90^\circ$.
24. What is the HCF of 12 and 18?
25. Define probability.

Section C: Short Answer

(3 × 5 = 15 marks)

26. Find the roots of the quadratic equation $x^2-7x+10=0$.
27. Solve: $2x + y = 11$, $x - y = 1$.
28. Find the 10th term of the AP: 2, 5, 8, ...
29. Prove that $\tan 45^\circ = 1$.
30. Find the area of a circle of radius 14 cm.

Section D: Long Answer

(5 × 4 = 20 marks)

31. Find the roots of the quadratic equation by quadratic formula:

$$2x^2-7x+3=0$$

32. Find the coordinates of the point dividing the line joining A(2, -2) and B(8, 4) internally in the ratio 1 : 2.
33. Find the curved surface area and volume of a cone of radius 3.5 cm and height 6 cm.
34. Find the probability of getting:
 - a) A prime number
 - b) A multiple of 3when a number is selected at random from 1 to 10.

Section E: Case Study / HOTS

(5 marks)

35. The sides of two similar triangles are in the ratio 3 : 5. Find the ratio of their areas. Also explain why the ratio of areas is the square of the ratio of corresponding sides.