

**A-3-Y**

Roll No.....

Total No. of Questions : 40]

[Total No. of Printed Pages : 15

**XARJKUT23**

**9303-Y**

**MATHEMATICS**

Time : 3 Hours]

[Maximum Marks : 80

**Section-A**

1 each

1. The number  $\sqrt{2}$  is :

(A) an even number

(B) a rational number

(C) an irrational number

(D) None of these

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**A-3-Y**

Turn Over

2. Sum of zeroes of the quadratic polynomial  $x^2 + 7x + 10$  is :

(A)  $-7$

(B)  $10$

(C)  $7$

(D) None of these

3. The 11th term of an A.P.  $3, 3, 3, 3, \dots$  is :

(A)  $0$

(B)  $3$

(C)  $33$

(D) None of these

4. Distance between the points (0, 3) and (2, 0) is :

(A)  $\sqrt{5}$

(B)  $\sqrt{13}$

(C)  $\sqrt{6}$

(D) None of these

5. Circumference of a circle with radius ' $r$ ' is :

(A)  $\pi r$

(B)  $2\pi r$

(C)  $3\pi r$

(D) None of these

Turn Over

6. ✓  $Kx + 2y = 5$  and  $3x + y = 1$ , has a unique solution if :

(A)  $K = 6$

(B)  $K = 0$

(C) •  $K \neq 6$

(D) None of these

7. † How many tangents can a circle have ?

(A) 1

(B) • Infinite

(C) 2

(D) None of these

8. A card is drawn from a pack of 52 cards. What is the probability of getting a King of red colour ?

(A)  $\frac{1}{13}$

(B)  $\frac{1}{2}$

(C)  $\frac{1}{26}$

(D) None of these

9.  $1 + \tan^2 \theta$  is equal to :

(A)  $\operatorname{cosec}^2 \theta$

(B)  $\sec^2 \theta$

(C)  $-\sec^2 \theta$

(D) None of these

Turn Over

10. The sum of the roots of the quadratic equation  $ax^2 + bx + c = 0$ ,  $a \neq 0$  is :

(A)  $\frac{c}{a}$

(B)  $-\frac{b}{a}$

(C)  $\frac{b}{a}$

(D) None of these

11. H.C.F. of two consecutive even numbers is .....<sup>2</sup> ..

(Fill in the blank)

12. The sum of first five multiples of 3 is 45.

(True/False)

Or

$a_n = a + (n + 1)d$  is the  $n$ th term of an A.P. series.

(True/False)

13.  $\operatorname{cosec}^2 \theta - \cot^2 \theta = 1$ . (True/False)

14. All circles of different radii are ..... (Congruent/Similar)

15. The tangent at any point of a circle is ..... to the radius  
through the point of contact. (Fill in the blank)

16. Define Section Formula.

Or

Define Abscissa of a point.

17. State Pythagoras Theorem.

18. Define Angle of Depression.

19. What is the probability of impossible event ?

Turn Over

20. Write the formula for volume of a cylinder.

**Section-B**

2 each

21. Find the L.C.M. of 26 and 91.

22. A drinking glass is in the shape of a frustum of a cone of height 14 cm. The diameters of its two circular ends are 4 cm and 2 cm. Find the capacity of the glass.

23. Solve the pair of linear equations :

$$2x + 3y = 11$$

$$2x - 4y = -24$$

by substitution method.

24. Given  $15 \cot A = 8$ , find  $\sin A$  and  $\sec A$ .

*Or*

Evaluate :

$$2 \tan^2 45^\circ + \cos^2 30^\circ - \sin^2 60^\circ$$

25. A bag contains 3 red balls and 5 black balls. A ball is drawn at random from the bag. What is the probability that the ball drawn is :

(i) red ?

(ii) not red ?

26. A class teacher has the following absence record of 40 students of a class for the whole term. Find the mean number of days a student was absent :

Number of Days	Number of Students
0-6	11
6-10	10
10-14	7
14-20	4
20-28	4
28-38	3
38-40	1

## Section-C

3 each

27. Obtain all other zeroes of  $3x^4 + 6x^3 - 2x^2 - 10x - 5$ , if two of its zeroes are  $\sqrt{\frac{5}{3}}$  and  $-\sqrt{\frac{5}{3}}$ .

*Or*

Find a quadratic polynomial, the sum and product of whose zeroes are  $\sqrt{2}$  and  $\frac{1}{3}$ , respectively.

28. A fraction becomes  $\frac{1}{3}$  when 1 is subtracted from the numerator and it becomes  $\frac{1}{4}$  when 8 is added to its denominator. Find the fraction.

29. Find the roots of the quadratic equation  $2x^2 + x - 6 = 0$  by factorization.

30. Find the 31st term of an A.P. whose 11th term is 38 and the 16th term is 73.

*Or*

Find the sum of the first 15 multiples of 8.

31. Write all the other trigonometric ratios of  $\angle A$  in terms of  $\sec A$ .
32. Prove that the lengths of tangents drawn from an external point to a circle are equal.

*Or*

The length of a tangent from a point A at distance 5 cm from the centre of the circle is 4 cm. Find the radius of the circle.

33. Find the area of a quadrant of a circle whose circumference is 22 cm.
34. How many silver coins, 1.75 cm in diameter and of thickness 2 mm, must be melted to form a cuboid of dimensions  $5.5 \text{ cm} \times 10 \text{ cm} \times 3.5 \text{ cm}$  ?

**Section-D**

4 each

35. A train travels 360 km at a uniform speed. If the speed had been 5 km/h more, it would have taken 1 hour less for the same journey. Find the speed of the train.

*Or*

Find the roots of  $4x^2 + 3x + 5 = 0$  by the method of completing the square.

36. The angles of elevation of the top of a tower from two points at a distance of 4 m and 9 m from the base of the tower and in the same straight line with it are complementary. Prove that the height of the tower is 6 m.

37. Find the area of the quadrilateral whose vertices taken in order, are  $(-4, -2)$ ,  $(-3, -5)$ ,  $(3, -2)$  and  $(2, 3)$ .

*Or*

If A and B are  $(-2, -2)$  and  $(2, -4)$ , respectively, find the coordinates of P such that  $AP = \frac{3}{7}AB$  and P lies on the line segment AB.

38. Prove that the line joining the mid-points of any two sides of a triangle is parallel to the third side.

*Or*

In an equilateral triangle, prove that three times the square of one side is equal to four times the square of one of its altitudes.

39. Draw a pair of tangents to a circle of radius 5 cm which are inclined to each other at an angle of  $60^\circ$ .

40. If the median of the distribution given below is 28.5, find the values of  $x$  and  $y$  :

Class Interval	Frequency
0-10	5
10-20	$x$
20-30	20
30-40	15
40-50	$y$
50-60	5
Total	60