

**C-3-C**

Roll No.....

Total No. of Questions : 20 ]

[ Total No. of Printed Pages : 7

***XBAMKD20***  
***1303-C***  
***MATHEMATICS***

**Time : 3 Hours]**

**[Maximum Marks : 100**

1. In each of the following write down the correct answer on your answer-book :

(i) A line which intersects a circle in two distinct points is called :

(A) A Secant ✓

(B) A Tangent

(C) A Chord

(D) None of these

1

(ii) The value of 'm' for which the quadratic equation  $x^2 - mx + 4 = 0$  has equal roots is :

(A)  $\pm 4$  ✓

(B) +4

(C) -4

(D) None of these

1

$$x^2 - mx + 4 = 0$$
$$x^2 - mx$$

XBAMKD20-1303-C

**C-3-C**

Turn Over



(iii) From the letters of the word "MOBILE", a letter is selected. The probability that the selected letter is a vowel is :

(A)  $\frac{1}{3}$

(B)  $\frac{3}{7}$

(C)  $\frac{1}{6}$

(D) None of these

(iv) Curved surface area of the cylinder is :

(A) Perimeter of the base  $\times$  Height

(B) Area of the base  $\times$  Height

(C)  $3 \times$  Area of base

(D) None of these

(v) If  $x^2 = 0.4$ , then 'x' is a :

(A) Rational number

(B) Irrational number

(C) Composite number

(D) None of these

$$x^2 = 0.4$$

$$x = \sqrt{0.4}$$



(vi) If three numbers  $a, b, c$  in order are in A.P., then :

(A)  $2b = a + c$

(B)  $2a = b + c$  ✓

(C)  $2c = a + b$

(D) None of these

2. Find the distance between the points  $A(-a, -b)$  and  $B(a, b)$ .

3. ✓ If  $\sin A = \frac{3}{4}$ , calculate  $\cos A$  and  $\tan A$ .

4. Express 156 and 140 as a product of its prime factors.

5. ✓ AB is the diameter. TB is the tangent to the circle. If Q is a point on TB, then find QA.

6. Find the 31<sup>st</sup> term of an A.P. whose 11<sup>th</sup> term is 38 and the 16<sup>th</sup> term is 73.

7. Solve the following pair of linear equations by the method of elimination :

$$3x + 4y - 10 = 0$$

$$2x - 2y - 2 = 0$$



8. Find the value of 'P' for which the given system of equations :

$$2x + 3y - 5 = 0 \text{ and}$$

$$Px - 6y - 8 = 0$$

has a unique solution.

4

9. Find a quadratic polynomial, the sum and product of its zeroes are

$$-\frac{1}{4}, \frac{1}{4} \text{ respectively.}$$

4

10. A die is thrown once, find the probability of getting :

(a) A prime number

(b) A number lying between 2 and 6

4

11. Find two numbers whose sum is 27 and product is 182.

Or

Find the roots of the quadratic equation  $2x^2 - 7x + 3 = 0$  by the method of completing the square.

6

12. The difference of squares of two numbers is 180. The square of the smaller number is 8 times the larger number. Find the two numbers.

Or

Find the nature of the roots of the quadratic equation  $3x^2 + 4\sqrt{3}x + 4 = 0$ . If real roots exist, then find them.

6



13. If the areas of two similar triangles are equal, then prove that they are congruent.

*Or*

Diagonals of a trapezium ABCD with AB parallel to CD intersect each other at point O. If  $AB = 2 CD$ , find the ratio of the areas of triangles AOB and COD.

14. ABC is an equilateral triangle of side  $2a$ . Find each of its altitudes.

*Or*

Prove that in a right triangle, the square of the hypotenuse is equal to the sum of the squares of the other two sides.

15. Find the co-ordinates of a point A, where AB is the diameter of a circle whose centre is  $(2, -3)$  and B is  $(1, 4)$ .

*Or*

Find the value of 'K' for which the points  $(8, 1)$ ,  $(K, -4)$  and  $(2, -5)$  are collinear.

16. Prove that :

$$\frac{\cos A}{1 + \sin A} + \frac{1 + \sin A}{\cos A} = 2 \sec A$$



*Or*

If  $15 \cot A = 8$ , calculate all other trigonometric ratios.

6

17. Evaluate :

$$\frac{5 \cos^2 60^\circ + 4 \sec^2 30^\circ - \tan^2 45^\circ}{\sin^2 30^\circ + \cos^2 30^\circ}$$

*Or*

From a point on the ground, the angles of elevation of the bottom and top of a transmission tower fixed at the top of a 20 m high building are  $45^\circ$  and  $60^\circ$  respectively. Find the height of the tower.

7

18. Construct a triangle with sides 5 cm, 6 cm and 7 cm and then another triangle whose sides are  $\frac{7}{5}$  of the corresponding sides of the first triangle. Also write down steps of construction.

*Or*

Draw a circle of radius 3 cm. Take two points at a distance 7 cm from its centre. Draw tangents to the circle from these two points.

Also write down steps of construction.

7



19. Prove that the tangents drawn at the ends of a diameter of a circle are parallel.

*Or*

Prove that the lengths of tangents drawn from an external point to a circle are equal.

7

20. 2 cubes each of volume  $64 \text{ cm}^3$  are joined end to end. Find the surface area of the resulting cuboid.

*Or*

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.

7