TEST NO.
 # 5

Achievers Foundation Initiative for CBSE/ICSE School Students

ICSE 10TH :
MATHEMATICS

Max Marks: 60
Max Time : 2 hr

REFLECTION, COORDINATE GEOMETRY AND GEOMETRY

INSTRUCTOINS:

The question paper consists of 21 questions divided into four **Section A, B, C and Section D**.

You have to attempt all the sections.

SECTION-A   [10 Marks]

QUESTION - 1 The distance between the points (cosA , sin A) and (sinA, cosA) is

QUESTION - 2 Write the perimeter of the triangle formed by points O (0, 0) , A (a, 0) and B (0, b).

QUESTION - 3 The angle between the lines 2x -y +3=0 and x + 2y +3 =0 is
a)   90   b)   60   c)   45   d)   30

QUESTION - 4 The medians AD and BE of a triangle with vertices A (0,b) , B (0,0)and C (a,0) are perpendicular to each other, if
a)   a= b/2   b) = a/2   c) ab=1   d) a = $\pm\sqrt{2}$ b

QUESTION - 5 Write an equation representing a pair of lines through the point (a, b) and parallel to the coordinate axes.

QUESTION - 6. If ABC and DEF are similar triangles such that angle A = 47 and angle E = 83 , then find angle C = ?

QUESTION - 7. If four sides of a quadrilateral ABCD are tangent to a circle, then
a)   AC + AD = BD + CD   b)   AB +CD = BC + AD   c) AB + CD = AC +BC   d) none of these

QUESTION - 8. If angle between two radii of a circle is 130 , the angle between the tangents at the ends of radii is
a)   90   b)   50   c) 70   d) none of these

QUESTION - 9. Number of circles that can be drawn through three non collinear points is.

QUESTION - 10. The chord of a circle is equal to its radius. the angle subtended by this chord at the minor arc of the circle is.
a)   60   b)   75   c)   120   d)   150

SECTION-B [20 Marks]

QUESTION - 11. Draw a circle with centre O and radius equal to 5 cm illustrate the loci of points that are at a constant distance of 2 cm from the circumference of this circle.   3

QUESTION - 12. The equation of a line AB is 2x – 2y + 3 = 0.   **2**
(i) Find the slope of the line AB.
(ii) Calculate the angle that the line AB makes with the positive direction of the x-axis.

QUESTION - 13

(i) The area of a right angled isosceles triangle whose hypotenuse is equal to 270 m is- **2**

(ii) If ratio of corresponding sides of two similar triangles is 5 : 6, then find ratio of their areas. **2**

(iii) Let triangles ABC ~ DEF. if area of triangle ABC = 100 cm², Area of triangle DEF = 196 cm² and DE = 7, then find AB. **2**

QUESTION -1 4

(i) Draw a circle of radius 4 cm. take a point P on it. Without using the center of the circle, draw a tangent to the circle at point P. **3**

(ii) Prove that the tangents at the extremities of any chord make equal angles with the chord. **3**

(iii) Two concentric circles are of radii 5 cm and 3 cm. Find the length of the chord of larger circle (In cm) which touches the smaller circle. **3**

SECTION-C [14 Marks]

QUESTION –1 5 The point P(3, 4) is reflected to P' in the x-axis and O' is the image of O (the Origin) in the line PP' Find : **4**

(i) The coordinates of P' and O'.   (ii) The length of segment PP' and OO'.

(iii) The perimeter of the quadrilateral POP'O'   (iv) What is the special name of the quadrilateral POP'O'.

QUESTION – 16 The co-ordinates of two points P and Q are (2, 6) and (-3, 5) respectively. Find: **2**

(i) The gradient of PQ;   (ii) the equation of PQ;

QUESTION – 17

(i) Find the points on x-axis which are at a distance of 5 units from the point A(-1, 4). **2**

(ii) Find the value of m for which coordinates (3,5), (m,6) and $\left(\dfrac{1}{2}, \dfrac{15}{2}\right)$ are collinear. **2**

(iii) Does the line 3x – 5y = 6 bisect the join of (5, -2) and (-1, 2)? **2**

(iv) Find the point of intersection of the lines: 4x + 3y = 1 and 3x – y + 9 = 0. If this point lies on the line (2k – 1)x – 2y = 4; find the value of k. **2**

SECTION-D (Each question carries $\dfrac{20}{5}$ marks)

QUESTION- 18. Prove that the area of the triangle BCE described on one side BC of a square ABCD as base is one half of the area of similar triangle ACF described on the diagonal AC as base.

QUESTION- 19. Find the circumcenter of the triangle whose vertices are (-2,3), (2,-1) and (4,0). Also find the circumradius.

QUESTION- 20. In the given figure, the in circle of $\triangle$ ABC touches the sides AB, BC and CA at the points P, Q, R respectively. Show that AP + BQ + CR = BP + CQ + AR = $\dfrac{1}{2}$ (Perimeter of $\triangle$ ABC)
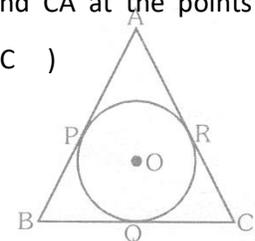
QUESTION- 21. Two circles with centers A and B of radii 3 cm and 4 cm respectively intersect at two points C and D such that AC and BC are tangents to the circles. Find the length of the common chord CD.