7. Coordinate Geometry

8 Marks:

1) Find the area of a rhombus if its vertices are $(-4,-7)$ $(-1,2)$ $(8,5)$ and $(5,-4)$ taken in order

2) Show that the four points $(0,-1)$ $(6,7)$ $(-2,3)$ and $(8,3)$ are the vertices of a rectangle and also find its area.

3) i) Show that $(-1,-2)$ $(1,0)$ $(-1,2)$ $(-3,0)$ are taken in order they form a square   ii) $(1,7)$ $(4,2)$ $(-1,-1)$ $(-4,4)$

4) Name the type of quadrilateral formed, if any, by the following points, and give reasons for your answer:
   i) $(4,5)$ $(7,6)$ $(4,3)$ $(1,2)$ ii) $(-3,5)$ $(3,1)$ $(0,3)$ $(-1,-4)$

5) Find the area of rhombus if its vertices are $(3,0)$ $(4,5)$ $(-1,4)$ and $(-2,-1)$ taken in order and find the length of the sides.

6) If $P(2,1)$, $Q(3,4)$, $R(-2,3)$ and $S(-3,-2)$ be four points in a plane, show that PQRS is a rhombus

7) If $(1,2)$ $(4,y)$ $(x,6)$ and $(3,5)$ are the vertices of a parallelogram taken in order find x and y and also find the area.

8) If the points $A(6,1)$, $B(8,2)$, $C(9,4)$ and $D(P,3)$ are the vertices of a parallelogram, find p?

9) i) Find the coordinates of the points of trisection of line segment joining $(4,-1)$ and $(-2,-3)$
   ii) $A(2,-2)$ and $B(-7,4)$ iii) $(2,6)$ $(-4,8)$ iv) $(-3,-5)$ $(-6,-8)$
   v) $(6,9)$ $(-6,-9)$ vi)

10) Find the coordinates of the point which divide the line segment joining $A(-2,2)$ and $B(2,8)$ into four equal parts

11) 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.

12) Find the ratio in which the line segment joining $A(1,-5)$ and $B(-4,5)$ is divided by the x-axis. Also find the coordinates of the point of division.

13) Find the ratio in which the y-axis divides the line segment joining the points $(5,-6)$ and $(-1,-4)$. Also find the point of intersection.

2 Marks:

1) Find the distance between two points i) $(\cos\theta, 0)$ and $(0, \sin\theta)$
   ii) $(2,3)(4,1)$ iii) $(-5,7)(-1,3)$ iv) $(a,b)(-a,-b)$ v) $(-1,-2)(1,0)$ vi) $(5,7)(-3,2)$

2) Find a relation between x and y such that the point (x,y) is equidistant from the points $(3,6)$ and $(-3,4)$

3) Find the values of y for which the distance between the points $P(2,-3)$ and $Q(10,y)$ is 10 units.

4) i) Find the radius of the circle whose center is $(3,4)$ and passes through $(0,0)$
   ii) $(36,15)(0,0)$

5) Do the points $(3,2)(-2,-3)$ and $(2,3)$ form a triangle? If so, name the type of triangle formed.

6) Find the point on the x-axis which is equidistant from $(2,-5)$ and $(-2,9)$

7) Find a point on the y-axis which is equidistant from the points $A(6,5)$ and $B(-4,3)$

8) Find the distance between the points
   i) $(a+b, a-b)(a-b, -a-b)$ ii) $(\sin\theta-\cos\theta, 0)(0, \sin\theta+\cos\theta)$ iii) $(2,0)(-2,0)$

9) Find the midpoint of the line segment joining
   i) $(8,2)$ and $(7,3)$ ii) $(\cos 0, 0)(0, \sin 90)$ iii) $A(-2,3)$ and $B(0,7)$
   iv) $A(3,5)$ and $B(-2,3)$ v) $(\sqrt{2}+1, 1)(1-\sqrt{2}, -1)$

10) $(0,0)(4,0)(4,4)(0,4)$ are taken in order form a square. Show that diagonals bisect each other.

11) What is the other end of the diameter of a circle whose centre is $(1, 2)$ and one end point of the diameter is $(3, 4)$

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

13) If $P(5, 6)$ is the midpoint of the line segment joining $A(6, 5)$ and $B(4, x)$, find x.

14) i) Point on positive x-axis is ———

ii) Point on negative x-axis is ———

iii) Point on positive y-axis is ———

iv) Point on negative y-axis is ———