UNIT IV - ANALYTICAL GEOMETRY

Co-ordinate System in a Plane ⟨15⟩

1m	2m	3m	4m	5m	Total
–	1(K)	–	–	1(A)	7

(Knowledge)

2 MARKS QUESTIONS

1. Find the value of k if the distance between $(2k, 5)$ and $(-k, 4)$ is $\sqrt{90}$.

2. If the distance between the points $(3, -2)$ and $(-1, a)$ is 5 units. Find the value of 'a'.

3. Find the distance of the following points from x-axis.
   (a) $(-4, 2)$ (b) $(-\frac{1}{2}, 2)$ (c) $(5, 3)$

4. Find the distance of the following points from the y-axis
   (a) $(8, 4)$ (b) $(-2, 3)$ (c) $(0, 3)$

5. Find the distance of the following points from the origin.
   (a) $(4, -1)$ (b) $(5, 3)$ (c) $(-3, -2)$

6. Find the points of trisection of the line joining the points $(3, 4)$ and $(5, -2)$.

7. Find the points of trisection of the line joining the points $(2, -1)$ and $(5, 4)$.

8. One end of a diameter of a circle is $(1, 3)$ and its centre is $(4, -2)$. Find the co-ordinates of the other end of the diameter.

9. The centroid of the triangle ABC is the point $(4, 3)$. The co-ordinates of 'A' is $(5, -4)$ and B is $(-1, 6)$. Find the co-ordinates of C.

10. Find the area of the triangle whose vertices are
    (i) A$(6, -4)$ B$(-2, 5)$ C$(6, 2)$ (ii) A$(4, -2)$ B$(1, 3)$ C$(4, -3)$
    (iii) A$(5, 2)$ B$(6, -1)$ C$(5, -1)$

11. Find the perimeter of the triangle formed by the points $(3, -1)$ $(5, 2)$ and $(-1, 2)$.

5 MARKS QUESTIONS

(Application)

1. Show that the following points are the vertices of a square and hence find the areas.
   (a) $(3, 2)$ $(0, 5)$ $(-3, 2)$ $(0, -1)$ (b) $(1, 1)$ $(4, 1)$ $(4, 4)$ $(1, 4)$
   (c) $(4, -5)$ $(8, 1)$ $(14, -3)$ $(10, -9)$

2. Prove that the following sets of points form a rhombus. Also find their areas.
   (a) $(-3, 6)$ $(-2, 11)$ $(3, 12)$ $(2, 7)$ (b) $(7, 3)$ $(3, 0)$ $(0, 4)$ $(4, 7)$

3. Prove that the following sets of points form paralelogram.
   (a) $(3, 2)$ $(4, -1)$ $(7, 3)$ and $(6, 6)$ (b) $(0, 1)$ $(-3, 7)$ $(6, -9)$ $(9, -1)$

4. Prove that the following sets of points are the vertices of a rectangle
   (a) (8,3) (8, 6) (10, 6) (10, 3)   (b) (3, –2) (3, 1) (5, 1) (5, –2)

5. Find the circumcentre of the triangle whose vertices are (1, 2) (2, 1) & (2, 3). Also find the circum radius.

6. Find the coordinates of the circumcentre of the triangle so formed by the points (1, 1) (2, –1) and (3, 2).

7. Find the length of the medians of the triangle with vertices (–3, 6) (5, 4) (1, –2).

8. Find the ratio in which the line segment joining the points (4, 5) & (1, 2) is divided by the x-axis? Also find the coordinates of the point of division.

9. Find the ratio in which the line segment joining (2, –3) and (5, 6) is divided by y-axis. Also find the co-ordinates of the point of division.

10. The midpoints of the sides of the triangle are (2, 6) (4, 6) and (3, 5) the find the vertices of the triangle.

11. Find the co-ordinates of the vertices of the triangle given the midpoints of the sides are (4, –1) (7, 9) (4, 11).

12. Find the ratio in which the co-ordinate axis divide the line joining the points (2, 5) & (1, 9). Find the co-ordinates of the points of division.

13. Find the area of the quadrilateral whose vertices are
    (a) (1, 2) (6, 2) (5, 3) (3, 4)   (b) (–1, 3) (4, –1) (3, 2) (4, 2)
    (c) (2, –1) (1, 1) (3, 2) (1, 2)   (d) (1, 1) (3, 4) (5, –2) (4, –7)

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