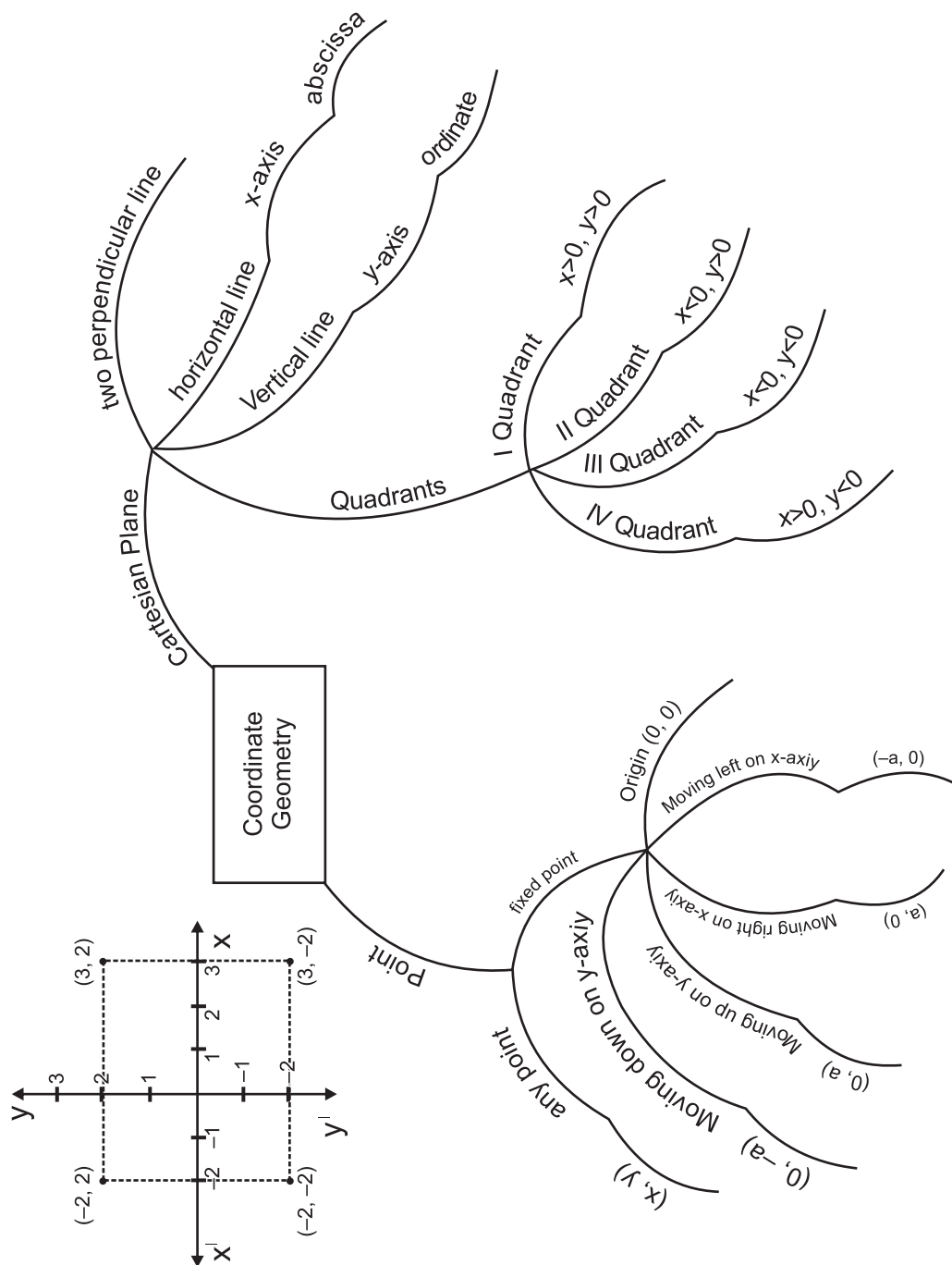


CHAPTER-3

COORDINATE GEOMETRY

MIND MAP

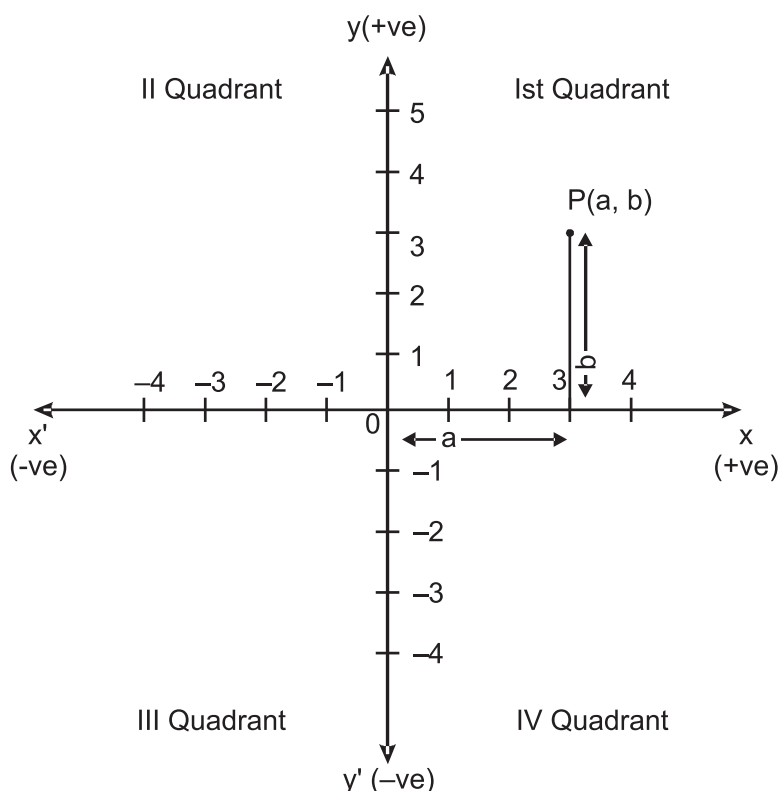


CHAPTER-3

CO-ORDINATE GEOMETRY

KEY POINTS

- **Coordinate Axes** : The position of a point in a plane is determined with reference to two fixed mutually perpendicular lines, called coordinate axes.



The horizontal line xox' is called x-axis.

The vertical line yoy' is called y-axis.

The intersection point of these two lines is called origin. It is represented by O.

- **Coordinates** : Location of a point P in cartesian system, written in the form of ordered pair say $P(a, b)$ as shown in figure above.
a is the length of perpendicular of P (a, b) from y-axis and is called abscissa of P.

- b is the length of perpendicular of $P(a, b)$ from x -axis and is called ordinate of P .
- Location of a point $P(a, b)$ on graph with sign convention – where a and b are such that –

	Value of Point	Sign of Point	Location of Point
i)	$a = 0, b = 0$	–	origin
ii)	$a > 0, b > 0$	$(+, +)$	Ist Quadrant
iii)	$a < 0, b > 0$	$(-, +)$	IInd Quadrant
iv)	$a < 0, b < 0$	$(-, -)$	IIIrd Quadrant
v)	$a > 0, b < 0$	$(+, -)$	IVth Quadrant

Note: If a point lie on x -axis or y -axis it does not lie in any quadrant.

- Coordinates of a point on x -axis are of the form $(x, 0)$
- Coordinates of a point on y -axis are of the form $(0, y)$

PART (A)

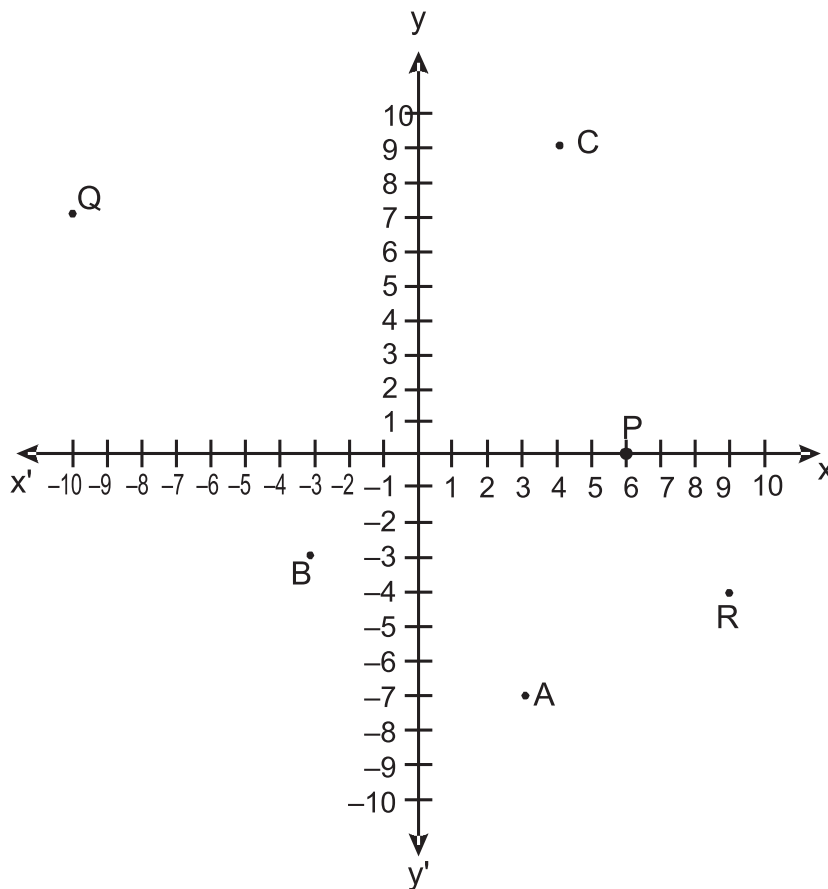
1. The abscissa of a point is the distance of the point from
 - a) x-axis
 - b) y-axis
 - c) origin
 - d) None of these
2. The y-coordinate of a point is the distance of that point from
 - a) x-axis
 - b) y-axis
 - c) origin
 - d) None of these
3. If both the coordinates of a point are negative then that point will lie in
 - a) First quadrant
 - b) Second quadrant
 - c) Third quadrant
 - d) Fourth quadrant
4. If abscissa of a point is zero then that point will lie
 - a) on x-axis
 - b) on y-axis
 - c) at origin
 - d) in I st quadrant
5. If $x > 0$ and $y < 0$, then the point $(x, -y)$ lies in _____.
 - a) I quadrant
 - b) II quadrant
 - c) III quadrant
 - d) IV quadrant
6. Point $(a, 0)$ lies
 - a) on x-axis
 - b) on y-axis
 - c) in third quadrant
 - d) in fourth quadrant
7. Signs of abscissa and ordinate of a point in the fourth quadrant are respectively.
 - a) +, +
 - b) -, -
 - c) -, +
 - d) +, -
8. Ordinate of a point is positive is
 - a) I and IV quadrants
 - b) I quadrant only
 - b) I and II quadrants
 - d) I and III quadrants
9. The point which lies on y-axis at a distance of 10 units in the negative direction of y-axis is
 - a) $(10, 0)$
 - b) $(0, 10)$
 - c) $(-10, 0)$
 - d) $(0, -10)$

10. The point whose abscissa and ordinate have different signs will lie in
a) I and II quadrants b) I and III quadrants
b) II and III quadrants d) II and IV quadrant
11. Which of the point P(0, 3), Q(1, 0), R(0, -1), S(-5, 0), T(1, 2) do not lie on x-axis ?
a) P and R only b) Q and S only
c) P, R and T d) Q, S and T
12. If the coordinates of the points are P(-2, 3), and Q (-3, 5), then (abscissa of P) - (abscissa of Q) is
a) -5 b) 1
c) -1 d) -2
13. Point (1, 1), (1, -1), (-1, 1), (-1, -1)
a) lie in I quadrant b) lie in III quadrant
c) lie in I and III quadrants d) do not lie in the same quadrant
14. The point of intersection of the coordinate axes is
a) Abscissa b) Ordinate
c) Quadrant d) Origin
15. The abscissa and ordinate of the origin are
a) 1, 0 b) 1, 1
c) 0, 1 d) 0, 0
16. The measure of the angle between the coordinate axes is
a) 0° d) 90°
c) 180° d) 270°
17. The perpendicular distance of the point p(-4, -3) from x-axis is
a) -4 b) -3
c) 4 d) 3
18. The perpendicular distance of the point p(-7, 2) from y-axis is
a) -7 b) 7
c) 2 d) None of these

35. The coordinates of a points, which lies on negative x-axis at a distance of 6 units from y-axis, are ($-6, 0$).
36. In which quadrant do the given points lie.
- | | | |
|------------------|-----------------|-----------------|
| i) $(3, -2)$ | ii) $(17, -30)$ | iii) $(-2, 5)$ |
| iv) $(-50, -20)$ | v) $(10, 100)$ | iv) $(-81, 80)$ |
37. On which axis do the given points lie :
- | | | |
|-----------------|----------------|---------------|
| i) $(11, 0)$ | ii) $(-11, 0)$ | ii) $(0, 14)$ |
| iv) $(0, -100)$ | | |
38. The abscissa and ordinate of a point A are -3 and -5 respectively then write down the coordinate of A.
39. Is $P(7, 0)$ and $Q(0, 7)$ represent the same point ?
40. In which quadrant x coordinate is negative ?
41. Name the figure formed when we plot the points $(0, 0)$, $(4, 4)$ and $(0, 4)$ on a graph paper.
42. In which quadrant, does the point A (x, y) with values $x > 0$ and $y > 0$ exists.
43. Write the coordinates os the fourth vertex of a square when three of its vertices are given by $(1, 2)$ $(5, 2)$ $(5, -2)$.
44. If abscissa of point A is positive & ordinate is negative then in which quadrant do A lie ?
45. Write the coordinates of a point whose perpendicular distance from x-axis is 5 units & perpendicular distance from y-axis is 3 & it lies in II quadrant.
46. Draw the Cartesian plane on a graph paper and plot the given points.
- | | | |
|----------------------|-----------------------|---------------------|
| i) A $(3, 5)$ | ii) B $(-7/2, 0)$ | ii) C $(2, -6)$ |
| iii) D $(-6, -4)$ | v) E $(0, -5/2)$ | vi) F $(8, 0)$ |

47. Write the coordinates of each of points in the given figure.

A, B, C, P, Q, R



48. Point P (4, 3) is in the first quadrant. Find the coordinate of the point Q, opposite to P in fourth quadrant.
49. Find the distance of point (8, 3) from x axis & y axis.
50. Write the name of the figure formed by joining the points A (-3, 0), B (0, 3) and C (3, 0) in the cartesian plane.
51. Write the coordinates of the point that lies on y-axis and is at a distance of 2 units in upward direction.
52. If the mirror image of a point (x, y) about x-axis is (x, -y) then write the mirror image of the point S (-5, 7) about x-axis is _____.

53. Find the distance of the point P (4, 2) from origin.
54. Write the mirror image of (4, -3) about y-axis.

PART – C

55. Draw a line segment on a graph paper whose end points lies in first quadrant and third quadrant. Write the coordinates of its end points and mid point of line segment.
56. Plot the points A (2, 4) & B (2, -5) whose x-coordinates are same. Is this line AB parallel to any of the axes. If yes, to which axis is it parallel?
57. Plot the points P (2, -3) & Q (-5, -3) whose ordinates are same. To which axis the line P Q is parallel?
58. Plot the points A (7, 6) & B (7, -6) on graph paper. Join them & answer the following :
- (i) Write the coordinate of the point where line AB cuts the x-axis?
 - (ii) To which axis, line AB is parallel ?
59. Draw a triangle ABC on graph paper having the coordinates of its vertices as A (-2, 0), B (4, 0) and C (1, 5). Also find the area of triangle.
60. If we plot the points P(5, 0), Q (5, 5), R(-5, 5) and S (-5, 0), which figure will we get? Name the axis of symmetry of this figure?
61. Find the coordinates of a point which is equidistant from the two points (-4, 0) and (4, 0). How many of such points are possible satisfying the condition?
62. Draw a quadrilateral with vertices A (4, 3), B(-4, 3), C(-4, -3) and D(4, -3). Draw its diagonals and write the coordinates of the point where the diagonals cut each other?
63. A rectangular field is of length 10 units & breadth 8 units. One of its vertex lie on the origin. The longer side is along x-axis and one of its vertices lie in first quadrant. Find all the vertices.
64. Plot the point B (5, 3), E(5, 1), S(0, 1) and T(0, 3) and answer the following :
- i) Join the points and name the figure obtained.
 - ii) Find the area of figure.

CHAPTER-3 **COORDINATE GEOMETRY** **ANSWERS**

- | | |
|--|----------------------------|
| 1. b) y-axis | 25. 0 |
| 2. a) x-axis | 26. right angled isosceles |
| 3. c) third quadrant | 27. I, III |
| 4. b) on y-axis | 28. different |
| 5. a) I quadrant | 29. $(-5, 7)$ |
| 6. a) on x-axis | 30. $(5, 0)$ |
| 7. d) $+, -$ | 31. False |
| 8. c) I and II quadrants | 32. True |
| 9. d) $(0, -10)$ | 33. False |
| 10. d) II and IV quadrants | 34. False |
| 11. c) P, R and T | 35. True |
| 12. b) 1 | 36. i) IV quadrant |
| 13. d) do not lie in the same quadrant | ii) IV quadrant |
| 14. d) Origin | iii) II quadrant |
| 15. d) $(0, 0)$ | vi) III quadrant |
| 16. b) 90° | v) I quadrant |
| 17. d) 3 | vi) II quadrant |
| 18. b) 7 | 37. i) x-axis |
| 19. d) 5 | ii) x-axis |
| 20. d) Points B and C both | iii) y-axis |
| 21. quadrants | ii) y-axis |
| 22. $5, -2$ | 38. $(-3, -5)$ |
| 23. IV | 39. No |
| 24. 0 | 40. II and III quadrant |
| | 41. Right angled Triangle |

- 42. Ist Quadrant
- 43. $(1, -2)$
- 44. IV
- 45. $(-3, 5)$
- 47. $A(3, -7), B(-3, -3)$
 $C(4, 9), P(6, 0)$
 $Q(-10, 7), R(9, -4)$
- 48. $(4, -3)$
- 49. 3 units, 8 units
- 50. Triangle or isosceles
Triangles
- 51. $(0, 2)$
- 52. $(-5, -7)$
- 53. $\sqrt{20}$ units
- 54. $(-4, -3)$
- 56. Yes, y-axis
- 57. x-axis
- 58. i) $(7, 0)$
ii) Parallel to y-axis
- 59. 15 square units
- 60. Rectangle, y-axis
- 61. Any point on y-axis, infinite
- 62. At origin $(0, 0)$
- 63. $(0, 0), (10, 0), (10, 8), (0, 8)$
- 64. i) Rectangle
ii) 10 sq. units

Practice Test

COORDINATE GEOMETRY

Time : 50 Min.

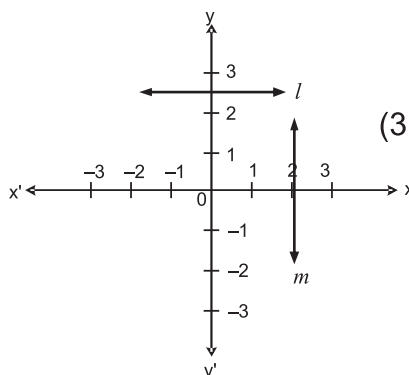
M.M. 20

1. In which quadrant, the point (x, y) will lie? (Where x is a positive and y is a negative number). (1)
2. Write the y -coordinate of a point which lies on x -axis. (1)
3. Find the value of x and y if: (2)
 - (a) $(x - 4, 7) = (4, 7)$
 - (b) $(1, 2y - 3) = (1, 7)$

4. What is the distance of a point $(7, 6)$ from x -axis and y -axis? (2)
5. Plot the following points in a Cartesian plane. (3)

$(-3, 5), (-2, 0), (-4, 0)$

6. Write the equations of lines l and m as shown in the figure. (3)



- Also name the line which is represented by $x = 0$.

7. Plot the points $O(0, 0)$, $A(4, 0)$ and $C(0, 6)$. Find the coordinates of the fourth point B such that $OABC$ forms a rectangle. (4)
8. The base AB of two equilateral triangles ABC and ABD with side $2a$, lies along the x -axis such that the mid point of AB is at the origin. Find the coordinates of two vertices C and D of the triangles. (4)