







explanation of A.

correct explanation of A.

c) A is true but R is false.

d) A is false but R is true.

28. **Assertion (A):** The point (-1, 6) divides the line segment joining the points (-3, 10) and (6, -8) in the ratio 2 : 7 [1]  
internally.

**Reason (R):** Three points A, B and C are collinear if area of  $\triangle ABC = 0$ .

a) Both A and R are true and R is the correct explanation of A.

b) Both A and R are true but R is not the correct explanation of A.

c) A is true but R is false.

d) A is false but R is true.

29. **Assertion (A):** C is the mid-point of PQ, if P is (4, x), C is (y, -1) and Q is (-2, 4), then x and y respectively are [1]  
-6 and 1.

**Reason (R):** The mid-point of the line segment joining the points  $P(x_1, y_1)$  and  $Q(x_2, y_2)$  is

$$\left( \frac{x_1+x_2}{2}, \frac{y_1+y_2}{2} \right).$$

a) Both A and R are true and R is the correct explanation of A.

b) Both A and R are true but R is not the correct explanation of A.

c) A is true but R is false.

d) A is false but R is true.

30. **Assertion (A):** Ratio in which the line  $3x + 4y = 7$  divides the line segment joining the points (1, 2) and (-2, 1) is [1]  
3: 5

**Reason (R):** The coordinates of the point P(x, y) which divides the line segment joining the points  $A(x_1, y_1)$  and

$$B(x_2, y_2) \text{ in the ratio } m_1 : m_2 \text{ is } \left( \frac{m_1x_2+m_2x_1}{m_1+m_2}, \frac{m_1y_2+m_2y_1}{m_1+m_2} \right)$$

a) Both A and R are true and R is the correct explanation of A.

b) Both A and R are true but R is not the correct explanation of A.

c) A is true but R is false.

d) A is false but R is true.

31. **Assertion (A):** The co-ordinates of the point which divides the join of A(-5, 11) and B(4, -7) in the ratio 7: 2 is [1]  
(2, -3)

**Reason (R):** The coordinates of the point P(x, y) which divides the line segment joining the points  $A(x_1, y_1)$  and

$$A(x_2, y_2) \text{ in the ratio } m_1 : m_2 \text{ is } \left( \frac{m_1x_2+m_2x_1}{m_1+m_2}, \frac{m_1y_2+m_2y_1}{m_1+m_2} \right)$$

a) Both A and R are true and R is the correct explanation of A.

b) Both A and R are true but R is not the correct explanation of A.

c) A is true but R is false.

d) A is false but R is true.

32. **Assertion (A):** The point on the X-axis which is equidistant from the points A(-2, 3) and B(5, 4) is (2, 0) [1]

**Reason (R):** The coordinates of the point P(x, y) which divides the line segment joining the points  $A(x_1, y_1)$  and

$$B(x_2, y_2) \text{ in the ratio } m_1 : m_2 \text{ is } \left( \frac{m_1x_2+m_2x_1}{m_1+m_2}, \frac{m_1y_2+m_2y_1}{m_1+m_2} \right)$$

a) Both A and R are true and R is the correct explanation of A.

b) Both A and R are true but R is not the correct explanation of A.

c) A is true but R is false.

d) A is false but R is true.

33. **Fill in the blanks:** [1]

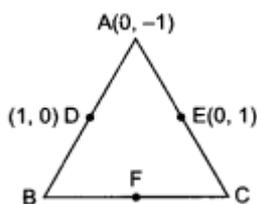
(a) The mid point of p(-5, 0) and q(5, 0) is \_\_\_\_\_.

[1]



53. If the point  $P\left(\frac{1}{2}, y\right)$  lies on the line segment joining the points  $A(3, -5)$  and  $B(-7, 9)$  then find the ratio in which  $P$  divides  $AB$ . Also, find the value of  $y$ . [5]
54. Find the lengths of the medians of a  $\triangle ABC$  having vertices at  $A(0, -1)$ ,  $B(2, 1)$  and  $C(0, 3)$ . [5]
55. Find the coordinates of the points which divide the line segment joining  $A(-2, 2)$  and  $B(2, 8)$  into four equal parts. [5]
56. If the coordinates of the mid-points of the sides of a triangle are  $(3, 4)$ ,  $(4, 6)$  and  $(5, 7)$ , find its vertices. [5]
57.  $A(5, 1)$ ,  $B(1, 5)$  and  $C(-3, -1)$  are the vertices of  $\triangle ABC$ . Find the length of median  $AD$ . [5]
58. If points  $(10, 5)$ ,  $(8, 4)$  and  $(6, 6)$  are the mid-points of the sides of a triangle, find its vertices. [5]
59. The base  $BC$  of an equilateral triangle  $ABC$  lies on  $y$ -axis. The co-ordinates of point  $C$  are  $(0, -3)$ . The origin is the mid-point of the base. Find the co-ordinates of the point  $A$  and  $B$ . Also find the co-ordinates of another point  $D$  such that  $BACD$  is a rhombus. [5]
60. If  $G$  be the centroid of a triangle  $ABC$  and  $P$  be any other point in the plane, prove that  $PA^2 + PB^2 + PC^2 = GA^2 + GB^2 + GC^2 + 3GP^2$ . [5]
61. The vertices of a  $\triangle ABC$  are  $A(4, 6)$ ,  $B(1, 5)$  and  $C(7, 2)$ . A line is drawn to intersect sides  $AB$  and  $AC$  at  $D$  and  $E$  respectively such that  $\frac{AD}{AB} = \frac{AE}{AC} = \frac{1}{4}$ . Find the area of the  $\triangle ADE$  and compare it with the area of  $\triangle ABC$ . [5]
62. If the coordinates of the mid points of the sides of a triangle are  $(1, 2)$ ,  $(0, -1)$  and  $(2, -1)$ . Find the coordinates of its vertices of the triangle. [5]
63. In what ratio is the line segment joining  $A(2, -3)$  and  $B(5, 6)$  divided by the  $x$ -axis? Also, find the coordinates of the point of division. [5]
64. In  $\triangle ABC$ ,  $D(3, -2)$ ,  $E(-3, 1)$  and  $F(4, -3)$  are the midpoints of the sides  $BC$ ,  $CA$  and  $AB$  respectively. Then, find the coordinates of the vertices  $A$ ,  $B$  and  $C$ . [5]
65. Find the area of the triangle formed by joining the midpoints of the sides of the triangle whose vertices are  $A(2, 2)$ ,  $B(4, 4)$  and  $C(2, 6)$ . [5]
66.  $A(0, 3)$ ,  $B(-1, -2)$  and  $C(4, 2)$  are vertices of a  $\triangle ABC$ .  $D$  is a point on the side  $BC$  such that  $\frac{BD}{DC} = \frac{1}{2}$ .  $P$  is a point on  $AD$  such that  $AP = \frac{2\sqrt{5}}{3}$ . [5]
67. Find the coordinates of the points  $Q$  on the  $x$ -axis which lies on the perpendicular bisector of the line segment joining the points  $A(-5, -2)$  and  $B(4, -2)$ . Also, name the type of triangle formed by the points  $Q$ ,  $A$  and  $B$ . [5]
68. Find the lengths of the medians of a  $\triangle ABC$  whose vertices are  $A(0, -1)$ ,  $B(2, 1)$  and  $C(0, 3)$ . [5]
69. In the given figure,  $ABC$  is a triangle coordinate of whose vertex  $A$  is  $(0, -1)$ .  $D$  and  $E$  respectively are the mid-points of the sides  $AB$  and  $AC$  and their coordinates are  $(1, 0)$  and  $(0, 1)$  respectively. [5]

If  $F$  is the mid-point of  $BC$ , find the areas of  $\triangle ABC$  and  $\triangle DEF$ .



70. If the centre of circle is  $(2a, a - 7)$  then find the values of  $a$  if the circle passes through the point  $(11, -9)$  and has diameter  $10\sqrt{2}$  units. [5]
71. i. Derive section formula. [5]  
ii. In what ratio does the point  $(-4, 6)$  divide the line segment joining the points  $A(-6, 10)$  and  $B(3, -8)$ .

72. If the coordinates of the mid-points of the sides of a triangle are  $(1, 1)$ ,  $(2, -3)$  and  $(3, 4)$ , find the vertices of the triangle. [5]