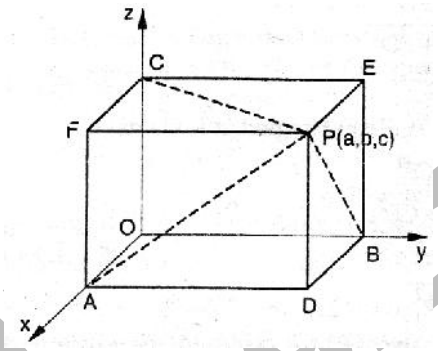
Chapter - 12

ASSIGNMENT

1 In Fig., if the coordinates of point P are (a, b, c), then

(i) write the coordinates of point A, B, C, D, E and F.

(ii) write the coordinates of the feet of the perpendiculars from the point P to the coordinate axes.



(iii) write the coordinates of the feet of the perpendicular from the point P on the coordinates planes XY, YZ and ZX.

(iv) find the perpendicular distances of point P from XY, YZ and ZX–planes.

(v) find the perpendicular distances of the point P from the coordinate axes.

(vi) find the coordinates of the reflection of P in XY, YZ and ZX–planes.

2 Find the image of:

(i) (- 2,3,4) in the yz - plane.

(ii) (- 5 ,4, -3) in the xz - plane.

(iii) (5 ,2-7) in the xy - plane.

(iv) (- 5,0,3) in the xz-plane.

(v) (- 4,0,0) in the xy - plane.

3 Planes are drawn parallel to the coordinate planes through the points (3, 0,-1) and (- 2, 5,4). Find the lengths of the edges of the parallelepiped so formed.

4 Find the distances of the point P (- 4,3,5) from the coordinate axes.

5 The coordinates of a point are (3, - 2, 5). Write down the coordinates of seven points such that the absolute values of their coordinates are the same as those of the coordinates of the given point.

6 Determine the point in XY–plane which is equidistant from three points A (2, 0, 3), B (0, 3, 2) and C (0, 0, 1).

7 Find the coordinates of a point equidistant from the four points O (0, 0, 0), A (a, 0, 0), B (0, b, 0) and C (0, 0, c).

8 Find the point on y-axis which is equidistant from the points (3, 1, 2) and (5, 5, 2).

9 Find the points on z-axis which are at a distance $\sqrt{21}$ from the point (1, 2,3).

10 Find the coordinates of the point which is equidistant from the four points O (0,0,0), A (2, 0,0), B (0,3,0) and C (0,0,8).

11 Find the locus of the points which are equidistant from the points (1, 2, 3) and (3,2,-1).

12 Find the locus of the point, the sum of whose distances from the points A (4, 0, 0) and B (- 4, 0, 0) is equal to 10.

13 Find the coordinates of the point which divides the join of P (2, –1, 4) and Q (4, 3, 2) in the ratio 2 : 3 (i) internally (ii) externally.

14 Find the ratio in which the line joining the points (1, 2, 3) and (–3, 4, – 5) is divided by the xy–plane. Also, find the coordinates of the point of division.

15 Using section formula, prove that the three points A (–2, 3, 5), B (1, 2, 3) and C(7,0, – 1) are collinear.

16 If the origin is the centroid of the triangle with vertices P (2a, 2, 6), Q (–4, 3b, – 10) and R (8, 14, 2c), find the values of a, b and c.

17 Find the ratio in which the line segment joining the points (2, - 1, 3) and (- 1,2,1) is divided by the plane x + y + z = 5.

18 Show that the plane ax + by+ cz + d = 0 divides the line joining the points (x_1, y_1, Z_1) and (x_2, y_2, z_2) in the ratio $-\frac{ax_1 + by_1 + cz_1 + d}{ax_2 + by_2 + cz_2 + d}$.

19 Given that P (3, 2, - 4), Q (5, 4, - 6) and R (9, 8, - 10) are collinear. Find the ratio in which Q divides PR.

20 Find the ratio in which the line segment joining the points (4, 8, 10) and (6, 10, -8) is divided by the yz-plane.