CHAPTER 12

Introduction to Three Dimensional Geometry

One mark questions:

1. The three coordinate planes divide the space into how many pats? What are they known as?(K)

2. What are the coordinates of any point on X-axis?   (U)
3. What are the coordinates of any point on Y-axis?   (U)
4. What are the coordinates of any point on Z-axis?   (U)

5. A point is on the X-axis. What are its y and z coordinates?   (U)

6. A point is in the XZ plane, what can you say about its y coordinate?   (U)

7. Name the plane determined by X and Y axes taken together.   (U)

8. What are the coordinates of any point in the XY-plane?   (U)

9. What are the coordinates of any point in the YZ-plane?   (U)

10. What are the coordinates of any point in the XZ-plane?   (U)

11. Name the octant in which the point (2,-4,-7) lie.   (K)

12. Find the distance of the point (3, 4, 5) from the origin.   (K)

13. If the distance of the point (2, 1, k) from the origin is 3, then find k.   (K)

14. Find the coordinates of the mid-point of the line joining the points (1, -2, 1) and (-3, 8, 3).   (K)

15. Find the coordinates of the centroid of a triangle whose vertices are (2,-3, 1), (1, 0, -1) and

(3, 6, 0).   (K)

Two marks questions:

1. Find the distance between the points P (1,-3,4) and Q (-4,1,2).   (K)

2. Find the equation of the set of points P such that its distances from the points A (3, 4,-5) and

B (-2, 1, 4) are equal.   (S)

3. Find the equation of the set of points P such that $PA^2 + PB^2 = 2K^2$, where A and B are the points

(3, 4, 5) and (-1, 3, -7) respectively.   (S)

Three marks questions:

1.Show that the points P (-2, 3, 5), Q (1, 2, 3) and R (7, 0, -1) are collinear.(K)

2. Are the points A(3,6,9), B(10,20,30) and C(25,-41,5),the vertices of a right angled triangle.(A)

3. Show that the points (-1,2,1),(1,-2,5),(4,-7,8) and (2,-3,4) are the vertices of a parallelogram.(A)

4. Show that the points (0,7,-10),(1,6,-6) and (4,9,-6) are the vertices of an isosceles triangle.   (A)

5. Find the equation of the set of points P, the sum of whose distances from A (4, 0, 0) and

B (-4, 0, 0)   is equal to 10.   (S)

6. The centroid of a triangle ABC is (1, 1, 1).If the coordinates of A and B are (3,-5, 7) and (-1, 7,-6)

respectively, find the coordinates of the point C.   (S)

7. Find the coordinates of the point which trisect the line segment joining the points P(4,2,-6) and

   Q(10,-16,6).   (S)

Five marks questions:

1. Derive the formula to find the coordinates of the point which divides the line segment joining

    thepoints (x_1, y_1, z_1) and (x_2, y_2, z_2) in the ratio m:n internally.   (K)

2. Find the coordinates of the point which divides the line segment joining the point (1,-2, 3) and

(3,4,-5) in the ratio 2:3 (i) internally and (ii) externally.   (K)

3. Using section formula, prove that the three points (-4,6,10),(2,4,6)and (4,0,-2)are collinear.   (A)

4. 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. Also

find the coordinates of Q.   (S)

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

YZ - plane.   (S)

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