CLASS XI – MATHEMATICS – CHAPTER 12

INTRODUCTION TO 3D

Name: Date:

Q01. Name the octants in which the following lie. (5,2,3).

Q02. Name the octants in which the following lie. (–5,4,3).

Q03. Find the image of (–2,3,4) in the yz plane.

Q04. Find the image of (5,2,–7) in the xy plane.

Q05. A point lies on X–axis what are co ordinate of the point.

Q06. Write the name of plane in which x axis and y - axis taken together.

Q07. The point (4,–3,–6) lie in which octants.

Q08. The point (2,0,8) lie in which plane.

Q09. A point is in the XZ plane. What is the value of y co-ordinates?

Q10. What is the coordinator of XY plane.

Q11. The point (–4, 2,5) lie in which octants.

Q12. The distance from origin to point (a,b,c) is?

Q13. 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.

Q14. Determine the points in xy plane which is equidistant from these point A (2,0,3) B(0,3,2) and C(0,0,1).

Q15. Find the locus of the point which is equidistant from the point A(0,2,3) and B(2,–2,1).

Q16. Show that the points A(0,1,2) B(2,–1,3) and C(1,–3,1) are vertices of an isosceles right angled triangle.

Q17. Using section formula, prove that the three points A(-2,3,5), B(1,2,3), and C(7,0,–1) are collinear.

Q18. Show that coordinates of the centroid of triangle with vertices $A(x_1\ y_1\ z_1)$, $B(x_2\ y_2\ z_2)$, and $C(x_3\ y_3\ z_3)$ is $[(x_1 + y_1 + z_1)/3, (x_2 + y_2 + z_2)/3, (x_3 + y_3 + z_3)/3]$.

Q19. Prove by distance formula that the points A(1,2,3), B(–1,–1,–1) and C(3,5,7) are collinear.

Q20. Find the co ordinate of the point which divider the join of P(2,–1, 4) and Q(4,3,2) in the ratio 2 : 5
(i) internally (ii) externally

Q21. Find the co ordinate of a point equidistant from the four points 0(0,0,0), A(a,0,0), B(0,b,0) and C(0,0,c).

Q22. Find the ratio in which the join the A(2,1,5)and B(3, 4,3) is divided by the plane 2x + 2y – 2z =1. Also find the co ordinate of the point of division.

Q23. Find the centroid of a triangle, mid points of whose sides are (1, 2,–3),(3,0,1) and (–1,1,–4)

Q24. The mid points of the sides of a DABC are given by (–2,3,5), (4,–1,7) and (6,5,3) find the co ordinate of A, B and C.

Q25. Find the co-ordinates of the points which trisects the line segment PQ formed by joining the point P(4,2,–6) and Q(10,–16,6)

Q26. Show that the point P(1,2,3), Q(–1,–2,–1), R(2,3, 2) and S (4,7,6)taken in order form the vertices of a parallelogram. Do these form a rectangle?

Q27. A point R with x co-ordinates 4 lies on the line segment joining the points P(2, –3,4)and Q(8,0,10). Find the co-ordinates of the point R.

Q28. If the points P(1,0,–6), Q(–3,P,q) and R(–5,9,6) are collinear, find the values of P and Q.

Q29. Three consecutive vertices of a parallelogram ABCD are A (3,–1,2), B (1,2,–4) and C (–1,1,2) find fourth

vertex D.

Q30. If A and B be the points (3,4,5) and (–1,3,7) respectively. Find the eq. of the set points P such that $PA^2 + PB^2 = K^2$ where K is a constant

Q31. Prove that the lines joining the vertices of a tetrahedron to the centroids of the opposite faces are concurrent.

Q32. The mid points of the sides of a triangle are (1,5,–1), (0,4,–2) and (2,3,4). Find its vertices.

Q33. Let $P(x_1\ y_1\ z_1)$ and $Q(x_2\ y_2\ z_2)$ be two points in space find co-ordinate of point R which divides P and Q in the ratio $x_1 : y_1$ by geometrically.

Q34. 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 $[(ax_1 + by_1 + cz_1 + d)/(ax_2 + by_2 + cz_2 + d)]$s

Q35. Prove that the points O(0,0,0), A(2,0,0), B(1,√3,0)and C(1, 1/√3, 2√2/√3) the vertices of a regular tetrahedron.

Q36. If A & B are the points (-2,2,3) and(-1,4,-3) respectively, then find the locus of P such that 3|PA|=2|PB|