CHAPTER 12

THREE DIMENSIONAL GEOMETRY

IMPROVEMENT 2017

1. a) Co-ordinates of a point on XY plane is …….
   i) (1,2,0) ii) (2,–3,–1)
   iii) (0,3,1) iv) (4,0,1) (1)
   b) Find the ratio in which the XY plane divides the line segment joining the points (–2,4,7),(3,–5,8). (2)

MARCH 2017

2. a) The distance between the point (1,-2,3) and (4,1,2) is ……..
   i) $\sqrt{12}$ ii) $\sqrt{19}$
   iii) $\sqrt{11}$ iv) $\sqrt{15}$ (1)
   b) The centroid of triangle ABC is at the point (1,2,3). If the coordinates of A and B are (3,–5,7) and (–1,7,–6) respectively. Find the coordinates of the point C. (2)

IMPROVEMENT 2016

3. a) State whether the following is TRUE or FALSE. " The point (4,–2,–5) lies in the eight octant'.
   b) Find the equation of the set of points such that its distance from the points A(3,4,-5) and B (-2,1,4) are equal.

MARCH 2016

4. a) Which one of the following points lies in the sixth octant?
   i) (–4, 2, –5) ii) (–4, –2, –5)
   iii) (4,–2, –5) iv) (4,2,5) (1)
   b) Find the ratio in which the YZ plane divides the line segment formed by joining the points (–2,4,7) and (3,–5,8)

IMPROVEMENT 2015

5. a) Which of the following is lies in the sixth octant? (1)
   i) (–3,–1,–2) ii) (–3,1,–2)
   iii) (3,–1,2) iv) (3,–1,–2)
   b) Find the ratio in which the YZ plane divides the line joining the points (–2,4,7) and (3,–5,8). (3)

MARCH 2015

6. a) A point in the XZ pane is ……..
   i) (1,1,1) ii) (2,0,3)
   iii) (2,3,0) iv) (–1,2,3)
   b) Show that the points $A(1,2,3), B(-1,-2,-1), C(2,3,2)$ and $D(4,7,6)$ are the vertices of a parallelogram. (3)

IMPROVEMENT 2014

7. Find the coordinates of the point which, divides the line segment joining the points (–2,3,5) and (1,–4,6) in the ratio 2:3 internally. (4)

MARCH 2014

8. a) Find the distance between the points (2,3,5) and (4,3,1).
   b) Find the ratio in which the line segment joining the points A (4,8,10) and B(6,10,–8) is divided by the XY pane.

IMPROVEMENT 2013

9. a) If P is a point in YZ-plane, then its x coordinate is ……
   b) Find the ratio in which the YZ-plane divides the line segment formed by joining the points (–2,4,7) and (3,–5,8).

MARCH 2013

10. a) Find the distance between the points (2,−1,3) and (−2,1,3).
    b) Find the coordinates of the point which divides the line segment joining the points (−2,3,5) and (1,−4,6) internally in the ratio of 2:3.

IMPROVEMENT 2012

11. The vertices of ΔABC are $A(2,1), B(-3,5)$ and $C(4,5)$
    a) Write the co-ordinates of the midpoint of AC.
    b) Find the equation of the medial through the vertex B.

MARCH 2012

12. a) If $\left(\frac{5}{3},\frac{22}{3},\frac{-22}{3}\right)$ is the centroid of ΔPQR with vertices P (a,7,−10), Q (1, 2b,−6) , R (4,9,3c), find the values of a, b and c.
    b) Prove that ΔPQR is isosceles.

IMPROVEMENT 2011

13. a) Determine a point on the x axis which is equidistant from the points (−2,3,5) and (1,2,3).
    b) If the centroid of the triangle with vertices (a,2,5), (1,b,0) and (−3,−1,c) is (1,2,3), then find a,b and c.

MARCH 2011

14. Consider the points A (−2,3,5). B (1, 2, 3) and C(7, 0, −1).
    a) Using the distance formula. Show that the points A,B and C are collinear.
    a) Find the ratio in which B divides the line segment AC.

SEPTEMBER 2010

15. a) Find the co-ordinates of the points which trisect the line segment joining the points P(4,0,1)and Q(2,4,0).
    b) Find the locus of the set of points P such that the distance from A(2,3,4) is equal to twice the distance from B(−2,1,2).

MARCH 2010

16. Consider the triangle with vertices A (0,7,−10), B (1,6,−6) ,C (4,9,−6).
    i) Find the sides AB, BC, AC
    ii) Prove that the triangle is right angled.
    iii) Find the centroid of the triangle.

IMPROVEMENT 2009

17. Consider the points A(−2,4,7) and B(3,−5,8).
    i) If P divides AB in the ratio k:1, then find the co-ordinates of P.
    ii) Find the co-ordinates of the point where the line segment AB crosses the YZ-plane.

MARCH 2009

18. Consider the points A(2,1,3) and B(1,2,1):
    a) Find the ratio in which the join of AB is dived by YZ plane.
    b) Also find the point of division.