B.Sc. DEGREE EXAMINATION, APRIL 2018.

II YEAR III SEMESTER

Core Major - Paper VI - THREE DIMENSIONAL GEOMETRY

Time : 3 Hours Max. Marks : 75

SECTION A – (10 × 2 = 20 marks)

Answer any *TEN* questions

1. Find the intercepts made by the plane with the coordinate axes.
2. Write down the equation of the straight line passing through the point and having the direction ratios.
3. Write down the equation of the sphere whose centre is at and radius units.
4. Find the equation of the sphere having the line joining the points and as diameter.
5. Define a homogeneous cone.
6. What is the condition for split into two linear factors?
7. Define a right circular cone.
8. Write down the equation of the right circular cone with vertex at the origin.
9. Define a right circular cylinder.
10. Write down the equation of a right circular cylinder whose radius is and whose axis is .
11. Show that the planes and are parallel to each other.
12. Find the equation of the straight line joining the points and.

SECTION B – (5 × 5 = 25 marks)

Answer any *FIVE* questions

1. Find the equation of the plane passing through the points and perpendicular to the plane.
2. Find the equation of the sphere which has its centre at the point and touches the plane.
3. Find the equation of the cone with vertex O and base curve, the conic in which the surface is cut by the plane.
4. Show that the equation of a right circular cone whose vertex is O, axis OZ and semi-vertical angle is .
5. Find the equation of the cylinder whose generators are parallel to the plane and whose guiding curve is, .
6. Transform the line and into symmetrical form.
7. Find the equation of the tangent plane to the sphere at .

[P.T.O.]

SECTION C – (3 × 10 = 30 marks)

Answer any *THREE* questions

1. Find the image of the point in the plane.
2. Find the equation of the sphere through the four points, and.
3. Find the equation of the cone whose vertex is the point and whose base is the curve .
4. Obtain the equation of a right circular cone.
5. Find the equation of the right circular cylinder of radius with axis as .