

CSSR & SRRM DEGREE & PG COLLEGE

(AUTONOMOUS)

UG (CBCS) REGULAR EXAMINATIONS, OCT- 2025

B.Sc(CS), SEMESTER-III

MINOR: SOLID GEOMETRY

(w.e.f. 2024-25 Admitted Batch)

(No additional sheet will be supplied)

Time: 3 hrs.**Max. Marks: 70****SECTION – A****I. Answer any FIVE questions. Each Question Carries 4 Marks** 5 X 4 =20 M

1. Find the equation of the plane through the points (2,2,1), (9,3,6) and perpendicular to the plane

$$2x + 6y + 6z = 9.$$

2. Find the angle between planes $2x - 3y - 6z = 9$ and $6x + 3y - 2z = 18$.

3. Prove that the four points (1,2,3), (4,0,4), (-2,4,2), (7, -2,5) are collinear

4. Find the image of (2, -1,3) in the plane $3x - 2y + z = 9$.5. Find the equation of the sphere through the points (1, -4,5), (1, -5,2), (1, -3,0) and whose centre lies on the plane $x + y + z = 0$.

6. A variable plane passes through a fixed point (1,1,1) and meets the axes in A, B, C. Show that the locus

$$\text{of the centre of the sphere OABC is } \frac{1}{x} + \frac{1}{y} + \frac{1}{z} = 2$$

7. Find the equation of the radical line of the spheres

$$x^2 + y^2 + z^2 + 4y = 0, x^2 + y^2 + z^2 + 3x - 2y + 8z + 6 = 0, x^2 + y^2 + z^2 + 2x + 2y + 2z + 2 = 0.$$

8. Find the limiting points of the co-axial system defined by the spheres

$$x^2 + y^2 + z^2 + 4x - 2y + 2z + 6 = 0, x^2 + y^2 + z^2 + 2x - 4y - 2z + 6 = 0.$$

9. Find the equation of the cylinder whose generators are parallel to the line $\frac{x}{1} = \frac{y}{-2} = \frac{z}{3}$, and the guiding curve is the ellipse $x^2 + 2y^2 = 1, z = 3$.10. Find the equation to the right circular cylinder whose guiding circle is $x^2 + y^2 + z^2 = 9$,

$$x - y + z = 3.$$

SECTION – B**II. Answer All questions. Each Question Carries 10 Marks** 5 X 10 =50 M

11. Show that following points are coplanar (-6,3,2), (-13,17, -1), (3, -2,4), (5,7,3).

Or12. Find the equations of the plane bisecting the angles between the planes $2x + 2y + 2z = 19$,

$$4x - 3y + 12z + 3 = 0.$$
 point out which plane bisects the acute angle.

13. Find the image of (1,3,4) in the plane $2x - y + z + 3 = 0$.**Or**14. Show that lines $x + 2y + 3z - 4 = 0, 2x + 3y + 4z - 5$ and $2x - 3y + 3z - 5 = 0 = 3x - 2y + 4z - 6$ are coplanar and find the equation of the plane containing them.

15. A sphere of constant radius k passes through the origin and intersects the axes in A,B,C. Prove that the centroid of the ΔABC lies on the sphere $9(x^2 + y^2 + z^2) = 4k^2$.

Or

16. Find the centre and radius of the circle $x^2 + y^2 + z^2 - 2y - 4z - 11 = 0$, $x + 2y + 2z - 15 = 0$.

17. Find the limiting points of the co-axial system

$$x^2 + y^2 + z^2 - 20x + 30y - 40z + 29 + \mu(2x - 3y + 4z) = 0.$$

Or

18. Find the radical plane of the spheres $x^2 + y^2 + z^2 = 25$ and $x^2 + y^2 + z^2 - 4x + 6y - 2z = 0$.

19. Find the equation of the enveloping cylinder of the sphere $x^2 + y^2 + z^2 + 2x - 4y - 1 = 0$, having its generators parallel to the line $x = y = z$.

Or

20. Find the equation of a cylinder whose generators are parallel to the z-axis and which passes through the circle $x^2 + y^2 = 9$, $z = 0$.



Q.P. Code
CS305