



ATTEMPT THIS (SUBJECTIVE) ON THE SEPARATE ANSWER SHEET PROVIDED

Section-I

Question No.2: Answer the following short questions. (20)

- i. Find equation of the straight line passing through the point $p(0,-3,2)$ and parallel to the straight line joining the points $A(3,4,7)$ and $B(2,7,5)$
- ii. Find an equation of the plane through the points $(1,0,1)$ and $(2,2,1)$ and perpendicular to the plane $x-y-z+4=0$.
- iii. Show that the straight line $\frac{x+3}{2} = \frac{y-4}{7} = \frac{z}{3}$ is parallel to the plane $4x+2y+2z=9$
- iv. Find the intercepts of the given surface on the co-ordinate axes
$$x^2 + 4y^2 + 5xz - 2x + y - 3 = 0$$
- v. Find the centre and radius of the sphere
$$x^2 + y^2 + z^2 + 3x - 4z + 1 = 0$$

Section-II

(Long Question)

Q.3. (10)

- a. Find an equation of the cylinder with directrix $C: y - z^2 = 0$ and having elements parallel to $n=[2,3,4]$
- b. Discuss the surface

$$S: f(x, y, z) = \frac{x^2}{4} + \frac{y^2}{4} + \frac{z^2}{16} - 1 = 0$$

Q.4. (10)

- a. Show that the shortest distance between the lines $x+a = 2y = -12z$ and $x = y+2a = 6(Z-a)$ is $2a$.
- b. Find an equation of the plane passing through the point $(2, -3, 1)$ and containing the line $x-3 = 2y=3z-1$

Q.5. (10)

- a. Show that the distance of the point $p(3,-4,5)$ from the plane $2x+5y-6z=16$ measured parallel to the line

$$\frac{x}{2} = \frac{y}{1} = \frac{z}{-2} \text{ is } \frac{60}{7}$$

- b. Show that the $S: (x^2+y^2+z^2)=1$ a surface of revolution. Find a generatrix and axis of revolution.

