

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Second Semester - 2019

Roll No.

PAPER: Analytical Geometry

Course Code: MATH-124 / MTH-12118 Part - II

Time: 2 Hrs. 30 Min. Marks: 50

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 he 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

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

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

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√ Roll	No.	in	Fig.	
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PAPER: Analytical Geometry

Course Code: MATH-124 / MTH-12118 Part-I (Compulsory)

Time: 30 Min. Marks: 10

ATTEMPT THIS PAPER ON THIS QUESTION SHEET ONLY.

Division of marks is given in front of each question.

This Paper will be collected back after expiry of time limit mentioned above.

Signature of Supdt.:

(10x1=10)

Encircle the right answer cutting and overwriting is not allowed.

i. If the curve in the xy-plane is revolved about x-axis then replace y² by.

a.
$$y^2+x^2$$

b. y^2+z^2

Focus of the parabola $x^2=4py$ is ii.

a. (0, -p)

c. (-p,0)

b. (0, p)

d. (p, 0)

The equation $\frac{x^2}{4} + \frac{z^2}{16} = 1$ represents a iii.

a. Circle

c. Ellipse

b. Parabola

The direction cosines of z-axis are iv.

a. (0,1,1)

c. (0,0,1)

b. (1,0,0)

If f(x, y, z) = 0 implies f(-x, -y, -z) = 0, the surface is symmetric with respect ٧,

a. yz-plane

c. y-axis

b. origin

vi. Cylindrical co-ordinates represent a point in space by ordered triples.

a. (x, y, z)

c. (r, θ, z)

b. $(\rho, \theta, \emptyset)$

vii. The points where the focal axis and ellipse cross are the elipse's

a. Focal axis

c. Foci

b. Vertices

d. Center points

viii. Two vectors A and B are parallel if and only if there exists a real number 'K' such that.

c. A = K+B

b. A = K-B

Centre to focus distance of the hyperbola $\frac{x^2}{16} - \frac{y^2}{9} = 1$ is ix.

b. 5

d. C

The co-ordinates of the mid point of a line segment are found by. X.

a. Dividing

b. Averaging