UNIVERSITY OF CENTRAL PUNJAB
LAHORE
Assignment 1
CLO Mapping: CLO1

Course Code	**MAT243**	**Semester**	**Fall 2025**
Course Title	**Multivariate Calculus**		
Resource Person	**Ms. Seema Mazhar**		
Assignment Given Date	**27-10-2025**	**Submission Date**	**31-10-2025**
Total Marks	**20 marks**		

Sr.	Name of student	Complete Registration no.	Section	Assignment marks
1				

Submission Instructions *(Please follow strictly)*

- **It is COMPULSORY to attach this page as the title page of your assignment along with all details. Failure to do so will lead to 2 marks deduction.**
- **Work should be neat and with ALL computational steps.**
- **This is an INDIVIDUAL assignment so mention all details as required.**
- **Version 1 will be done by students whose roll number ends in odd digits (1,3,5,7) and Version 2 will be done by students whose roll number ends in even digits (2,4,6,8,0)**
- **LATE SUBMISSION WILL NOT BE ACCEPTED.**
- **All Plagiarized assignments will be awarded deduction of 2 marks for each match.**
- **Do work on assignment papers or A4 sheets. Rough & untidy work otherwise will account for 1 mark deduction.**

I declare that I have prepared the assignment according to above guidelines, and I shall be responsible for any deduction of marks if the instructions are not followed.

Student signature: _____

Version 1

Q1. [CLO1] (20 marks = 8+2+5+5):

a) **Find** the **equation of the plane** that contains the three points $(\mathbf{1}, \mathbf{1}, \mathbf{0}), (\mathbf{2}, \mathbf{4}, \mathbf{3})$ **and** $(\mathbf{5}, \mathbf{2}, \mathbf{1})$. **What** is the normal vector to this plane? Find the equation of line parallel to the obtained normal vector when the point (6,-5,-2) lies on it.

b) **Find** the perpendicular distance between the line **L :**

$$x = 1 - t$$
$$y = 2 + 5t$$
$$z = 4 - 3t$$

and the *point* $(-9, 13, 10)$. Can the distance between the point and a line be zero? If yes, what does it signify?

Version 2

Q [CLO1] (20 marks= 8+2+5+5):

a. **Find** a **vector *perpendicular to the plane*** that passes through the points $(-3, 1, 0)$, $(0, 1, 6)$ **and** $(2, -1, 1)$ and give the description of the obtained vector. Find the equation of line parallel to the obtained normal vector when it passes through the point (-10,-8,4).

b. Compute the distance of the point $(3, 4, 5)$ from the obtained plane in *part (a).*

What can be the minimum distance between a point and a plane? What can you infer from it regarding the position of that point?

Best of Luck!!