National University of Computer and Emerging Sciences, Lahore Campus

Course:	Linear Algebra	Course Code:	MT104
Program:	BS(CS)	Semester:	Fall 2019
Duration:	60 Minutes	Total Marks:	40
Paper Date:	November-2019	Weight	12.5
Section:	ALL	Page(s):	1
Exam:	Midterm-II	Roll No:	

Instruction/Notes: Attempt All Questions.

Question # 1[10]: (CLO: 4) Find the distance between the given parallel planes .

$$2x - y - z = 5 \quad and \quad -4x + 2y + 2z = 12$$

Question # 2[10]: (CLO: 5) Determine whether the vectors $v_1 = (3, -2, 1)$, $v_2 = (5, 0, -1)$, $v_3 = (1, 2, 3)$ are linearly independent or linearly dependent in R^3.

Question # 3[10]: (CLO: 1,2 5) Show that the set $S = \{p_1, p_2, p_3\}$ is a basis for P_2 , then find the coordinator vector of p relative to the basis S.
$p_1 = 1 + x + x^2$, $p_2 = x + x^2$, $p_3 = x^2$; and $p = 7 - x + 2x^2$.

Question # 4[10]: (CLO: 1,2, 5) Let S be the standard basis for R^3, and $B = \{v_1, v_2, v_3\}$ be the basis in which $v_1 = (1,2,1)$, $v_2 = (2,5,0)$, $v_3 = (3,3,8)$

Find the transition matrix $P_{S \to B}$. (Note: use reduction formula)