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:	50
Paper Date:	September-19	Weight	12.5
Section:	ALL	Page(s):	1
Exam:	Midterm-I	Roll No:	[redacted]

Instruction/Notes: **Attempt All Questions.**

Question # 1: (CLO: 1,2, 3) If $A = \begin{pmatrix} -1 & 7 & -1 \\ 0 & 1 & 0 \\ 0 & 15 & -2 \end{pmatrix}$

a) **[10]** Find A^{-1} by using inversion algorithm,

b) **[10]** Show that A can be expressible as a product of elementary matrices,

c) **[2]** If $AX = b$ and $X = \begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix}$, $b = \begin{bmatrix} 1 \\ 2 \\ 3 \end{bmatrix}$, then find the value of X by using A^{-1}

d) **[3]** Find an elementary matrix E that satisfies the stated equation

$$EA = \begin{bmatrix} -1 & 7 & -1 \\ 0 & 1 & 0 \\ -2 & 29 & -4 \end{bmatrix}$$

e) **[5]** Use the row reduction to evaluate the determinant of $B = \begin{bmatrix} 1 & 3 & 1 & 5 & 3 \\ -2 & -7 & 0 & -4 & 2 \\ 0 & 0 & 1 & 0 & 1 \\ 0 & 0 & 2 & 1 & 1 \\ 0 & 0 & 0 & 1 & 1 \end{bmatrix}$