Assignment 1

NATIONAL UNIVERSITY OF MODERN LANGUAGES

Faculty of Engg & Computer Science

BSCS-37 M-IV

Paper: Linear Algebra (Morning)	**Total marks :10**
Program: BS Computer Science	**Due Date: Nov 10, 2021**

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Question#1: (a) Suppose the coefficient matrix of a system of linear equations has a pivot position in every row. Explain with examples why the system is consistent.

(b) Determine existence and uniqueness of the linear system given by

$$A\boldsymbol{x} = \boldsymbol{b} \text{ with } \boldsymbol{A} = \begin{bmatrix} 1 & c \\ a & 3 \end{bmatrix}, \boldsymbol{b} = \begin{bmatrix} 1 \\ h \end{bmatrix},$$

where h is general constant and a and c represents 3rd and 4th digits of your roll number.

Note: If any of the 3rd or 4th digit is zero than consider 2nd digit of your roll number.

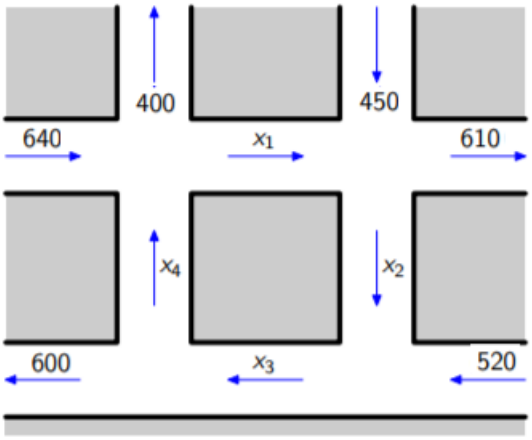
(c) Solve the above linear system using Gauss-Jorden method.

(d) Find nontrivial solution (if exist) of the corresponding homogenous system $A\boldsymbol{x} = \boldsymbol{0}$.

(e) Determine if columns of A are linear independent. Justify your answer. **(CLO-1)**

(1*5= 05 Marks)

Question#2: Find the general flow pattern of the network shown in the figure. Assumning that the flows are all nonnegatives, what is the smallest possible values for the unknown? **(CLO-2)**



(05 Marks)

Good Luck