National University of Computer & Emerging Sciences, Lahore Campus

Exam: Mid-II **Subject: Linear Algebra (CS)** **Semester: Fall 2014**

Time: 70 min **Max Marks: 30**

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Note: Attempt all questions. Programmer calculator is not allowed.

Question # 1 : [10]

Let $V = \{(a,b,c) \;\; a,b,c \in \mathbb{R}\}$ and $S = \{(a,b,c) \;\; where \;\; c = 2a - 7b\}$. Then check whether S is subspace of V or not ?

Question # 2: [10]

Show that an element of a vector space can be expressed as a linear combination of elements of the basis in a unique way.

Question # 3 : [10]

Let

$$A = \begin{bmatrix} -1 & 5 & 8 & -3 \\ 2 & -10 & -16 & 6 \\ 3 & 1 & 0 & 7 \\ 5 & -9 & -16 & 13 \\ 6 & 2 & 0 & 14 \\ 11 & -7 & -16 & 27 \\ 13 & -17 & -32 & 33 \\ 22 & -14 & -32 & 54 \end{bmatrix}$$

Find a basis for row space of A in terms of rows of A.

Best of Luck