Final Term Paper (Online)
Course: Linear Algebra
BS SE-II

Note: Attempt this assignment on a paper clearing mentioning your ***Name, ID NO,*** at the top of answer sheet. Once complete than take a picture of your answer sheet, convert pictures to pdf. (Make one pdf file) and upload it to sic.

Q.No.1. Determine if the following system is consistent or not:

$X_1-(3^{rd}\_ID)x_2+x_3 = 0$
$2x_2-8x_3 = 8$
$5X_1-5x_3 = 10$

3^{rd}_ID means 3rd digit of your ID.
4^{th}_ID means 4th digit of your ID.

Q.No.2. Find the inverse of $A=\begin{bmatrix} 3 & 4 & 5 \\ 2 & -1 & 4th\_ID \\ 5 & -2 & 7 \end{bmatrix}$ by adjoint method.

Q.No.3. Solve the following systems of linear equations by Guass- Jordan Method.

$2x+2y+4z=18$
$X+3y+2z=13$
$3x+2y-3z=14$

Q.No.4. Show that this matrix is Diagonisable.

$$\begin{bmatrix} 4 & 2 & -2 \\ -5 & 3 & 2 \\ -2 & 4 & 1 \end{bmatrix}$$

Q.No.5. Determine if the following homogeneous system has a non-trivial solution. Then describe the solution set.

$3x_1+ 5x_2 -4x_3 = 0$
$-3x_1-2\ 5x_2 +4x_3 = 0$
$6x_1+ x_2 -8x_3 = 0$

Q.No.6. Reduce the matrix to Normal Form and Find its rank.

$$\begin{bmatrix} 1 & 3 & 4 & 3 \\ 3 & 9 & 12 & 3 \\ 1 & 3 & 4 & 0 \end{bmatrix}$$