CE 601 NUMERICAL METHODS

TUTORIAL – 3

Marks – 40

Date: 16-August-2012

The responses to the tutorial questions are to be submitted by 22-August-2012 (Wednesday).

- 1. Use Matlab or any other programming software (e.g. see the Doolittle's algorithm uploaded in website) to solve the following system of equations by,
 - (i) Jacobi iteration,
 - (ii) Gauss-Siedel iteration, and
 - (iii) Succesive-Over-relaxation.

You can take the over-relaxation factor as 1.10. Submit the computer program as well as the outputs from each iteration in a tabular form. Take suitable relative convergence criteria.

 $\begin{bmatrix} -2 & 1 & 0 & 0 & 0 \\ 1 & -2 & 1 & 0 & 0 \\ 0 & 1 & -2 & 1 & 0 \\ 0 & 0 & 1 & -2 & 1 \\ 0 & 0 & 0 & 1 & -2 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \\ x_3 \\ x_4 \\ x_5 \end{bmatrix} = \begin{cases} 5 \\ 1 \\ 0 \\ 8 \\ 10 \end{cases}$