**BRAC UNIVERSITY**

**Department of Computer Science and Engineering**

**CSE330: Numerical Methods  
Midterm Exam, Summer 2015**

**Duration: 1.00 hour, Total Marks: 40**

**ANSWER ANY 2 (Two)**

**[Please note in the tables V2 is a dependent variable of V1]**

1. (a) Find the root of the non-linear equation given below using Newton Raphson’s Method. Continue your solution up to 3rd iteration. Show your results in a tabular form including the percentage errors. First approximation, *x0*= -2. [10]

(b) Draw the flow chart of **Secant’s** method for finding root(s) of a non-linear equation. [10]

1. (a) Using LU decomposition method find the first column of inverse matrix of the below matrix:

[10]

(b) Using Table 1, find the value of V2 at V1=5.7 using third order Lagrange interpolating interpolation method.[10]

**Table 1**

|  |  |  |
| --- | --- | --- |
| **Sl. No.** | **V1** | **V2** |
| 1 | 2 | 7 |
| 2 | 5 | 9 |
| 3 | 7 | 13 |
| 4 | 11 | 17 |

1. Find the roots of the function with [3, 4] bisection and false position methods and compare their results. Compute results for the first three iterations and publish the results in a tabular form for both methods. [20]