**BRAC UNIVERSITY**

**Department of Computer Science and Engineering**

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

**Duration: 1 hour, Total Marks: 40**

**ANSWER ANY 2 (Two)**

1. (a) Find the root of the non-linear equation using Secant Method. Continue your solution up to 3rd iteration. Show your results in a tabular form including the percentage errors. Use x-1 =-0.5 and x0=0.5. [10]

(b) Find the Newton-Rapson’s formula from the graphical method. Write the algorithm of Newton-Rapson’s method. [4+6]

1. (a) Draw the flow chart of False Position method for finding root of a non-linear equation. [8]

(b) Using Gauss elimination method solve the below system. [12]

1. Let’s assume you have a dataset as given below. Perform second order Lagrange interpolation and Newton’s divided difference interpolation to find the f(x) for x=1.5. Also comment on the results that you are getting from the two methods. [20]

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| x | 1 | 1.3 | 1.6 | 1.9 | 2.2 |
| f(x) | 0.1411 | −0.6878 | −0.9962 | −0.5507 | 0.3115 |

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