Comilla University
Faculty of Engineering
Department of Computer Science and Engineering
2nd Year 1st Semester Final Exam-2014(Session: 2012-13)

Course Code: CSE 216 | Course Title: Numerical Methods

Total Time: 2.00 hours | Total Marks: 30.0

(Note: Answer any three set of questions from the following five set of questions)

1. a) What is numerical computing? Why is it necessary for computer engineers? 2
   b) Explain the criteria of standardizing a numerical method. 3
   c) Distinguish between inherent errors and numerical errors. 2.5

2. a) What are the advantages of false position method over bisection method? 1
   b) Use Newton-Raphson method to find the root of the equations 3
   $f(x) = x^2 - 3x + 2$ in the vicinity of x=0.
   c) Depict secant method for finding roots. 3.5

3. a) Briefly explain the Gauss Elimination method. 3
   b) Use Gauss Elimination to solve the following system 2

$$5x - 2y + z = 4$$
$$7x + y - 5z = 8$$
$$3x + 7y + 4z = 10$$

   c) Explain the RUNGE-KUTTA method. 2.5

4. a) What do you know about Linear Regression and Polynomial Regression. 2
   b) Explain Newton's Divided-Difference Interpolating Polynomials. 2.5
   c) Fit a polynomial of the second degree to the data points given in the following table 3

X	Y
0.0	1.0
1.0	6.0
2.0	17.0

5. a) When a system of equations has no solution? 1
   b) Define 4
   i) Rounding Off ii) Relative Error iii) Absolute accuracy
   c) Explain the effects of ill-conditioned systems. 2.5

6. a) Why three-point formula is more accurate than two-point formula in numerical differentiation? 2
   b) Use composite trapezoidal rule for n=4 to evaluate the integral $\int_{-1}^{1} e^x \, dx$ 3.5
   c) What is the advantages of Simpson's 3/8 rule over Simpson's 1/3 rule? 2