Daffodil International University

Department of Computer Science & Engineering

Faculty of Science, Information & Technology

Final Term Improvement Examination, Semester: Fall-2016

Course Code: CSE 234 Course Title: Numerical Methods

Section: PC-A&B

Course Teacher: Fahmid Sadeque (FS),

Time: 2.0 hours Total Marks: 40

[Instruction: Question no 7 and 8 are mandatory. Answer any FIVE from the remaining SEVEN questions.]

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| 01. | Differentiate the function **f(x) = exsin(x)** from x = 0 to x = 1 using Centre Difference Method. Consider h = 0.2. | **5** |
| 02. | Solve the following differential equation by 4th Order Runge-Kutta Method.  Given that, xi = 0, xf = π, h= π/2, y(0) =0 | 5 |
| 03. | Use Simpson’s 1/3rd Method to integrate the function f(x) from x = -3 to x = 3. Consider h = 1.0  f(x) = 4x3 - 3x2 + 2 | 5 |
| 04. | Derive the formula of Composite Trapezoidal Method. | 5 |
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| 05. | Solve the following differential equation by Euler’s Method  Given that, xi = 2, xf = 4, h=1, y(2) = 1. | 5 |
| 06. | Find the Integral of the following function f(x) by Simpsons 3/8 Method from x = -2 to x = 2  f(x) = | 5 |
| 07. | Fit a straight line to the following pairs of values by Linear Least Square Regression Method.   |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | | x | 1.0 | 2.0 | 3.0 | 4.0 | 5.0 | 6.0 | 7.0 | | y | 0.5 | 2.5 | 2.0 | 4.0 | 3.5 | 6.0 | 5.5 | | 7.5 |
| 08. | Using LU decomposition, front and back substitution solve the following equations-  x +2y +3 z = 5  x + 8z = 17  2x +5 y +3z = 3 | 7.5 |
| 09. | Find a root of f(x) = sin(2x) –e (x-1) by false position method. Calculate upto 3 iterations | 5 |
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