M.E (EE) 1st Semester Final Examination 2013

Computational Methods and Programming in Electrical Engineering (EE 917)

Time : 3 Hour | Full Marks : 70

Answer any Two questions from Group-A and THREE questions from Group-B

Group-A

1. (a) Solve the following set of equations using LU factorization:

$$2x_1 - x_2 + x_3 = -1$$
$$3x_1 + 3x_2 + 9x_3 = 0$$
$$3x_1 + 3x_2 + 5x_3 = 4$$

(b) Evaluate $\int_0^{0.8} (\log(1+x) + \sin 2x)\,dx$ using Simpson's 1/3 rule with step size h=0.1.

[9+5]

2. (a) Solve using Gauss-Jordan Elimination

$$x_1 + x_2 + x_3 = 6$$
$$3x_1 + 3x_2 + 4x_3 = 20$$
$$2x_1 + x_2 + 3x_3 = 13$$

(b) Fit a polynomial of the form (Ax^2+Bx+C) to these four point (-3,3), (0,1), (2,1), and (4,3).

[8+6]

3. (a) $dy/dx = (1+x^2)y$, $y(0) = 1$. Step size $h = 0.2$. Find $y(0.6)$ using Runge-Kutta 4th order method.

(b) Using Lagrange's interpolation formula, find the form of the function y(x) for the data given in the following table:

x	0	1	3	4
y	-12	0	12	24

[7+7]

GROUP-B

4. a) Discuss about UNIX process and process system commands.
(b) Write brief notes on the followings: (i)gdb (ii)gnuplot (iii)gprof (8+6)

5. (a) Write a brief notes on UNIX pipe and filters with appropriate examples.
(b) Why and how debugger and profilers works, explain with suitable examples.
(8+6)

6. (a) Discuss about the Object Oriented Programming and it's important features.
(b) Define "static" and "dymanic" binding. Write a C++ program to demonstrate "late" binding. (6+8)

7. Write short notes on following topics: (4+4+6)
   (a) UNIX schedular
   (b) UNIX file system security
   (c) Class and Object