Code No: R09220306

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY, HYDERABAD
B.Tech II Year II Semester Examinations, May-2013
Numerical Methods
(Common to ME, MCT, MIE, MIM)

Time: 3 hours   Max. Marks: 75

Answer any five questions
All questions carry equal marks
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1.a) Give the comparison of different iterative methods of solving an equation.
  b) Using Bisection method, solve the equation Sin x = 1 – x. [15]

2. For the following data interpolate at x = 3.5 and x = 8.0. [15]

x	1	3	4	5	7	10
f(x)	3	31	69	13	351	1011

3. Solve the following system of linear equations by Gauss Jordan method. [15]

$$2x_1 + 4x_2 - 6x_3 = -4$$
$$x_1 + 5x_2 + 3x_3 = 10$$
$$x_1 + 3x_2 + 2x_3 = 5$$

4. Use the method of least squares to fit the curve $f(x) = C_0 x + \left(C_1 / \sqrt{x} \right)$ for the
following data: [15]

x	0.2	0.3	0.5	1	2
f(x)	16	14	11	6	3

5.a) Obtain the error function for Trapezoidal rule.

  b) Evaluate the integral $I = \int_{0}^{1} \frac{dx}{1+x}$ using Trapezoidal rule. [15]

6. Find the largest Eigen value of the matrix $A = \begin{bmatrix} 2 & 1 & 1 & 0 \\ 1 & 1 & 0 & 1 \\ 1 & 0 & 1 & 1 \\ 0 & 1 & 1 & 2 \end{bmatrix}$ using Power
method. [15]

7. Use the Euler method to solve numerically the initial value problem
$u' = -2 + u^2$, $u(0) = 1$ with h = 0.2, 0.1 and 0.05 on the interval [0, 1]. [15]

8. Write short notes on:
  a) Laplace equations
  b) Parabola equations. [15]

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