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SYED AMMAL ENGINEERING COLLEGE, RAMANATHAPURAM
BE/ B.Tech DEGREE PERIODICAL TEST II March 2013.

(Common to III IT, III CSE A, III CSE B, II EEE, II CIVIL)

10177MA401/10144CSE21/MA2264-NUMERICAL METHODS

Regulation 2008 / 2010

Time: 1½ hours Date: 04.03.2013 Maximum: 50 marks.

Answer ALL questions.

PART A ---- (5 X 2 = 10 marks)

- Write the formula for Lagrange inverse method.
- What are the errors in Newton's forward and backward interpolation formula?
- Form the divided difference table for

x	0	1	3
y	2	8	16

- What is $\frac{dy}{dx}$ & $\frac{d^2y}{dx^2}$ in differentiation?
- Write the formula for first and second derivative of Newton's forward interpolation formula.

PART B ---- (2 1/2 X 16 = 40 marks)

- (a) Using Lagrange's formula, fit a polynomial to the data

x	0	1	3	4
y	-12	0	6	12

(8)

(8)

Or

- (b) Form the following table of half-yearly premium for policies maturing at different ages, estimate the premium for policies maturing at age 46 and 63

Age x	45	50	55	60	65
Premium y	114.84	96.16	83.32	74.48	68.48

(8)

- (a) Find cubic spline and evaluate $y(2.5)$

x	1	2	3	4
y	1	2	5	11

(16)

Or

- (b) (i) If $f(0) = f(1) = f(2) = -12$, $f(4) = 0$, $f(5) = 600$ and $f(7) = 7308$. Find the polynomial that satisfies this data using Newton's divided difference interpolation formula. Hence find $f(6)$.

(8)

- (ii) Given the following table, find $f(2.5)$ using cubic spline functions.

x	1	2	3	4
$f(x)$	0.5	0.3333	0.25	0.2

(8)

- (a) (i) Find $f'(6)$ and the maximum value of $y = f(x)$ given the data

x	0	2	3	4	7	9
$f(x)$	4	26	58	112	466	992

(8)

- (ii) Find the velocity of the particle at a distance S from a point on its path is given by the table below for $S=55$ metres

S metre	0	10	20	30	40	50	60
V m/sec	47	58	64	65	61	52	38

(8)

Or

- (b) (i) Find the value of $\sec 35^\circ$ given

x°	0	15	30	45	60	75
$\tan x$	0	0.2679	0.5774	1	1.7321	3.7321

(8)

- (ii) Find the value of $\frac{dy}{dx}$ at $x = 1.1$ given

x	1.0	1.1	1.2	1.3	1.4	1.5	1.6
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y	7.989	8.403	8.781	9.129	9.451	9.750	10.031
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(8)