Code: R5100306

R05

B. Tech I Year (R05) Supplementary Examinations, May 2012
COMPUTER PROGRAMMING & NUMERICAL METHODS
(Mechanical Engineering)

Time: 3 hours Max Marks: 80

Answer any FIVE questions
All questions carry equal marks
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1 (a) Explain program development steps.
(b) Write notes on bit wise operators.

2 (a) Describe various string handling functions. Write their syntax.
(b) What is recursion? Explain with an example.

3 Write notes on the following:
(i) Pointer and arrays.
(ii) Pointers to pointers.
(iii) Pointers to functions.
(iv) Multidimensional arrays.

4 (a) Explain with examples how elements of a structure are accessed.
(b) What are self referential structures? Give examples. Explain the applications which need there structures.

5 (a) What are linear data structures? Give examples.
(b) Implement stack using arrays.

6 Obtain a root of the following equations correct to their decimal places using:
(i) the bisection method (ii) method of false position
(a) $x^3 - x - 4 = 0$ (b) $x^3 - 18 = 0$.

7 (a) Give Newton's forward difference interpolation formula.
(b) If y(1) = -3, y(3) = 9, y(4) = 30 and y (6) = 132, find the four- point Lagrange interpolation polynomial that takes the same values as the function y at the given points.

8 (a) The velocities of a car (running on a straight road) at intervals of 2 minutes are given below:

Time in minutes	0	2	4	6	8	10	12
Velocity in Km/hr.	0	22	30	27	18	7	0

Apply Simpson's rule to find the distance covered by the car.
(b) Form the Taylor series for y(x), find y (0.1) correct to form decimal places if y (x) satisfies $y^1 = x - y^2$ and y (0) = 1.

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