

Code.No: R05010303

R05

SET-1

I B.TECH – EXAMINATIONS, DECEMBER - 2010
COMPUTER PROGRAMMING AND NUMERICAL METHODS
(COMMON TO ME, CHEM, MCT, MMT, MEP, AME)

Time: 3hours**Max. Marks: 80**

Answer any FIVE questions
All questions carry equal marks

- 1.a) Write a 'C' program to print Pascal's triangle.
- b) Define variable. Explain how to declare a variable. How to assign a value to the variable? What is the necessity of the defining a variable? Mention limitations or restrictions on variables. [8+8]
- 2.a) Write short notes on 'C' preprocessor directives.
- b) Write a 'C' program to check whether the given string is "INDIA" or not. Accept the string from the key board.
- c) Mention the advantages of arrays. [4+8+4]
3. Write a 'C' program to find number of words, blank spaces, special characters, digits and vowels in a given text using pointers. [16]
- 4.a) What is the use of struct key word? Explain the use of • (dot) operator? Give examples for each.
- b) Write a 'C' program to accept records of the different states using array of structures. The structure should contain char state, population, literacy rate and income. Display the state whose literacy rate is highest and whose income is highest. [6+10]
5. Declare two stacks of varying length in a single array; write 'C' routines for push1, push2, pop1, pop2 to manipulate the two stacks. [16]
- 6.a) Evaluate the real root of $-10x^4 - 32x^3 + 32x^2 + 8x + 9 = 0$ correct to 3 decimal places using Newton Raphson's method.
- b) Find a positive root of $xe^x = 2$ by the method of false position. [8+8]
- 7.a) In a Zoological study the length of an insect at various times have been recorded as follows:

Days	x_0 10	x_1 25	x_2 47	x_3 81
Length	14.1321 f_0	17.2172 f_1	19.1729 f_2	21.1892 f_3

Use Lagrange's interpolation; find the length in 28 days.

- b) Use Newton's forward interpolation method. Find the value of y at $x = 8$ from the following data: [8+8]

x	5	6	9	11
y	12	13	14	16

- 8.a) Evaluate $\int_0^3 \frac{dx}{4+x^2}$ by trapezoidal rule and Simpson's $\frac{1}{3}$ rule.

- b) Obtain the error function for Simpson's rule. [8+8]

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