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Reg. No. : .....

Name : .....

Fourth Semester B.Tech. Degree Examination, February 2015

Branch : MECHANICAL

08.402 : Computer Programming and Numerical Methods (MNPU)

(2008 Scheme)

(Special Supplementary)

Time : 3 Hours Max. Marks : 100

PART – A

Answer **all** questions.

1. Explain different datatypes supported in C^{++}.
2. Explain ternary (conditional) operator in C^{++}.
3. What is the significance of associativity of operators ? Explain with an example.
4. Explain the complete syntax of function main().
5. What are inline functions ? Give an example.
6. What is operator overloading ?
7. What are constructor and destructors ?
8. Explain the stability and convergence of numerical methods.
9. Explain method of least squares in curve fitting.
10. What is meant by order of a PDE ? Give examples of first, second and third order PDE.

(10×4=40 Marks)

P.T.O.

PART – B

Answer **one full** question from **each** Module.

Module – I

11. a) Write a user interactive program to find factorial of a number using while loop. 8

    b) What is function overloading ? Write a program to illustrate it by computing area of a triangle, circle and a rectangle. 12

12. a) What are recursive functions ? Write a program using recursive function to generate fibonacci series (0, 1, 1, 2, 3, 5, 8, 13,....) ? 10

    b) What is meant by parameter passing by address and by reference ? Illustrate with an example to swap two numbers. 10

Module – II

13. a) What are private, public and protected members of a class ? 10

    b) Write a program to create a class ELLIPSE with major axis and minor axis as private members. Also illustrate constructor function with default values and parametric constructor. 10

14. a) Write a program to illustrate class declaration, definition and accessing class members. 10

    b) Create a class students with name, roll number, marks for science and mathematics as private data. Make a friend class to display roll number, name and average marks. Write the program with functions to read user input data. 10

Module – III

15. a) Find x for y = 0.4 from the following data : 10

x :	20	25	30	35
y :	0.34	0.42	0.5	0.65

b) Fit a curve of the form $y = ax^b$ to the following data using method of least squares : 10

x :	2	3	4	5
y :	28	62	110	160

16. Solve Laplace equation for the following domain with boundary conditions given below and calculate values at the interior points. 20