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Reg. No. : .....

Name : .....

Fourth Semester B.Tech. Degree Examination, July 2015
(2008 Scheme)
Branch : Mechanical Engineering
08.402 : COMPUTER PROGRAMMING AND NUMERICAL METHODS
(MNPU)

Time : 3 Hours Max. Marks : 100

PART – A

Answer **all** questions.

1. What are the basic data types in C++ ?
2. Write an algorithm and draw a flow chart to check the greatest of two numbers.
3. What are the advantages of using functions in C++ ?
4. How can we declare the member functions of a class inline ?
5. What is encapsulation or data hiding ?
6. Can member functions be private ? Explain.
7. What are friend functions ?
8. Define absolute, relative and percentage error.
9. Explain the terms consistency and stability.
10. What is the use of correlation coefficient ? **(10×4=40 Marks)**

PART – B

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

Module – I

11. a) Explain the working of a switch case statement with suitable example. **10**

    b) Write a program to find the greatest value, the sum and the average of n numbers. **10**

P.T.O.

12. a) Explain with an example the following terms.

i) Function prototype ii) Actual arguments

iii) Formal arguments iv) Function call

v) Function declarator vi) Return statement. 12

b) Write a program to find the sum of all odd numbers between 1 to 100. 8

Module – II

13. What are class and objects ? With suitable examples explain public and private inheritance. 20

14. Write a program to add two matrices with the overloaded '+' operator. The class should contain member functions to initialize and print the matrix. 20

Module – III

15. a) Write a C++ program to fit a straight line of the form y = a+bx with a given set of data. 10

b) Certain corresponding values of x and log x are given below. Find $\log_{10} 310$ using Newton's divided difference method.

x	:	300	304	305	307
$\log_{10}$ x	:	2.4771	2.4829	2.4843	2.4871

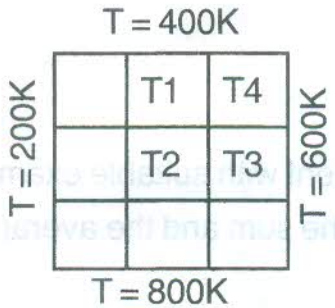
10

16. a) Find the least square line for the data points given below and the coefficient of correlation of the fit.

x	:	–1	0	1	2	3	4	5
y	:	10	9	7	5	4	3	0

10

b) Solve the Laplace equation for the square mesh shown below and find the temperatures T1, T1, T3 and T4 with the boundary conditions given below.



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