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Reg. No. : .....

Name : .....

Fourth Semester B.Tech. Degree Examination, May 2014
(2008 Scheme)
Branch : Mechanical Engineering
08.402 : COMPUTER PROGRAMMING AND NUMERICAL METHODS
(MNPU)

Time : 3 Hours Max. Marks : 100

***Instructions** : Answer **all** questions from Part – **A** and **any one** full question from **each** Module from Part – **B**.*

PART – A

1. List the derived data types in C++ and their declaration syntax.
2. What are the commonly used escape sequences in C++ ? Explain with example.
3. Differentiate between if-else-if and switch ( ) control statements.
4. Differentiate between POP and OOP.
5. Explain the different access specifiers for a C++ class.
6. Differentiate between static data members and static member function.
7. What are constructors ?
8. Discuss multipath inheritance.
9. What is meant by numerical stability ?
10. List the various sources of errors in numerical computing. **(10×4=40 Marks)**

PART – B

Module – I

11. a) Prepare a flow chart to test whether a given number is prime or not ? **10**
    b) Write a program to check whether a given number is palindrome or not ? **10**

OR

12. a) With the help of examples, explain inline functions. 8

    b) Write a program to calculate the factorial of a given integer using a recursive function. 12

Module – II

13. a) What are friend functions ? With the aid of a suitable program, explain how a friend function can access private members of a class. 10

    b) Write a program to overload the binary plus operator and use it to add two class objects. 10

OR

14. a) Explain the different types of inheritances. 8

    b) Write a program to count the characters and numerals present in a file. 12

Module – III

15. a) Find the Lagrange interpolation polynomial which agree with the following data :

x	1.0	1.1	1.2
Cos x	0.5403	0.4536	0.3624

    Use it to estimate Cos 1.15. 10

    b) Write a C++ program to implement the procedure in the above problem. 10

OR

16. Solve the following equation using finite difference method

$\frac{\partial^2 y}{\partial x^2} = 12x^2$, y(1) = 2 and y (2) = 17. 20

(3×20=60 Marks)