



Reg. No. :

Name :

Third Semester B.Tech. Degree Examination, October 2016
(2013 Scheme)
13.305 : COMPUTER PROGRAMMING AND NUMERICAL METHODS
(MP)

Time : 3 Hours

Max. Marks : 100

PART – A

Answer **all** questions. **Each** question carries **4** marks.

1. Explain the need for object oriented programming in real world.
2. Why do we need the preprocessor directive # include<iostream> ?
3. Describe the uses of enumeration data types.
4. What is the main advantage of passing arguments by reference ?
5. Explain the need for pointer variables in programming languages.
6. What are objects ? How are they created ?
7. What does inheritance means in C++ languages ?
8. What are the merits and demerits of using 'friend' declaration ?
9. Write down the applications of Laplace Equation.
10. What is meant by numerical stability ?

PART – B

Answer **one full** question from **each** Module. **Each full** question carries **15** marks.

Module – I

11. a) Prepare a flow chart to select the largest number of a given set of 500 numbers.
b) Explain the unique advantages of an object oriented programming paradigm.

OR

12. a) Explain the data types in C++.
b) Explain the Object Oriented Programming technique. What are its main characteristics ?

**Module – II**

13. a) Write a program to find the sum of $1 + \left(\frac{1}{2}\right)^2 + \left(\frac{1}{3}\right)^3 + \left(\frac{1}{4}\right)^3 + \dots$ to a good accuracy.
b) Write a program to find the product of two 2×2 matrices using function.

OR

14. a) The effect of default arguments can be alternatively achieved by overloading. Discuss with an example.
b) Write a program to sort a list of numbers in descending order.

Module – III

15. Explain the concept of private member functions with suitable examples.

OR

16. Illustrate how an object of the derived class can access protected member of base class in public inheritance.

Module – IV

17. a) Solve :
 $10x - 7y + 3z + 5u = 6$, $-6x + 8y - z - 4u = 5$, $3x + y + 4z + 11u = 2$,
 $5x - 9y - 2z + 4u = 7$ by Gauss Elimination Method.
b) Implement the above problem using a C++ program.

OR

18. Applying relaxation method to solve the equation $\nabla_u^2 = -400$, when the region of u in the square bounded by $x = 0$, $y = 0$, $x = 4$ and $y = 4$ and u is zero on the boundary of the square.

