



(Pages : 2)

**A – 6567**



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 ?

P.T.O.

**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  $2 \times 2$  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.

