Roll No. ..... **Total Pages : 03**

BT-4/M-20 **34003**

OBJECT ORIENTED PROGRAMMING USING C++

IT-252E

Time : Three Hours] [Maximum Marks : 100

Note: Attempt *Five* questions in all, selecting at least one question from each Unit. All questions carry equal marks.

Unit I

1. (a) Define the terms class and object. Write a C++ program to define a class called distance with feet and inches as data members and get(), put() and add() as members to read, display and add two distance objects.

(b) Explain the visibility of base class members for the access specifiers : private, protected and public while creating the derived class and also explain the syntax for creating derived class. **10+10=20**

2. (a) Explain briefly characteristics of OOPS language and mention advantages of OOPS approach over functional/procedural programming.

(b) Describe what do you mean by nesting of classes. Also explain briefly how friend function is important in C++. **10+10=20**

Unit II

3. What is the use of operator overloading ? Discuss the restriction on operator overloading. Write a program to overload post and pre increment operators. **20**

4. (a) What is Inheritance ? How to inherit a base class as protected ? Explain it in multiple base classes.

(b) Draw a comparison between composition and inheritance. **10+10=20**

Unit III

5. (a) Define polymorphism and virtual functions with example. What is the difference between static and dynamic binding?

(b) What is pure virtual function in C++? Explain with the help of a program. Also elaborate the rules of virtual functions. **10+10=20**

6. (a) What is stream manipulators ? Explore stream error states.

(b) List and explain in brief various functions required for random access file operations. **10+10=20**

Unit IV

7. What are class templates and non-type parameters ? How are class templates created ? What is the need for class templates ? Create a template for bubble sort functions. **20**

8. What is exception handling ? Discuss the following :

(a) Sequence of events when an exception occurs

(b) Exception specification

(c) Destructor and exception handling **7+7+6=20**