B.Tech-3
OOP
Set-Q_2

Full Marks : 70

Time : 3 hours

AAnswer six questions including **Q. No. 1** which is compulsory.

The figures in the right-hand margin indicate marks

1. Answer the following questions : 2×10

   (*a*) Define Absrtract Class. What is its use ?

   (*b*) State at least two differences between an inline function and a macro substitution.

   (*c*) What is a friend function ? Explain with a suitable example.

   (*d*) What is a generic catch block ? Explain with an example.

   (*e*) Briefly explain the different visibility modes in object oriented programming.

   (*f*) What is the necessity of scope resolution operator in C++ ?

   (*g*) Differentiate between static binding and dynamic binding.

(*Turn Over*)

(b) Name the streams generally used for file I/O.

(j) Differentiate between constructor and member function of a class. Also mention the access method for constructor and destructor.

(j) Differentiate between int *F( ) and int (*F)( ).

2. (a) Briefly explain the different concepts of object oriented programmings. 5

(b) What do you mean by recursion ? Write a recursive function using C++ to find the maximum element in a list. 5

3. (a) What is a friend function ? Write a C++ program using friend function to overload operator so that it can subtract two complex numbers. 5

(b) What do you mean by static class members ? Explain the characteristics of static class member with example. 5

4. (a) Create a class FLOAT that contains one float data member. Overload all four arithmetic operators so that they operate on the objects of FLOAT. 5

(b) Write a complete program to create a class

named as Student with protected attributes such as id and marks. The attributes should be initialized only through constructors. The class contains a public method named as show() to display the initialized attributes. Provide a mechanism to create an array of Student object. The array size should be given by the user at runtime. 5

5. (a) With an appropriate example, explain how ambiguities can be resolved for public and protected attributes in case of multipath inheritance without using virtual base class. 7

(b) Write a program that throws an exception when a wrongtype of data is keyed in. 5

6. (a) What is a copy constructor ? Explain the role of a copy constructor while initializing a pointer attribute of a class for which the memory allocation takes place at the runtime. 5

(b) With the help of a suitable example explain the role of a virtual destructor. 5

7. (a) Write a complete program to declare and define a generic function that is capable of arranging any kind of element in descending order. 5

(b) Write a program to create a template to find the minimum value stored in an array. 5

8. Explain the following :

(*a*) Composition *vs* Aggregation 5

(*b*) Virtual function *vs* Pure virtual function 5
