AUTUMN END SEMESTER EXAMINATION-2013

3rd Semester B.Tech / B.Tech Dual Degree

OOP IT-301

(Regular-2012 & Back of previous batches)

Full Marks: 60 Time: 3 Hours

Answer any SIX questions including Question No.1 which is compulsory.
The figures in the margin indicate full marks.
Candidates are required to give their answers in their own words as far as practicable and all parts of a question should be answered at one place only.

1. Answer all the questions. [2 × 10

a) What is the application of scope resolution operator :: in C++?

b) Can a destructor be overloaded? Justify.

c) When do we declare a member of a class static? How does it accomplish data hiding?

d) Explain the difference between prefix and postfix incremental operator.

e) What is the difference between friend class and friend function? Give an example.

f) Why only friend function can be used for overloading some operators?

g) Why the internal members of a class declared as protected instead of private?

h) How terminate() and unexpected() function works?

i) How to call the parameterized constructor of a base class from the constructor of the derived class? Explain with example.

j) Find the output of the following program.

```
#include<iostream>
using namespace std;
class test
{
public:
void show()
  {
  cout<<"hello";
  }
};
class derived:public test
{
private:
void show()
  {
  cout<<"hi";
  }
};
main()
{
derived d;
test *p;
p=&d;
(*p).show();
((derived *)p)-> show();
}
```

2. a) What are the benefits of object oriented programming over procedure oriented programming.Briefly discuss about any two features of OOP? [4

b) How does an inline function differes from macro? Write an inline function to read and display name, id, dept_no., monthly salary of an employee of an organisation. [4

3. a) Write a C++ code for the class "Circle" which stores the co-ordinate position of the centre of a circle and its radius as three floating point numbers. It support to the following methods. [4
(i) Circle():Constructor which initializes the centre and radius of the circle during object creation.
(ii) Circle():Copy Constructor which initializes an object of Circle with the co-ordinate value of existing Circle.
(iii) Distance ( ). A friend function which calculates the distance between the centre of two circles.
(iv) Is Intersecting ( ): A member function which checks whether two circles are intersecting or not.

b) List the three ways of passing parameter in C++? For each way indicate. [4
(i)Whether the function makes a copy of the object passed?
(ii)Wheteher the function allows passing of const object?

4. a) What is the significance of friend function in C++ programming? Can a friend function be defined in private visibility of the class? Write a program to alter the data members of two classes using friend function. [4

b) Explain the usefulness of constructor initialization list? In what order the constructors executes in different types of inheritance available in C++? Explain with suitable examples. [4

5. a) Explain the significance of friend function in operator overloading? How it plays significant role in overloading << and >> operator .Explain with programming code. [4

b) An abstact class cannot have instances. What is the use of having abstract classes. Create class " GeomShape" which includes function calculate_area(). Derive [4

classess"GeomLine","GeomRectangle","Geom Triangle" from " GeomShape" .Create a base class pointer to find the area of the each geometrical shape.

6. a) Discuss about different types of type conversions used in C++. [4

b) Define a class "Time" which store the time in Hour:Min:Sec in 12 hour format. Provide checking for valid time in the specified format and throws an exception when an invalid time is inputted from user. [4

7. a) What is generic programming? Overload a template function to swap two integer number, two float number and two long double number. [4

b) Read a alphanumeric character from the Keyboard and extract only the alphabet and store it in a FILE. [4

8. Short Notes on any Four. [2 × 4

a) STL

b) Rethrowing an Exception

c) Container class

d) Function overriding

e) Manipulator

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