Object Oriented Programming
Mid-Semester Examination -2015
School of Computer Engineering, KIIT University, Bhubaneswar-24

Time: 2hrs ***Full Mark:25***

(*Answer any five questions including question No.1 which is compulsory. The figures in the margin indicate full marks.*)

1. [1 × 5]

a) The formal parameter in copy constructor is always by reference – justify.

b) Differentiate between call by value and call by reference.

c) Differentiate between a member function and static member function of a class.

d) Write down the output of the following code

```
#include<iostream>
using namespace std;
class A{
        static int x;
        public:
        A(){ x++;}
        void show(){ x++; cout<<x; }
};
int A::x=5;
int main(){
        A obj1;
        obj1.show();
        return 0;
}
```

e) Write down the output of the following code with proper explanation.

```
#include<iostream>
using namespace std;
void func(int a=10, int b, float c=7.5){ float res=a+b+c; cout<<res;  }
int main(){
func(10,20,50);
return 0;
}
```

2.

a) Overload the function find_perimeter() with one, two and three float parameters. The function with one parameter is used to return the perimeter of the circle. The function with two parameters is used to return the perimeter of the rectangle. The function with three parameter is used to return the perimeter of the triangle. Write the necessary c++ program to test the functionality of the above functions. [3]

b) Explain the properties of Object oriented programming language. [2]

3.

a) Implement a Complex class having data members real and imaginary. Include the following member functions

(i) getdata () : is used to assign the data members.

(ii) show() : is used to display the complex number in a+ib format.

(iii) add() : is used to add two complex objects.

[(a+ib)+(c+id)=(a+c)+i(b+d)]

Write the necessary c++ program to test the functionality of the above class and functions. [3]

b) Differentiate between procedure-oriented and object-oriented programming approach.[2]

4.

a) Implement a class Meter having data member value (private) and a member function getvalue() for initializing the data member. Similarly Implement another class CentiMeter having data member value (private) and a member function getvalue() for initializing the data member. Define a friend function Sum( ) to find out and display the summation of two distances of both classes. [3]

b) Explain new and delete operators with suitable example. [2]

5.

a) Create class PI with data members roll and name. Create another class AI with data members sub1 and sub2. Derive a class Student from PI and AI classes. Student class has one data member total to calculate the sum of sub1 and sub2. Create another class Sports with data members sport_type (indoor or outdoor) and sports_mark. Derive Result class from Student and Sports to display the final total score and the individual details. Create object of Result class. [3]

b) Discuss the importance of virtual base class with suitable example. [2]

6.

a) Create class Weight with private data members kilogram and gram with proper constructors. Overload "<=" operator to compare between two weights and display the smallest weight. [3]

b) Explain the difference between pre-increment and post-increment operators in operator overloading using suitable example. [2]

7. Write short notes (any two) [2.5+2.5]

a. Types of constructor
b. Inline function
c. Friend class