

03/02/17



B. Tech
OOP, IT 1002

Spring Mid-Semester Examination – 2017
Object Oriented Programming
[IT 1002]

Full Marks: 25

Time : 2 Hours

(Answer any 5 questions, including Question no. 1)

1. Answer all the questions

[1*5]

i. Write the output of the following code with your justification.

```
#include <iostream>
using namespace std;
class Sample
{
    int a;
    public:
    void set_data(int b){a=b;}
    void display(){cout<<a<<"\n";}
};
int main()
{
    Sample *s;
    s->set_data(10);
    s->display();
    return 0;
}
```

ii. Write the output of the following code with your justification.

```
#include <iostream>
using namespace std;
class Display
{
    int cnt;
    public:
    Display(){cnt=0;}
    static void show_data(){cout<<++cnt<<"\n";}
};
int main()
{
    Display d;
    Display::show_data();
    return 0;
}
```

iii. Can you have a constructor with all default arguments? Justify your answer.

iv. Differentiate between class and structure in c++.

v. Why call by reference is preferred over call by value technique of passing object as an argument to a function?

2. a) Write a program using c++ to define a class "String" and extract a substring of specified length from a particular position of a given string.

[3]

- b) What is a scope resolution operator? Discuss all the scenario where it can be useful. [2]
3. a) When do we declare the data member of a class as static? Justify the need of static members along with an example. [3]
b) Write a c++ program, that add two interger members of a class and display the result of the same using friend function. [2]
4. a) Write a c++ program that has a class Temperature with two data members – celsius and fahrenheit. Incase, fahrenheit is set as 0, then convert the celsius to fahrenheit and vice versa. $[C = (F-32) * 5/9]$ [3]
b) Differentiate between friend function and friend class. [2]
5. a) Write a program using c++ that uses dynamic constructor to allocate memory to an array of integer. Count the number of even and odd elements present in this array. [3]
b) What do you mean by inline function? Discuss the advantages and disadvanatges of using an inline function. [2]
6. a) What is the use of a destructor and when it is going to be invoked? If an array of 3 objects of a class has been created then how many times and in what sequence the the destructor will be invoked to destruct the objects? [3]
b) Write a program in c++ using default argument to calculate the interest to be paid to a customer based on the fact that, if the customer is a senior citizen he will be given a rate of interest of 10% or else he will be given a rate of interest of 8% on a principal amount of Rs.10000 for 1 year. [2]
7. a) Define a class Student with data members as rollno and name. Derive a class Result from the Student class in private mode. The Result class contains a data member i.e. an array of integers having marks in different subjects and a member function to claculate and display the total mark obtained by the student. [3]
b) Discuss the advantages of using inheritance and explain the different types of inheritance with their diagram. [2]