



THIRD SEMESTER EXAMINATION-2012

OOP / OOP C++

[IT 301 / CS 309]

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) "Size of an object is equal to the sum of sizes of data members and member functions in the class". Justify the correctness of the statement.

b) Find the output of the following program.

```
#include <iostream.h>
Void main( )
{
    Int a=2;int&b=a;int c=20;
    b = c;
    cout<<a<<endl<<b<<endl;
    c = 2;
    cout<<a<<endl<<b<<endl;
}
```

c) If memory is allocated by using new operator and delete operator is not used then when the memory will be released?

(1)

- d) Explain the significance of "protected " access specifier.
 - e) How can we differentiate between pre and post decrement operator while operator overloading?
 - f) Can we initiate an object of a class "abc" through the following statement
abc a= 50; Justify your answer.
 - g) Can we declare static function as virtual? Justify your answer.
 - h) When and how class template is instantiated?
 - i) Mention two methods of detecting end of FILE?
 - j) State the benefits of using STL?
2. a) Write about any two features of OOP? How can we define the member function of a class? [4]
- b) What is friend class? In which situation friend classes are helpful? Write the syntax of creating a friend class. [4]
3. a) Differentiate between function overloading and function overriding in OOP by using a suitable example. [4]
- b) Write a program in C++ to calculate the factorial of a number by calling the constructor recursively. [4]
4. a) Why operator overloading is required? Write a program to overload the extraction operator. [4]

- b) Write a program to create a class "year" that has private data members month, week & day. Create another class "days" that has private data member totalday which is entered by user. Calculate the equivalent months, weeks and days & assign to the "year" class data member by using necessary conversion routines.
(Example-if total day=1000, then equivalent month=3, week=1, day=3., consider one month=30 days) [4]
5. a) Write a program to declare a pointer to the derived class and access the member function of base and derived class. [4]
- b) Write a program to create a class "A" that stores name and age of a student. Create another class "B" that stores two subject marks. Derive another class "C" from "A" and "B" that stores the grade by calculating the following conditions.
if average mark ≥ 80 then grade='O'
average mark ≥ 60 & < 80 grade='E'
average mark ≥ 40 & < 60 grade='A' else grade='B'.
Display all the details of the student through the object of class "C" [4]
6. Write a program to enter the mobile number from the key board in international format [8]
-it must have the country code (like +91) in the beginning
-the total digits must be exactly 10 excluding the country code

--the first digit after the country code must not be zero

if user's entry deviate from the above condition(s) then exceptions must be thrown.

7. a) Write a program to create a template to find the maximum value stored in an array. [4]
- b) Write a program to enter a string from keyboard and store to a FILE. Print all the characters from nth position till the end of FILE to output screen where n is the +ve integral value entered by user. [4]
8. Write short notes on any Four. [4 × 2]
- a) manipulators
 - b) this pointer
 - c) object slicing
 - d) containership
 - e) inline function

x x x x x