



THE SPRING END SEMESTER EXAMINATION-2013

2nd Semester MCA (Regular & Back)

OOP Using C++ (MCA-201)

[Regular-2012 Admitted batch & Back]

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 own words as far as practicable and all parts of a question should be answered at one place only. No marks awarded for extra questions.

1. a) What is the function `cin.sync()` used for? [10x2]
- b) 'The object can access the public member variables and functions of a class by using some operators'. Name the operators and state the scenario in which they should be used.
- c) Explain the consequences of declaring an object as 'static'.
- d) Refer to the syntax below and explain what is the significance of 'operator' keyword.

```
return_type 'operator' symbol (parameters)
{
    statement 1;
    statement 2;
}
```

- e) 'Constructors in C++ can be declared virtual'. Is the statement correct? Justify your answer.
- f) 'Base class objects can access the members of the derived class and vice versa'. Is the statement correct? Justify your answer.
- g) 'Default constructors' and 'constructors with default parameters' mean the same. Is the statement correct? Explain your answer.

- h) With a small code, illustrate how you can stop a class from being instantiated.
 - i) Under what conditions do we need to make the base class virtual?
 - j) 'iostream' and 'fstream' are derived classes of which base classes?
2. a) Write a small program in C++ to demonstrate how private members (data and function) declared in C++ can be accessed from the main. [2x4]
- b) C++ allows a mechanism in which a non member function has access permission to the private members of the class. Illustrate this with an example.
3. a) What are the properties of a copy constructor? Using a simple program show the working of a copy constructor. [2x4]
- b) Objects can be created without names in C++. What are those objects called? Show the creation of such objects with a small code snippet.
4. a) What are operator functions? Illustrate how you can implement an operator function as a friend function and as a member function. [2x4]
- b) Demonstrate the type conversion from one class type to another class type using both the methods – single argument constructor and the operator function. [2x4]
5. a) Explain with a simple program how we can create objects dynamically in C++. [2x4]
- b) How are virtual functions implemented in C++ internally? Write a small program to demonstrate the working of a virtual function.

6. a) Write a small program to find the sum of two integers and floating point numbers using a template function. [2x4]

b) Explain the various steps involved in writing to a file. Using a small code snippet write 'C++ is easy' into a file named 'oops.txt'.

7. XYZ bank has requested you to create banking software for its customers. The bank maintains two kinds of accounts for customers, savings and current account. The savings account provides compound interest, withdrawal/deposit facility and check book facility. Current account provides withdrawal/deposit and check book facility but no interest. Current account holders should maintain a minimum balance of Rs. 10000/- . Write a program to create a class account that stores customer name, account number and account type. From this derive two classes curr-act for current account, save-act for savings account. Include necessary member functions to accept required data through constructor and perform transactions and to check the balance. [8]

8. Write short notes on: [4x2]

- i. Delegation
- ii. Parameterized Constructors
- iii. Generic Pointers
- iv. Structures in C++

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