18/613

COMP 4 – 6 (RC)

S.E. (Comp.) (Semester– IV) (RC) Examination, May/June 2013
OBJECT ORIENTED PROGRAMMING AND DESIGN USING C++

Duration : 3 Hours | Total Marks : 100

Instruction: *Answer* ***any five*** *questions, selecting atlest* ***one*** *question from* ***each*** *Module.*

MODULE – I

1. a) List and explain the various restrictions on operator overloading. 6

   b) Write a C++ program to add two complex numbers and overload the + operator. 5

   c) Write a C++ program to implement multilevel inheritance for the following. Assume that the test results of your batch of students are stored in three different classes. Class student stores the roll number. Class test stores the marks obtained in two subjects and class result contains the total marks obtained in the test. The class result can inherit the details of the marks obtained in the test and the roll number of students through multilevel inheritance. 9

2. a) Draw an inheritance hierarchy to illustrate
      1) Hybrid inheritance
      2) Virtual base class
      3) Single inheritance
      4) Multiple inheritance. 4

   b) Write a C++ program to overload "++" operator as a post-increment and pre-increment operator. 6

   c) Write a C++ program to illustrate overloading of stream insertion (<<) operator. 6

   d) Explain the following stream error states
      1) eof bit
      2) fail bit
      3) bad bit
      4) good bit. 4

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MODULE – II

3. a) Explain the exception handling mechanism with diagrams. 4

   b) Write a program to implement bubble sort on an array of integers using function template. 8

   c) Write a note on templates and friends. 8

4. a) Write a C++ program to handle divide - by - zero exception. 5

   b) Write a C++ program to demonstrate function template print array that prints an array of integers, float and character values. 6

   c) Write a C++ template function called swap that accepts two arguments of generic type and swaps their contents. 6

   d) What is exception specification ? Give example. 3

MODULE – III

5. a) Explain with example, # include preprocessor directive. 3

   b) Write a C++ program to retrieve substring "COMP" from the string "S.E COMPUTER" and display. 3

   c) Write a note on conditional compilation with examples. 5

   d) Write a note on iterations in STL. Explain the iterator category hierarchy. 9

6. a) Write a program to reverse a string using iterators. 8

   b) Explain the following with examples :
      1) Container Adapter
      2) Stack Adapter. 6

   c) Write a note on algorithms in STL. 6

MODULE – IV

7. a) Explain three ways of using UML. 6

   b) Define the following : 3
      1) Time boxing
      2) Automated regression tests
      3) Refactoring.

c) Explain the following with respect to class diagrams. Draw diagrams for each.
   1) Properties
   2) Attributes
   3) Associations. 6

d) Write a note on visibility in class diagrams. 5

8. a) Distinguish between waterfall and iterative style of software development with examples. 4

b) Explain the different types of multiplicities used in class diagrams with their meanings. 5

c) Draw a sequence diagram for the following pseudocode.

```
procedure dispatch
  for each (lineitem)
    if (product. value >$ 10 k)
      careful . dispatch
    else
      regular . dispatch
    end if
  end for
  if (needs confirmation) Messenger. Confirm
  end procedure.
```

8

d) Define the following term :
   1) trigger
   2) guarantee
   3) pre-condition. 3