21161 14 M.

COMP 4 – 6 (RC)

S.E. (Comp.) (Semester – IV) (RC) Examination, May/June 2014
OBJECT ORIENTED PROGRAMMING AND DESIGN USING C++

Duration : 3 Hours | Total Marks : 100

Instructions *: 1) Answer* ***any five*** *questions by selecting at least* ***one*** *from* ***each*** *Module.*
2) Make ***suitable*** *assumptions* ***if required****.*

MODULE – I

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

   b) Explain the role of constructors and destructors in derived class. **6**

   c) How is a table used in dynamic binding with appropriate example. **8**

2. a) Define a class fraction whose objects represent rational numbers (i.e. fractions). Include integer data members num and den for storing numerator and denominator respectively. Write following functions for fraction. **10**
      i) Parameterized constructor with one and two arguments.
      ii) Copy constructors.
      iii) A function, eval–fraction ( ) for evaluating the value of rational number.
      iv) A function invert ( ) for inverting the given rational number.

   b) Explain the need for the use of protected visibility specifier to class member, with appropriate example. **5**

   c) Distinguish between :
      i) Virtual functions and pure virtual functions. **5**

MODULE – II

3. a) What do you mean by "Array out of bounds" ? Write a C++ program, which handles situation of "Array out of bounds" with two different approaches. **8**

   b) Describe the need of function templates and explain the term function template and specialization. **6**

   c) Explain the C++ constructs required for handling random access file. **6**

4. a) Explain the following with examples : **8**
      i) Templates and friends. ii) Templates and static members.

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b) A file contains list of employee names along with ID number and telephone number. Write an interactive menu driven C++ program that will access the file and implement the following : 8

i) To determine the employee name from their ID number.

ii) To determine the phone number from their ID numbers.

c) List out different types of in built exceptions supported by C++. 4

MODULE – III

5. a) List out the categories of STL containers and their purpose in C++ programming. 6

b) Explain the following functions with respect to strings with example. 8

i) find_last_of( ) ii) erase( )

iii) replace( ) iv) substr( ).

c) Illustrate with example, to manipulate vectors in C++. 6

6. a) Write a C++ program to simulate all operations of stack adapter. 8

b) Write a C++ program to convert C-style char strings to C++ strings. 6

c) Explain the following pre-processing directives. 6

i) #Pragma ii) #error.

MODULE – IV

7. a) What are use case diagrams ? Draw use case diagram for an ATM system. 8

b) Distinguish between composition and aggregation with reference to class diagrams. Represent composition and aggregation with example. 6

c) Explain the UML development process. 6

8. a) Explain the following with respect to class with the help of examples. 8

i) Attributes ii) dependency

iii) Association class iv) Derived properties.

b) Explain in briefly, predictive and adaptive planning in software development process. 6

c) Explain the significance of sequence diagrams in UML development process. 6