24-6-15(M)

COMP 4 – 6 (RC)

S.E. (Computer) (Semester – IV) (RC) Examination, May/June 2015
OBJECT ORIENTED PROGRAMMING AND DESIGN USING C++

Duration : 3 Hours | Total Marks : 100

Instruction : *Answer* ***any five*** *question, at least* ***one*** *from* ***each*** *Module.*

MODULE – I

1. a) Explain the role of constructors in derived class with suitable C++ program. **6**

   b) Explain the use of Vtable in dynamic binding with the help of an example. **6**

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

   d) Distinguish between : **2**

      i) Virtual function and pure virtual function.

2. a) Explain the following stream error states : **4**

      i) eof bit

      ii) fail bit

      iii) bad bit

      iv) good bit.

   b) Define two classes Polar (r, a) and Rectangle (x, y) to represent points in the polar and rectangle systems. Use conversion routines to convert from one system to the other. Make use of he following conversion formulas : **8**

      $X = r * \cos(a)$

      $y = r * \sin(a)$

      $a = a \tan(x/y)$

      $r = \text{sqrt}(x * x + y * y)$.

   c) Explain the following with respect to formatted console input output operations. Give examples for each : **8**

      i) width( )

      ii) precision( )

      iii) fill( )

      iv) setf( )

P.T.O.

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. **6**

b) Explain the different modes in which file could be opened for various operations. **4**

c) Explain standard library exception hierarchy. **4**

d) Write a program to implement bubble sort on an array of integers using function templates. What is template specialization ? **6**

4. a) Explain the following with examples : **8**

i) Templates and friends

ii) Templates and static members.

b) A file contains list of telephone numbers and names. Write an interactive menu driven C++ program that will access the file and implement the following task. Determine the telephone number of the specified person. **8**

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

MODULE – III

5. a) List the various components of STL and explain in brief. **6**

b) What is the difference between C++ string and C-style char* string ? Write a C++ program to convert C-style char strings to C++ strings. **8**

c) Explain the following functions with respect to strings using example : **6**

i) find_first_of( )

ii) find_last_of( )

iii) replace( )

iv) rfind( )

v) find_first_not_of( )

vi) substr( )

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

b) Write a note on conditional compilation with examples. **4**

c) Write a C++ program to illustrate : **8**

i) push_back ( )
ii) capacity ( )
iii) insert ( )
iv) pop-back ( )
v) erase ( )
vi) front ( )
vii) back ( )
viii) resize ( )

on a vector sequence container.

MODULE – IV

7 a) Explain the following using examples, with respect to class : **8**

i) Attributes
ii) Dependency
iii) Association
iv) Derived properties.

b) Write short notes on : **6**

i) package diagrams
ii) sequence diagrams.

c) Draw use case diagram for an ATM system. **6**

8. a) Explain the UML development process outline. **6**

b) Write short notes on : **6**

i) Deployment diagrams
ii) State diagrams.

c) Draw a class diagram for college library system. **8**