Sem-IV m Repeal 24/12/13
Comp Dept

COMP 4-6 (RC)

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

Duration : 3 Hours Total Marks : 100

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

MODULE – I

1. a) Define the term inheritance. What are the various functions that can have access to the private and protected members of a class ? 5

   b) Write the rules for virtual functions. 5

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

      1) width ( )
      2) precision ( )
      3) fill ( )
      4) setf ( ). 8

   d) Explain the purpose of the following istream member function :

      1) peek
      2) put back. 2

2. a) For each of the following, write statements that perform the indicated task.

      i) Print 54321, right justified in a 7-digit field 2
      ii) Print two digits after the decimal point in a field of 5 characters width 2
      iii) Print "TABLE 1", left justified in a field width 15 and fill '*' character. 2

   b) List and explain stream error states. 6

   c) What is multiple inheritance ? Write a C++ program to illustrate the same. 8

P.T.O.

MODULE – II

3. a) Write a short note on template arguments with examples. 4

   b) Write a C++ template function, called exchange ( ) that accepts two arguments of generic type and swaps their contents. 6

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

   d) Write a short note on overloading of binary operators. 5

4. a) Explain Constructors, Destructors and Exception Handling. 6

   b) Write a C++ program to add, subtract and multiply two numbers (int or float) using function template. 6

   c) Write a C++ program to work with two files "CITY" and "STATE". Enter the necessary data into each of the files. Display the contents of both the files. 8

MODULE – III

5. a) Explain with example, # define preprocessor directive as Macros with one argument and two arguments. 6

   b) Write a note on # and # # operators with examples. 4

   c) Explain the following string characteristics with example

      1) assigns ( )
      2) length ( )
      3) at ( )
      4) append ( ). 8

   d) Explain # include with example. 2

6. a) Write a note on iterators in STL. Explain the iterator category hierarchy. 8

   b) Write short notes on the following :

      1) input iterators
      2) All iterators
      3) Output iterators. 6

   c) Write a program to demonstrate input and output with iterators. 6

MODULE – IV

7. a) Explain the creation and deletion of participants in a sequence diagram with the help of a diagram. 5

   b) With the help of a diagram show responsibilities in a class diagram. 2

   c) Draw package diagrams to illustrate the following :
      1) Fully qualified package name
      2) Nested packages
      3) Full qualified class name. 6

   d) Draw a state machine diagram for a controller of a secret panel in a Gothic castle. In this castle, I want to keep my valuables in a safe that is hard to find. So to reveal the lock to the safe, I have to remove a strategic candle from its holder, but this will reveal the lock only while the door is closed. Once I can see the lock, I can insert my key to open the safe. For extra safety, I make sure that I can open the safe only if I replace the candle first. If a thief neglects this precaution, I'll unleash a nasty monster to devour him. 7

8. a) With a simple diagram show the following in a state diagram.
      1) start
      2) state
      3) transition
      4) activity
      5) self transition
      6) final state
      7) guard
      8) initial pseudostate. 8

   b) Draw class diagrams for the following :
      1) Multiple classification
      2) Association class
      3) Enumerations
      4) Active class. 8

   c) Differentiate between classification and generalization in a class diagram. 4