COMP 4 – 6 (RC)

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

Duration : 3 Hours Total Marks : 100

Instructions: *1) Answer **any five** questions, atleast **one** from **each** Module.*
*2) Make **suitable** assumptions, **if** necessary.*

MODULE – I

1. a) Consider a Book shop which sells both books and video tapes. Create a class known as media that stores titles and price of a publication. Also create two derived classes, one for storing the number of pages in a book and another for storing the playing time of a tape. Write a C++ program that uses display() function in all classes to display the call contents. Use concept of polymorphism. **10**

   b) Differentiate between unformatted and formatted I/O. **4**

   c) Explain the use of V table in dynamic binding with the help of example. **6**

2. a) Explain the purpose of the following istream member function : **5**
      i) peek()
      ii) putback()
      iii) read()
      iv) ignore()
      v) gcount().

   b) List and explain various restrictions on operator overloading. **5**

   c) Distinguish between : **4**
      i) Abstract base classes and concrete classes.
      ii) Classic streams and standard streams.

   d) For each of the following, write C++ statements that perform the indicated task using console I/O functions. **6**
      i) Print 1.234 in a 9 digit field width with preceding zeros.
      ii) Print following using ios member functions.
      – * * * * * * 1.230000
      iii) Print following using console I/O functions.
      – # # # # # 2.345 e + 01
      iv) Print integer 200 in octal, hexadecimal and decimal using stream manipulators.

P.T.O.

MODULE – II

3. a) How is the problem of memory leak handled using class template auto_ptr ? Explain with a program. 6

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

   c) What happens if a function throws an exception of type not allowed by the exception specification for the function ? 5

   d) What is file mode ? Explain the various file modes in C++. 4

4. a) Write a C++ program to perform 'binary search' on integers and floating point numbers using template function. 8

   b) Explain the following : 6

      i) Reading from a file

      ii) Writing to a file.

   c) Write a program that throws an arithmetic exception as and when a number input is greater than 9999. 6

MODULE – III

5. a) Write a C++ program that will read a line of text containing more than 6 words and then replace all the blank spaces with an underscore. 6

   b) Explain the purpose of the following functions with reference to the list container with expected output : 10

      i) push_front()

      ii) push_back()

      iii) splice()

      iv) sort()

      v) merge().

   c) Explain the use of # and ## operators with examples. 4

6. a) Write a note on algorithms with respect to STL. 6

   b) What are container adapters ? Write a program to simulate all operations of queue adapter. 8

   c) Write a C++ program that reads in several strings and prints only those strings ending in "r" or "ay". 6

MODULE – IV

7. a) Draw package diagram to illustrate the following : 6
   i) Fully qualified package name
   ii) Nested packages
   iii) Full qualified class name.

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

   c) For a web based online shopping store, draw the sequence diagram for a scenario when a customer orders a book from the website of the store. 8

8. a) What are Use Case diagrams ? Explain the significance of these diagrams in software development process. 6

   b) Explain the UML development process outline. 8

   c) Explain in brief the three ways of using UML. 3

   d) Define the following : 3
   i) Time boxing
   ii) Automated regression tests
   iii) Refactoring.
