COMP 4 – 6 (RC)

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

Duration : 3 Hours | Total Marks : 100

Instructions : *i) Answer **any five** questions by selecting atleast **one** question from **each** Module.*
*ii) Make suitable assumptions if **required**.*

MODULE – I

1. a) Write a program having a base class Student with data member roll no and member functions getnum( ) to input rollno and putnum( ) to display rollno.

   A class Test is derived from class Student with data member marks and member functions getmarks ( ) to input marks and putmarks ( ) to display marks. Class Sports is derived from class Student with data member score and member functions getscore( ) to input score and putscore ( ) to display score. The class Result is inherited from two base classes class Test and class Sports with data member total and a member function display ( ) to display rollno, marks, score and the total(marks + score). **10**

   b) Differentiate between **6**

      i) Virtual functions and pure virtual functions.

      ii) Abstract base class and concrete class.

   c) Write the use of visibility specifiers available in C++. **4**

2. a) Why overloaded stream insertion and stream extraction operators are overloaded as global functions ? Support your answer with example. **8**

   b) Explain the role of constructors and destructors in memory management in C++. **6**

   c) Describe briefly the features of I/O system supported by C++. **6**

P.T.O.

MODULE – II

3. a) What are generic classes ? Why are they useful ? Explain with an example how these are implemented in C++ ? 8

   b) Explain the purpose of following istream member functions. 3
      i) putback( )
      ii) ignore( )

   c) Explain various file modes in C++. 4

   d) Write a C++ program that illustrates rethrowing an exception. 5

4. a) Explain generic function. Write a C++ program for generic bubble sort. 8

   b) Explain the procedure for
      i) Reading from a file
      ii) Writing to a file. 6

   c) Distinguish between unformatted and formatted I/O. 6

MODULE – III

5. a) Explain the purpose of the following functions with reference to the list container with example program with expected output. 10
      i) push_front( )
      ii) push_back( )
      iii) splice( )
      iv) merge( )
      v) sort( )

   b) What are iterators ? Explain with the help of syntax, how different types of iterators defined in C++ ? 6

   c) Explain the use of # and ## operator with example. 4

6. a) What is string stream processing ? Write a program illustrating the use of class osfringstream. 8

   b) Explain the following functions with respect to strings with example. 8
      i) substr( )
      ii) find( )
      iii) capacity( )
      iv) replace( ).

   c) What are function objects in STL ? List out function objects supported by C++ ? 4

MODULE – IV

7. a) Describe the need for sequence diagram in UML. Draw the sequence diagram for ATM application, in which the user (customer) session with ATM system represented. 8

   b) Explain the following with reference to the class diagram.
      i) Specialization
      ii) Generalization
      iii) Multiplicity
      iv) Relationships.

      with appropriate example you know. 8

   c) Write a short notes on rational united process. 4

8. a) Explain the purpose of the following diagrams : 8
      i) Deployment diagrams
      ii) Package diagrams
      iii) Interaction diagrams
      iv) State chart diagrams.

   b) Describe the advantages and disadvantages of waterfall model over iterative model. 8

   c) Explain in briefly, behavioral diagrams supported by UML. 4