COMP 4 – 6 (RC)

S.E. (Comp.) (Semester – IV) (Revised 07 – 08) Examination, May/June 2010
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) Create a class "complex" that enables operations on complex numbers : 12
   i) Overload the subtraction and addition operator to enable subtraction and addition of 2 complex number.
   ii) Overload the ">>" and "<<" operator to enable input and output of complex numbers.

   Write a C++ program to test your class.

   b) When do we use the protected visibility specifier to class member ? Explain with an example. 5

   c) Explain the purpose of the following istream member functions : 3
   i) peek
   ii) putback
   iii) ignore.

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

   b) Write a C++ program to display a number, its SQUARE and SQUARE ROOT, in the tabular format shown below : 4

NUMBER SQUARE SQUAREROOT

1********1********1

2********4********1.4142

   c) Write a C++ program to overload "++" operator as a post-increment and Pre-increment operator. 6

   d) Differentiate between the following functions getline() and read(). 2

P.T.O.

MODULE – II

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

   b) What are Exceptions ? Explain the basic exception handling mechanism available in C++. 6

   c) Write a C++ program to create a sequential file and read data from it. 6

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

   b) Write a class template to implement a stack and test it. 8

   c) Write a C++ program with the following : 8

      i) A function to read two double type numbers from keyboard

      ii) A function to calculate the division of the two numbers

      iii) A try block to detect and throw an exception if the condition "divide by zero" occurs

      iv) Appropriate catch block to handle the exception thrown.

MODULE – III

5. a) Explain the following : 6

      i) #error

      ii) #pragma

      iii) #include.

   b) 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

   c) Re-Implement the program using STL list : 8

      Some member functions of list class are

      begin,clear,empty,end,erase,insert,pop_back,pop_front,push_back, remove,swap.

6. a) 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

   b) Explain # define preprocessor directive as symbolic constant give examples. 6

   c) List the various components of STL and explain each of them in brief. 6

MODULE – IV

7. a) Draw an Use Case diagram for a library system. 6

   b) Explain the concept of Generalization with respect to class diagrams. Give an example. 6

   c) With help of an example, show the following elements in a state diagram : 8
      i) Transition
      ii) Start
      iii) Activity
      iv) State
      v) Self Transition.

8. a) Consider a scenario for the normal operation of an ATM (i.e. a customer inserts a card, enters his/her PIN, enters the amount, takes the card and the money). Sketch a state diagram for the the above scenario with 2 technical errors.
      – User enters wrong PIN number once or 3 times
      – ATM does not have enough money. 8

   b) Draw a use case diagram for a scenario of buying a product on web-based online store. Assume necessary information. 7

   c) Write a note on Visibility in Class Diagrams. 5