



## COMP 4-6 (RC)

### S.E. (Comp.) (Semester – IV) (Revised 07-08) Examination, May/June 2012 OBJECT ORIENTED PROGRAMMING AND DESIGN USING C++

Duration : 3 Hours

Total Marks : 100

- Instructions :**
- 1) **Assume** suitable data if necessary.
  - 2) Answer **five** questions by answering at least **one** from **each** Module.
  - 3) Draw **neat** diagrams if required.
  - 4) Write question numbers **legibly** while answering.
  - 5) Solve problems with **appropriate** assumptions if required.

#### MODULE – I

1. a) Write a C++ program to overload unary operator. 6
  - b) List and explain the use of visibility specifier available in C++. 4
  - c) Write a C++ program that converts integer Fahrenheit temperature from 0 to 212 degree to floating point Celsius temperature with four digits of precision. 10
- Use formula :
- $$\text{Celsius} = 5.0/9.0 * (\text{Fahrenheit} - 32)$$
- to perform the calculations.
- The output should be printed in two right justified columns and Celsius should be preceded by a sign for positive and negative values.
2. a) Differentiate between unformatted and formatted I/O. 4
  - b) Write a C++ program to implement multilevel inheritance. 6
  - c) Why overloaded stream insertion and stream extraction operators are overloaded as global function ? Support your answer with example. 4
  - d) Differentiate between
    - i) Virtual Functions and Pure Virtual Functions. 6
    - ii) Abstract base class and Concrete class.

P.T.O.



## MODULE – II

3. a) Explain class template. Write a class template to implement a stack and test it. 8  
b) Explain the purpose of following istream member functions. 3  
    i) peek()  
    ii) putback()  
    iii) ignore()  
c) What is file mode ? Explain various file modes in C++. 4  
d) Write a C++ Program that illustrates rethrowing an exception. 5
4. a) Consider a constructor for a string class. The constructor uses new to obtain space from free space. Suppose new fails. Illustrate with example how you deal with such memory exhaustion with and without using exception handling. 8  
b) Explain  
    i) Reading from a file  
    ii) Writing to a file 6  
c) Write a C++ Program to perform selection sort on integers and floating point numbers using template function. 6

## MODULE – III

5. a) Explain the use of # and ## operator with example. 4  
b) Write a program to simulate all operations of deque sequence container. 8  
c) What is string stream processing ? Write a program illustrating the use of class ostringstream. 8
6. a) Explain the following functions with respect to strings with examples : 8  
    i) getline()  
    ii) compare()  
    iii) find-first-not-of()  
    iv) replace()  
b) Write a C++ program that uses macro CIRCUM to find the circumference of circle. Input the values from keyboard. 5  
c) Write a program to simulate all operations of queue adapter. 7



## MODULE – IV

7. a) With the help of an example, show the following elements in a state diagram. 6
- i) State
  - ii) Transition
  - iii) Start
- b) Draw a class diagram for College Administrative System. Assume necessary information. 8
- c) Explain the concept of generalization with respect to class diagrams. Give an example. 6
8. a) Write a short note on Rational Unified Process. 5
- b) Draw a Use Case scenario of buying a product on web-based online store. Assume necessary information. 7
- c) Explain the UML Development Process Outline. 8
-