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**S.E. (Computer) Semester- IV (Revised Course 2007-08)**  
**EXAMINATION Nov/Dec 2019**  
**Object Oriented Programming and Design Using C++**

[Duration : Three Hours]

[Total Marks : 100]

**Instructions:-**

Answer **any five** questions by selecting at least **one** from **each** module.

**MODULE -I**

1. a) Write a short note on the use of visibility specifiers available in C++. 5
- b) Write a C++ program to implement function overloading in order to compute power (m,n) where i) m is double and n is int ii) m and n are int. 6
- c) Draw an inheritance hierarchy to illustrate & explain giving example the following 9
  - i) Single inheritance
  - ii) Multiple inheritance
  - iii) Hybrid inheritance
2. a) Create a class 'COMPLEX' to hold a complex number. Write a friend function to add two complex numbers. Write a main function to add two COMPLEX objects. 5
- b) Differentiate between static binding & dynamic binding giving examples. 5
- c) Write a C++ program to show the use of virtual functions. 5
- d) Create a 'STRING' class which overloads '=' operator to compare two STRING objects. 5

**MODULE -II**

3. a) What are generic classes? Why are they useful? Explain with example, how these are implemented in C++. 8
- b) Explain the difference between an error and an exception. Write a C++ program to handle the "Array out of Bounds" exception. 6
- c) Write a C++ program that displays the size (in bytes) of a given inputted file. 6
4. a) A file contains the list of students roll numbers and names. Write C++ program that will access the file and determine the names of the students with the specific rollno. 8

- b) Declare the template function swap () performing the swap of variables a, b, and c. 6
- c) Explain the concept of stack unwinding in case of exception handling with appropriate example program. 6

**MODULE -III**

- 5. a) Write a C++ program to reverse the string using iterators. 8
- b) Write a note on conditional compilation. 4
- c) Explain the purpose of the following functions with respect to the list container with the expected output. 8
  - i) push\_front                      iii) splice
  - ii) push\_back                      iv) merge
- 6. a) Write a C++ program to implement a template and carry out exception handling. Accept a no and range (higher and lower limit) and display no if its in range. Else throw an exception that deals with it by displaying appropriate message. 10
- b) Explain stack adapter. 4
- c) Write C++ program to implement the queue data structure using STL. 6

**MODULE -IV**

- 7. a) Explain the three ways of using UML. 6
- b) Write short notes on (any two) 6
  - i) Package Diagrams
  - ii) Use Case diagrams
  - iii) Sequence Diagrams
- c) Draw a class diagram for college administrative system. Assume necessary information. 8
- 8. a) Define the following: 6
  - i) Actor
  - ii) Precondition
  - iii) Guarantee
  - iv) Trigger
  - v) Use case
  - vi) Scenario
- b) What is a interaction diagram? When is it used? Assume a suitable scenario and explain the same. 8
- c) Write a short note on Relational Unified process. 6