Fourth Semester B.E. Degree Examination, May/June 2010
Object Oriented Programming with C++

Time: 3 hrs.   Max. Marks:100

Note: *Answer any FIVE full questions, selecting*
at least TWO questions from each part.

PART – A

1 a. Explain the various features of object oriented programming.   **(10 Marks)**
   b. Discuss function prototyping, with an example. Also write its advantages.   **(05 Marks)**
   c. Define the 'this' pointer, with an example, indicate the steps involved in referring to members of the invoking object.   **(05 Marks)**

2 a. What are friend non-member functions and friend member functions? Explain with suitable examples.   **(08 Marks)**
   b. Write a C++ program to count the number of objects of a certain class.   **(06 Marks)**
   c. Write a note on namespaces.   **(06 Marks)**

3 a. What is dynamic memory management? Write a C++ program demonstrating the usage of new and delete operators for a single variable as well as for an array.   **(10 Marks)**
   b. What are constructors and destructors? Explain the different types of constructors in C++, with examples.   **(10 Marks)**

4 a. Discuss with examples, the implications of driving a class from an existing class by the 'public' and 'protected' access specifiers.   **(08 Marks)**
   b. What is function overriding? Give an example. Justify the statement: "function overriding is a form of function overloading".   **(06 Marks)**
   c. Write a C++ program to initialize base class members through a derived class constructor.
                                                                          (06 Marks)

PART – B

5 a. Define and give the syntax for the following :
      i)   Virtual function ; ii) Pure virtual function ;   iii) Abstract base class.   **(06 Marks)**
   b. What is a virtual table? How does it help in implementing dynamic polymorphism? Explain with an example.   **(08 Marks)**
   c. Draw the class hierarchy for handling streams in C++. How is text input achieved in C++?
                                                                          (06 Marks)

6 a. What is a stream? What are the various flags and functions associated with error handling of streams in C++?   **(08 Marks)**
   b. What is operator overloading? Explain with examples the circumstances under which operator overloading becomes mandatory.   **(12 Marks)**

7 a. Create a class called 'distance' with data member's feet and inches and appropriate constructor (s). Overload the greater than operator (>) for the distance class to tackle the following conditions : i) $d_1 > d_2$;   ii) $d_1 >$ float ;   iii) Float $> d_1$,
      where d_1 and d_2 are objects of the distance class and float is a floating point value representing distance (ex : 4.5 means 4 feet 6 inches).   **(08 Marks)**
   b. Create a class called 'string' with a data member to hold a string and a constructor to set it. Overload the subscript to set it. Overload the subscript operator for the string class to accept a character as a parameter and return the position of its first occurrence, if found, else a negative value.   **(06 Marks)**
   c. Explain with examples, the conversion from basic type to class type and class type to basic type.   **(06 Marks)**

8 a. Define a function template giving its syntax. Write a C++ program to implement array representation of a stack for integers, characters and floating point numbers using class template.   **(12 Marks)**
   b. Explain the C++ style solution for handling exceptions.   **(08 Marks)**

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Fourth Semester B.E. Degree Examination, December 2010
Object Oriented Programming with C++

Time: 3 hrs.   Max. Marks:100

Note: *Answer any FIVE full questions, selecting*
at least TWO questions from each part.

PART – A

1   a. State the important features of object oriented programming. Compare the object oriented system, with procedure oriented system.
       (08 Marks)
    b. What is function overloading? Illustrate function overloading through add function which adds two integers, two float numbers.
       (06 Marks)
    c. Explain the working of inline functions, with an example.
       (06 Marks)

2   a. What is a friend class? Illustrate friends as bridges.
       (10 Marks)
    b. Explain: i) this operator   ii) arrow operator.
       (05 Marks)
    c. What are nested classes?
       (05 Marks)

3   a. What is a constructor? Explain different types of constructors.
       (08 Marks)
    b. Explain new and delete operators used in dynamic memory allocation.
       (10 Marks)
    c. What is a destructor?
       (02 Marks)

4   a. What is inheritance? Explain the different types of inheritance possible in C++.   **(10 Marks)**
    b. Write a C++ program to create a class STUDENT with data members USN, name and age.Using inheritance, create class UGSTUDENT having fields semester, fees and stipend. Enter data for at least 5 students and compute the semesterwise average age for UG students.
       (10 Marks)

PART – B

5   a. What is a virtual function? Explain with a suitable example.
       (10 Marks)
    b. Write a short note on I/O stream classes, with hierarchy for C++ stream handling. **(05 Marks)**
    c. What is a pure virtual function? Explain with an example.
       (05 Marks)

6   a. Distinguish between text and binary files.
       (05 Marks)
    b. How are opening and closing of files handled in C++?
       (05 Marks)
    c. Illustrate the overloading of + + and – – operators.
       (10 Marks)

7   a. Write a program to add two complex numbers by overloading the + operator. Display the complex numbers by overloading << operator.
       (10 Marks)
    b. Illustrate the overloading of new and delete operators.
       (10 Marks)

8   a. What is exception handling? How are exceptions handled in C++?
       (10 Marks)
    b. Write short notes on :
       i) RTTI
       ii) Templates
       (10 Marks)

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