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06CS44

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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