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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) $d_1 > \text{float}$; iii) $\text{Float} > d_1$, 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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