MCA–303

M. C. A. (Third Semester)

EXAMINATION, Nov.-Dec., 2007

OBJECT ORIENTED METHODOLOGY AND C++

(MCA–303)

Time : Three Hours

Maximum Marks : 100

Minimum Pass Marks : 40

Note : Attempt any *two* parts from each question. All questions carry equal marks.

1. (a) Compare abstraction and encapsulation. Give advantages and disadvantages of polymorphism in an object-oriented system. What types of relationship can be present between two classes, say A and B ?

   (b) Write a class to keep track of accounts in a bank. Also provide suitable constructors.

   (c) Compare the following :

      (i)   Object-oriented and object base language

      (ii) Default constructor and parameterized constructor and copy constructor

2. (a) What is containership or delegation ? How does it differ from inheritance ?

   (b) Write a program to create a class time containing data hours, minutes and seconds. Overload binary '+' operator such that you can add two objects of the class

time with the range of minutes and seconds. Display the added object.

   (c) What are the various forms of inheritance ? Explain with examples with their applicability.

3. (a) Differentiate between the following :

      (i)   Interface and abstract class

      (ii) Early and late binding

      (iii) Private, public and protected access modifiers

   (b) When are virtual functions created for implementing late binding ? What basic rules should be observed ? When do we make a virtual function "pure" ?

   (c) What is a friend function ? When and how do we declare a class of a friend class ? A friend function cannot be used to overload the assignment operator. Explain why.

4. (a) Write a program in C++ which use the 'try', 'catch' and 'throw' functions.

   (b) How can you create insertors and extractors of your own ? Write down the syntax of both.

   (c) Compare the following :

      (i)   Formatted I/O *vs* Standard I/O system

      (ii) Files *vs* Manipulators

5. (a) Draw an instance diagram for two squares with a common side under the following conditions :

      (i)   A point belongs to one or more polygons.

      (ii) A point belongs to almost two polygons.

(b) Differentiate among creational, structural and behavioural pattern.

(c) Perform OOA and OOD for examination results display system of a University on the following points :

(i) Identify actors and their responsibilities

(ii) Draw detailed use case diagram

(iii) Draw design class diagram