

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER-IV • EXAMINATION – WINTER 2013

Subject Code: 140705**Date: 30-12-2013****Subject Name: Object Oriented Programming with C++****Time: 02:30 pm to 05:00 pm****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a) Explain the basic concepts of Object Oriented Programming. **07**
(b) Describe various operators in C++. **07**

- Q.2** (a) Describe following terms in C++ with suitable examples. **07**
Function overloading, Inline function, Default arguments, Call by reference
(b) Define a class Time with hours and minutes as two data members, add necessary member functions to initialize and display data of class. Do not use constructors in a class. Define a member function sum() which adds two Time objects. Invoke the statements like T3.sum(T1, T2) in main (). **07**

OR

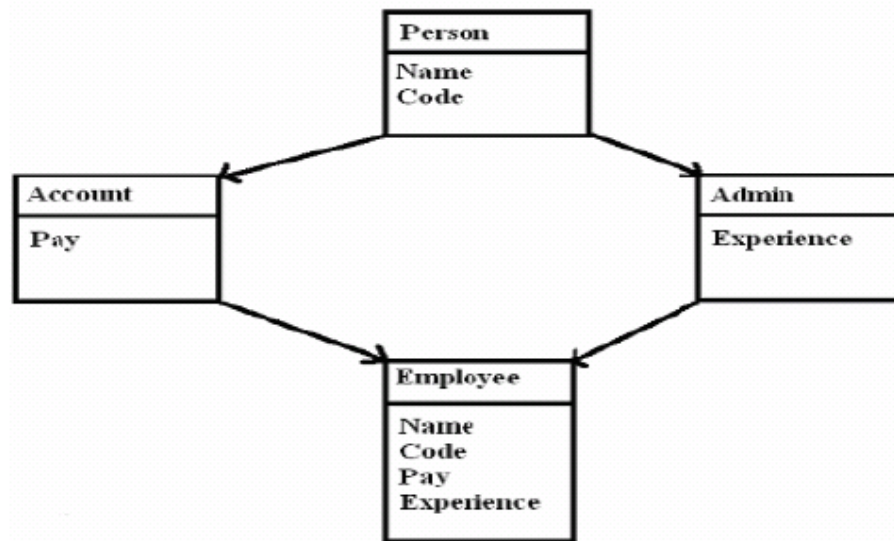
- (b) Explain Friend function and its characteristics. Define a class matrix with an integer array of 3X3 as a data member. Define a friend function which adds two matrix objects and returns resultant matrix object. **07**
- Q.3** (a) What is a constructor? Which are the special characteristics of constructor functions? What is the need of “do-nothing” implicit constructor? When the destructor function invoked? **07**
(b) Define a class complex with real and imaginary as two data member, add necessary constructors and member function to initialize and display data of class. Class should overload the + operator to add two complex objects and return the results. Invoke the statements like C3=C1+C2 in main (). **07**

OR

- Q.3** (a) Explain the type conversion from basic type to class type and from class type to basic type with proper example. **07**
(b) Explain various forms of inheritance with suitable diagrammatic illustrations. **07**
- Q.4** (a) Assume that Circle is defined using radius and Cylinder is defined using radius and height. Write a Circle class as base class and inherit the Cylinder class from it. Develop classes such that user can compute the area of Circle objects and volume of Cylinder objects. Area of Circle is $\pi * \text{radius} * \text{radius}$, while volume of Cylinder is $\pi * (\text{radius} * \text{radius}) * \text{height}$. **07**
(b) Explain pointer to objects. What is this pointer? Write a complete program to illustrate the use of **this** pointer. **07**

OR

- Q.4 (a)** Consider a class network as shown in figure given below. The class Employee derives information from both Account and Admin classes which in turn derive information from the class Person. Define all the four classes and write a program to create, update and display the information contained in Employee objects. **07**



- (b)** Explain Runtime polymorphism. Explain and demonstrate, how virtual function to achieve runtime polymorphism? **07**
- Q.5 (a)** What is a stream? Describe various stream classes for console I/O operations. **07**
- (b)** Explain with the help of an example why templates are used in programming? **07**
- OR**
- Q.5 (a)** Explain File Pointers and functions for their manipulation. **07**
- (b)** What is an exception? What are the advantages of using exception handling in a program? Illustrate C++ exception handling mechanism. **07**
