# GUJARAT TECHNOLOGICAL UNIVERSITY
B.E. Sem-IV Remedial Examination Nov/ Dec. 2010
Subject code: 140704
Subject Name: Object Oriented Concepts and Programming
Date: 08 / 12 / 2010   **Time: 03.00 pm – 05.30 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)** What is Object Oriented Programming? Explain Features of Object Oriented **07**
Programming Language.

(b) Explain Object Oriented Methodology and Themes. **07**

Q.2 **(a)** 1). Explain **Any four**: **04**
1. Inline Function.   2. Function Overloading.   3. Copy constructor.
4. Abstract Data Type. 5. Data Hiding. 6. Function Prototype. 7. Virtual Function.
2). Give difference between POP Language and OOP Language. **03**

(b) Define a class and draw class model of a windowing system. **07**

OR

(b) Explain types of events and draw event trace diagram for phone call. **07**

Q.3 **(a)** 1) What is Friend function? Explain with example. **04**
2) Explain following: **03**
  a).Constructor with default arguments.   b).Call by reference.
  c).Private, Public and Protected access specifier

(b) Define a class complex, having data member as X and Y, Define a friend function **07**
sum () to add two complex numbers and display all numbers using show () friend
function.

OR

Q.3 **(a)** 1) Explain Operator overloading. Name the operator which cannot be   overloaded. **04**
Name the operator which cannot be used with friend   function for overloading.

2) What do you mean by Implicit and Explicit conversion? Explain   with **03**
example.

(b) Design a class **Polar** which describes a point in the plane using Polar coordinates **07**
radius and **angle**. A point in **Polar** coordinates is shown in figure
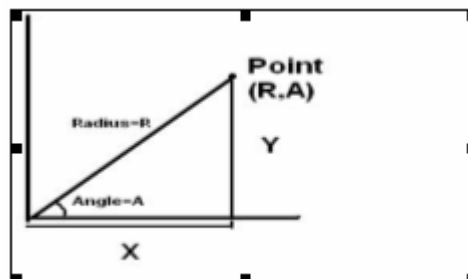
Use the overloaded + operator to add two objects of Polar.
You need to use the following trigonometric formula.
  $X=R* \cos (A)$
  $Y= R * \sin (A)$
  $A=atan(Y/X)$ //arc tangent
  $R=(X*X + Y*Y)$

1

Q.4 **(a)** Differentiate following :- **07**
Link Attributes versus Object Attributes   2) Generalization versus Aggregation

(b) 1) Explain object model and functional model. **04**

2) Define following terms: **03**
1.) States   2.) Data flow   3.) OMT

OR

Q.4 **(a)** Differentiate following :- **07**
Association versus Generalization   2) Concrete class versus Abstract class.

(b) 1) Explain the importance of problem statement in   Analysis process. **03**
2). Define following terms: **04**
1.) Scenario   2.) "is-a" relationship   3.) Metadata   4.) Role name

Q.5 **(a)** 1) What does Inheritance mean in C++? Explain different   forms of Inheritance. **04**
2) State true or false. **03**
a) Its perfectly all right to use variables of different data types in the same arithmetic expression.
b) 'New' operator can be overloaded in c++.
c) If no constructors are specified for a derived class, objects of the derived class will use the constructors in the base class.

(b) Explain Nested state diagram and entry and exit functions in state diagram. **07**

OR

Q.5 **(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 input and display the information of an **Employee**. **07**
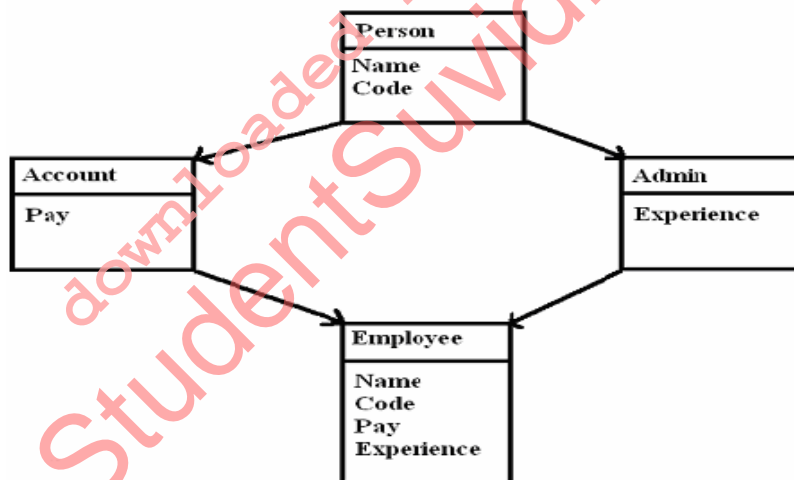
(b) 1) State true or false with valid arguments. **04**
1.) Generalization is an "and-relationship".
2.) The functional model represents the temporal, behavioral, "control" aspects of a system.
3.) An abstract class has no direct instances.
4.) A state is something that happens at a point in time.

2) Draw functional model for ATM. **03**

****

2