

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 Programming Language. **07**

(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

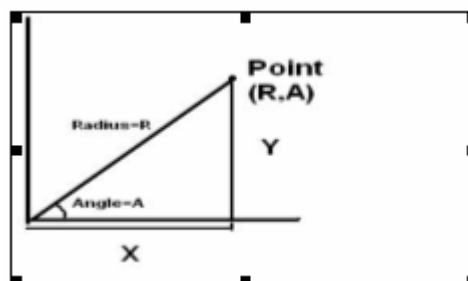
(b) Define a class complex, having data member as X and Y, Define a friend function sum () to add two complex numbers and display all numbers using show () friend function. **07**

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 example. **03**

(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.

$$X = R * \cos(A)$$

$$Y = R * \sin(A)$$

$$A = \text{atan}(Y/X) \quad // \text{arc tangent}$$

$$R = \sqrt{X^2 + Y^2}$$

- 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

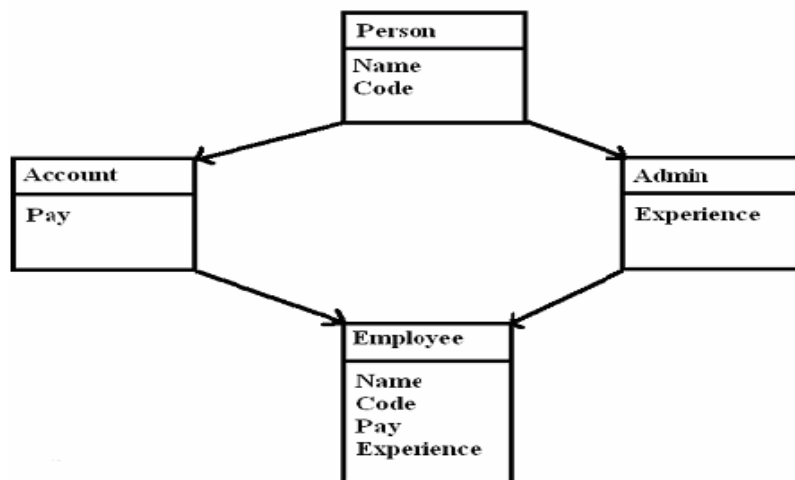
OR

- 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**
