

GUJARAT TECHNOLOGICAL UNIVERSITY**B.E. Sem-IV Examination June- 2010****Subject code: 140703****Subject Name: Object Oriented Analysis Design and UML****Date: 19 / 06 /2010****Time: 10.30 am – 01.00 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) How does the object oriented approach differ from the traditional approach? Why is reusability important? How does Object-Oriented Software Development promote (achieve) and improve reusability? **07**
- (b) Is UML a programming language? Is it process dependent or independent? **07**
Pen down the names all the UML Diagrams. Identify each of the UML diagrams belong to structural and which of these belong to behavioral group.
- Q.2** (a) Differentiate between attribute and association. What are associative classes? When it is useful to model an association as a class? **07**
- (b) List all kinds of control information represented by Dynamic model. **07**
Prepare State chart diagram for Two Party Phone Call.
- OR**
- (b) Differentiate the following **07**
- Query and Operation
 - Event and State
 - Activity and Operation
 - Association and Aggregation
 - Abstract class and Interface
 - Inheritance and Multiple Inheritance
 - Fork and Join
- Q.3** (a) What is the purpose of models in designing? Which diagram(s) show(s) the concept of Inheritance? What are the challenges in designing with Inheritance (single/multiple both)? **07**
- (b) What kinds of errors do you make if you directly rush into the implementation phase of a software project? How do you decide which classes, associations and generalizations should be eliminated? **07**
- OR**
- Q.3** (a) Categorize the following relationship into generalization, aggregation, composition and association. **07**
1. Files contain records.
 2. A drawing object is text, a geometrical object or group.
 3. Modems and keyboards are input/output devices.
 4. Object classes may have several attributes.
 5. Car has accelerator, break and wheels as parts.
 6. Windows is composed of lot of frames.
 7. An account is either type savings or type current.

- (b) Differentiate between Object Oriented Analysis and Object Oriented Design. 07
Explain following design concept:
1. Estimating Performance
 2. Identifying concurrency
 3. Handling global Resource
 4. Handling boundary condition

- Q.4 (a)** What is abstract class? Mention its use. Can concrete class be a super class? 07
If yes, give example, if no, give reason.
Create a class hierarchy to organize the following drink classes:
Mineral water, wine, alcoholic, nonalcoholic, grape juice, soda, bears.
- (b) Draw the use-case diagram for Hotel Information System. There are two types of customers: Tour-group customers and Individual customers. Both can book, cancel, check-in and check-out of a room by Phone or via the Internet. There are booking process clerk and reception staff who manages it. A customer can pay his bill by credit card or pay utility bill. 07

OR

- Q.4 (a)** What do you mean by Software Development Life Cycle (SDLC)? What are the phases (stages) of it? Which phase requires maximum efforts? Also explain why domain analysis i.e. domain class model, domain state model and domain interaction model is important. 07
- (b) Under what situation activity diagram should not be used? Which diagrams are preferable under such situations? 07
Also give practical situations, when to use the following diagram:
- a. Use-Case Diagram
 - b. Object Diagram
 - c. Interaction diagram

- Q.5 (a)** Activity diagrams may be used for different purposes during system development process. List 4 such purposes. 07

A soft drink vending machine accepts coins for a variety of products. When the amount of money deposited into the machine is equal to or greater than the price of any of its available products, the respective product selection buttons will be enabled for the user to make the selection. After the user has made a valid selection, the machine will dispense the soft drink, together with the change (if applicable). Draw the Activity Diagram for this vending machine.

- (b) What are the similarities/dissimilarities between a sequence diagram and collaboration diagram? Draw the Interaction diagram for an ATM – used for card based banking system. 07

OR

- Q.5 (a)** Prepare object diagram showing at least 10 relationships among the following object classes. Include associations and qualified associations, aggregations, generalizations, and multiplicity. You may add additional objects. Also show attributes and operations. 07
- School, playground, principal, school board, classroom, book, student, teacher, canteen, restroom, computer, desk, chair.
- (b) What the use is of “include” and “extends” relationships in use-case diagram? Draw the use-case diagram for Online Admission Process for Engineering Students in Gujarat. 07
