Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

B. E. Sem - IV Examination June- 2011

Subject code: 140703

Subject Name: Object Oriented Analysis Design and UML

Date: 08/06/2011 **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)** i) What do you mean by object-orientation? Briefly discuss the characteristics of OO approach. **03**

ii) Which are the different ways to find new system concepts? **04**

(b) Prepare a class diagram for a graphical document editor that supports grouping. Assume that a document consists of several sheets. Each sheet contains drawing objects, including text, geometrical objects and groups. A group is simply a set of drawing objects, possibly including other groups. A group must also contain at least two drawing objects. A drawing object can be a direct member of at most one group. Geometrical objects include circles, ellipses, rectangles, lines, and squares. **07**

Q.2 **(a)** Consider the following system for Online Theatre Booking (for multiplex). Following are the minimum requirement of the system from the perspective of a user who is going to use this online system. **07**

- User should be a registered member.
- User can book any number of tickets on availability.
- User should be able to search for the availability of tickets on selecting a particular movie.
- Once user books the ticket a token number will be generated so that on providing this token he will be able to collect tickets before show from theatre premises.
- User can cancel all or some seats of the ticket by providing token number before 1 Hr of scheduled time for that movie.

(I) Describe the system boundary for this application in a few sentences.

(II) Identify the actors for the application and draw the use case diagram.

(b) i) What do you mean by a model? Explain various purposes of modeling. **05**

ii) What do you mean by refactoring? **02**

OR

(b) i) Discuss the concept of delegation to share behavior with example **05**

ii) What is the difference between scenario and sequence diagram. **02**

Q.3 **(a)** Consider ATM(Automated Teller Machine) network. Elaborate the following high level questions and explain your answer: **07**

1. Who is the application for?
2. What are two of the largest risks?
3. Where will it be used?

(b) A simple digital watch has a display and two buttons to set it, the A button and B button. The watch has two modes of operation, display time and set time. In the display time mode, the watch displays hours and minutes, separated by a flashing colon. **07**

The set time mode has two sub modes, set hours and set minutes. The A button selects modes. Each time it is pressed the mode advances in the sequence: display, set hours, set minutes, display, etc. Within the sub modes, the capital B button advances the hours or minutes once each time it is pressed. Buttons must be released before they can generate another event.

Prepare a state diagram of the watch. Also show the activity effects and do activities in the state diagram.

OR

Q.3 **(a)** Consider online auction system. Elaborate the following high level questions and explain your answer **07**

1. Who is the application for?
2. Who are the stake holders?
3. Identify two features that should be omitted

(b) Draw the state diagram for a telephone line. At the start of a call, the telephone line is idle. When the phone is removed from the hook, it emits a dial tone and can accept the dialing of digits. Upon entry of a valid number, the phone system tries to connect the call and route it to the proper destination. The connection can fail if the number or trunk are busy. If the connection is successful the called phone begins ringing. If the called party answers the phone, a conversation can occur. When the called party hangs up the phone disconnects and rewards to idle when put on hook again. **07**

Q.4 **(a)** Which are the different criteria to keep the right association in domain class model. **07**

(b) What do you mean by an event in state diagram? Discuss various types of events. **07**

OR

Q.4 **(a)** Explain in detail "Library" as a reuse plan **07**

(b) Explain 'ordered', 'bags', 'sequences' in class diagram with example each. **07**

Q.5 **(a)** Explain different aspects while designing algorithms. **07**

(b) i) Explain qualified association in class diagram with example. **05**

ii) Define activity model. What is the need of it? **02**

OR

Q.5 **(a)** Prepare an activity diagram for computing a restaurant bill. There should be a charge for each delivered item. The total amount should be subject to tax. There is a service charge of 18% for groups of six or more and 10% for smaller groups. Any coupons and gift certificates submitted by the customer should be subtracted. **07**

(b) i) What do you mean by Aggregation? What is the difference between Aggregation and Composition? **05**

ii) "Many different abstractions of the same thing are possible" State whether the above statement is TRUE or FALSE. Justify your answer. **02**

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