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**Seventh Semester B.E. Degree Examination, May/June 2010**  
**Object Oriented Modeling and Design**

Time: 3 hrs.

Max. Marks:100

**Note: Answer any FIVE full questions, selecting at least TWO questions from each part.**

**PART - A**

- 1 a. Explain briefly three models used to describe a system. (06 Marks)
- b. Explain with a diagram, how an association class participates in another association. (04 Marks)
- c. With a neat diagram, explain a class model of a work-station window management system. (10 Marks)
- 2 a. What is an association end? What are the properties of an association end? (06 Marks)
- b. Define reification. Explain it with a diagram. (06 Marks)
- c. Explain with a diagram, the basic UML syntax for state diagrams. (08 Marks)
- 3 a. Explain with a diagram, nested states for a phone line. (06 Marks)
- b. What is a usecase? Explain the guidelines for usecase models. (08 Marks)
- c. What do you mean by a swimlane? Explain briefly an activity diagram with swimlanes for servicing an airplane. (06 Marks)
- 4 a. Explain the sequence of software development stages. (08 Marks)
- b. What do you mean by system conception? Explain devising a system concept. (08 Marks)
- c. List the steps to construct a domain state model. (04 Marks)

**PART - B**

- 5 a. With a neat sequence diagram, explain process transaction scenario. (08 Marks)
- b. What are the different aspects of reusability? Explain the reusable things. (08 Marks)
- c. What are the steps in designing a pipeline for a continuous transformation? (04 Marks)
- 6 a. Explain the consideration for choosing alternative algorithms. (06 Marks)
- b. When fine-tuning of classes is essential? How is it achieved? (08 Marks)
- c. Compare forward engineering and reverse engineering. (06 Marks)
- 7 a. Explain briefly the properties of patterns for software architecture. (08 Marks)
- b. Explain pattern categories. (06 Marks)
- c. What is a forwarder-receiver design pattern? When is it useful? (06 Marks)
- 8 a. Explain the liabilities imposed by a command processor pattern. (06 Marks)
- b. Why view handler design pattern is used? Explain the scenario of the view handler creating a new view. (08 Marks)
- c. Write the steps to implement the counted pointer idiom. (06 Marks)

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**Seventh Semester B.E. Degree Examination, December 2010**  
**Object Oriented Modeling and Design**

Time: 3 hrs.

Max. Marks:100

**Note: Answer any FIVE full questions, selecting  
at least TWO questions from each part.**

**PART – A**

- 1 a. What is object orientation? Explain briefly the stages involved in OO methodology. (10 Marks)  
 b. Use illustrations and explain the following with UML notations: (10 Marks)
  - i) Ordering the objects for an association end
  - ii) A multilevel inheritance hierarchy with instances.
- 2 a. What is an event? Explain various kinds of events, using UML notations. (10 Marks)  
 b. A simple digital watch has a display and two buttons, A and B to set it. The watch has two modes of operation, display time and set time. In the display time mode, the watch display hours and minutes, separated by a flashing colon. 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 submode, the 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. (10 Marks)
- 3 a. What is a nested state? Illustrate the importance and usage of aggregation concurrency, with the help of a state diagram. (10 Marks)  
 b. Consider shopping in a physical bookstore of super market : (10 Marks)
  - i) List three actors that are involved in the design of a checkout system. Explain the relevance of each actor.
  - ii) Take the perspective of a customer and list two use cases. Summarize the purpose of each use case within a sentence.
  - iii) Prepare a use case diagram for physical bookstore checkout system.
  - iv) Prepare a normal scenario for each use case. (10 Marks)
- 4 a. Explain the following development life cycle for software using OO approach: (10 Marks)
  - i) Waterfall development
  - ii) Iterative development.
- b. How are classes identified in a domain class model? Briefly explain. (04 Marks)
- c. For an ATM bank system, prepare a data dictionary for all modeling elements. (06 Marks)

**PART – B**

- 5 a. For an ATM system, prepare a normal scenario for process transaction and also give a sequence diagram for the process transaction scenario. (10 Marks)  
 b. Name the three kinds of control for the external events in a software system. Also describe each control very briefly. (10 Marks)
- 6 a. What tasks are involved in the process of design optimization? Explain any one in detail. (10 Marks)  
 b. Clearly distinguish between forward engineering and reverse engineering. (06 Marks)  
 c. Write briefly on association traversal. (04 Marks)
- 7 a. What is a pattern? How is it categorised? Describe any one category, with an example. (10 Marks)  
 b. Briefly discuss the structure of the client-dispatcher-server design pattern using CRC. (10 Marks)
- 8 a. Give an example design pattern for management of software system and explain briefly. (10 Marks)  
 b. What are Idioms? How do they differ from design patterns? Explain the necessary steps for implementing the counted pointer Idiom. (10 Marks)

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