

III B.Tech I Semester Regular Examinations, November 2008
OBJECT ORIENTED ANALYSIS AND DESIGN
(Common to Computer Science & Engineering, Information Technology
and Computer Science & Systems Engineering)

Time: 3 hours

Max Marks: 80

Answer any FIVE Questions
All Questions carry equal marks

1. (a) Explain briefly runtime polymorphism illustrating a program in Java or C++.
(b) What are the principles of modeling?
(c) Explain the antisymmetric and transitive properties of aggregation. [8+4+4]
2. (a) Explain any three features used in creating abstractions.
(b) Enumerate the steps to model the vocabulary of a system.
(c) Write a simple JAVA applet for printing "Hello, World!" in a web browser. [6+6+4]
3. (a) Enumerate the steps to forward engineer a class diagram.
(b) Enumerate the steps to reverse engineer a class diagram.
(c) What are forward engineering and reverse engineering? [8+6+2]
4. (a) What is sequence diagram? What is collaboration diagram? What are the features in each one?
(b) What are the properties and common uses of sequence diagrams and collaboration diagrams? [10+6]
5. (a) Sketch the use case diagram for modeling a hospital information system aimed at collecting and storing complete information pertaining to the patients treatment history and disease behavior where actors could be doctor, lab technician, patient, duty nurse, receptionist, visitors etc.
(b) What are the contents and common uses of activity diagrams?
(c) Contrast: action state Vs. activity state. How are forking and joining used in activity diagram. Illustrate. [6+4+6]
6. (a) Give the sketch of a state machine for the controller in a home security system, which is responsible for monitoring various sensors around the perimeter of the house. Briefly explain.
(b) Explain the following parts of a transition
 - i. Event trigger.
 - ii. Guard condition. [12+4]
7. Enumerate the steps to model the following. Illustrate UML diagrams and explain briefly.

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Set No. 1

- (a) Modeling processes and devices.
 - (b) Modeling distribution of components. [16]
8. (a) Write a Java program for the Loan class
- (b) Draw a deployment diagram for the library system
 - (c) Draw a class diagram showing architectural overview of the library system [8+3+5]

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1. Explain briefly about the various diagrams in UML. [16]

2. (a) Explain any three features used in creating abstractions.
(b) Enumerate the steps to model the vocabulary of a system.
(c) Write a simple JAVA applet for printing "Hello, World!" in a web browser. [6+6+4]

3. (a) Enumerate the steps to model logical database schema. Give all example class diagrams.
(b) Explain the common uses of class diagrams briefly. [12+4]

4. (a) Draw a collaboration diagram that specifies the flow of control involved in registering a new student at a school. Explain.
(b) Explain forward engineering and reverse engineering of interaction diagrams. [12+4]

5. (a) Consider an automated soda machine that gives cool drinks. Draw a use case model of the soda machine.
(b) Draw an extended use case diagram for the soda machine example depicting the 'extend', 'include' and generalization relationships. [8+8]

6. (a) Illustrate modeling family of signals and modeling exceptions with UML diagrams.
(b) Define event and signal. What are the four kinds of events modeled by UML? [10+6]

7. (a) Enumerate the steps to model an executable release.
(b) What are the contents, common properties and common uses of component diagrams? Explain briefly. [4+12]

8. (a) Draw activity diagram to inform a person when a loan is due and explain
(b) Draw activity diagram to remove reservations after a specified amount of time and explain [8+8]

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1. (a) What is genericity?
(b) Enumerate the principle of modeling.
(c) Enumerate any six artifacts.
(d) Briefly explain the extensibility mechanisms in UML. [3+4+3+6]

2. (a) Briefly explain any four standard constraints that apply to generalization relationships.
(b) Briefly explain the four adornments that apply to all association.
(c) What is the stereotype applied to generalization relationships? Give a brief. [6+8+2]

3. (a) Enumerate the steps to forward engineer a class diagram.
(b) Enumerate the steps to reverse engineer a class diagram.
(c) What are forward engineering and reverse engineering? [8+6+2]

4. (a) What is sequence diagram? What is collaboration diagram? What are the features in each one?
(b) What are the properties and common uses of sequence diagrams and collaboration diagrams? [10+6]

5. (a) Sketch the use case diagram for modeling a hospital information system aimed at collecting and storing complete information pertaining to the patients treatment history and disease behavior where actors could be doctor, lab technician, patient, duty nurse, receptionist, visitors etc.
(b) What are the contents and common uses of activity diagrams?
(c) Contrast: action state Vs. activity state. How are forking and joining used in activity diagram. Illustrate. [6+4+6]

6. (a) What are various parts of a transition. Explain briefly.
(b) Define event and signal. What are the four kinds of events modeled by UML? [10+6]

7. (a) Enumerate the steps to model adaptable systems. Illustrate with a UML diagram.

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Set No. 3

- (b) Enumerate the steps to model an executable release. Illustrate with a UML diagram.
- (c) What are the common uses of component diagrams? [6+8+2]
- 8. (a) Draw the use case diagram for the library system and explain the relationships.
- (b) Draw a sequence diagram for the use case Lend Item and explain
- (c) Draw a collaboration diagram for the add Title use case and explain [6+5+5]

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1. (a) What are the various views considered in modeling a system's architecture? Explain.
(b) What is the UML approach to software development life cycle? Explain the various phases. [8+8]
2. (a) Enumerate the steps to model webs of relationships.
(b) Contrast simple aggregation with composite aggregation. What is association class?
(c) Illustrate with examples how realization is used to specify the relationships between the following.
 - i. Interface Vs. Class
 - ii. Interface component. [9+5+2]
3. (a) Enumerate the steps to model simple collaborations. Give an example class diagram.
(b) What are the contents in class diagram? [12+4]
4. (a) What are interaction diagrams? What are their contents and common properties? Define semantic equivalence between two kinds of interaction diagrams.
(b) Enumerate the steps to model flows of control by time ordering. [8+8]
5. (a) What are the properties of well-structured use cases?
(b) Enumerate the steps to model the requirements of a system.
(c) Consider a retail system that interacts with customers who place and track orders. In turn, the system will ship orders and bill the customers. Model the behavior of the system will ship orders and bill the customers. Model the behavior of the system by declaring the behaviors as use cases. [4+6+6]
6. (a) Enumerate the steps to model the distribution of objects. Explain briefly considering a UML diagram.
(b) Enumerate the steps to model interprocess communication. [10+6]
7. (a) Define component. What are the differences between components and classes? How are component and interface related?
(b) What are the properties of components?

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- (c) What are standard stereotypes UML defines that apply to components. [8+4+4]
8. (a) Draw the use case diagram for the library system and explain the relationships.
- (b) What are the packages in the Library system? explain [6+10]
