

III B.Tech I Semester Regular Examinations, November 2007
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 the following with UML notation
 - i. behavioral things
 - ii. Grouping things
 - iii. Annotational things
- (b) Define software architecture. Explain the 4+1 view model of systems architecture.
- (c) Define using relationship. Give UML notation. [6+7+3]
2. (a) Explain the UML's behavior diagrams.
- (b) Briefly explain the following relationships with UML notation
 - i. Using
 - ii. Realization
 - iii. Simple aggregation
 - iv. Composite aggregation
- (c) Contrast is-a relationship with has-a relationship. [6+8+2]
3. Enumerate the steps to model object structures. Illustrate with an object diagram. [16]
4. Explain the sequence diagram and collaboration diagram and draw an example diagram for each one. [16]
5. What are the common uses of use case diagrams? Consider any two modeling issues and draw relevant use case diagrams. Explain briefly. [16]
6. (a) Enumerate the steps to model the following:
 - i. family of signals
 - ii. exceptions
- (b) Explain the four kinds of events modeled by UML. [6+10]
7. (a) Define node. Contrast node with components.
- (b) How are nodes organized?
- (c) Enumerate the steps to model processors and devices.

- (d) Draw a UML diagram to illustrate modeling processors and devices. Explain briefly. [4x4=16]
8. (a) Draw the use case diagram for the library system and explain the relationships. [6]
- (b) What are the packages in the Library system? explain [10]

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1. (a) Pick the ones that are related. Justify.
 - i. Behavioral things, verbs
 - ii. Structural things, nouns
 - iii. Generalization, specialization, adjectives
 - iv. Associations, verbs.(b) Explain the following briefly.
 - i. class/object dichotomy
 - ii. interface Vs. implementation.(c) Explain the various relationships in UML briefly. [8+4+4]
2. (a) Contrast interface inheritance with class inheritance.
(b) Define interface. Contrast it with abstract class.
(c) How do you inter relate interfaces, types and roles? [4+4+8]
3. (a) Enumerate the steps to model simple collaborations.
(b) Enumerate the steps to model logical database schema.
(c) What is class diagram? [6+8+2]
4. Consider the usecase “withdraw amount” related to ATM transaction modeling. Draw both the interaction diagrams for the usecase. Explain briefly. [16]
5. (a) Enumerate the properties of a well-structural use case.
(b) A retail system will interact with customers who place and track orders. Give UML diagram that uses various use cases.
(c) Define use case. Enumerate the steps to model the behavior of an element. [5+5+6]
6. (a) Contrast action with activity. Define state and event. What are the various parts of a state? Explain briefly.
(b) Define signal. [14+2]
7. (a) Enumerate the steps to model adaptable systems. Illustrate with a UML diagram.

- (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) Write a Java program for the Loan class [8]
- (b) Draw a deployment diagram for the library system [3]
- (c) Draw a class diagram showing architectural overview of the library system [5]

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1. Define the following:
 - (a) use case driven
 - (b) architecture centric
 - (c) iterative process
 - (d) Incremental process
 - (e) stakeholder
 - (f) artifact
 - (g) usecase
 - (h) Active class. [16]
2.
 - (a) Contrast interface inheritance with class inheritance.
 - (b) Define interface. Contrast it with abstract class.
 - (c) How do you inter relate interfaces, types and roles? [4+4+8]
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) 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) Enumerate the steps to model interprocess communication (IPC).

- (b) Draw a UML diagram which models IPC in a distributed reservation system with processes spread across four nodes. Briefly explain.
- (c) What are the characteristics of a well-structured active class and active object? [4+8+4]
- 7. (a) Enumerate the steps to model adaptable systems. Illustrate with a UML diagram.
- (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 a sequence diagram for the Add title use case [4]
- (b) For coding, the specifications are fetched from which diagrams in the design model? explain [6]
- (c) Draw class diagram for use interface classes in the functions menu and explain [6]

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1. (a) Define object identity. What is oid uniqueness principle?
(b) What is model? What are the aims of modeling?
(c) What are the principles of modeling?
(d) What is UML? Define. [5+5+4+2]
2. (a) Enumerate the steps to model different views of a system.
(b) Enumerate the steps to model complex views.
(c) Define idiom. Enumerate the steps to model structural relationships. [6+6+4]
3. (a) Enumerate the steps to model simple collaborations.
(b) Enumerate the steps to model object structures. [6+10]
4. Explain the sequence diagram and collaboration diagram and draw an example diagram for each one. [16]
5. (a) Explain the following standard stereotypes that adorn the ends of links.
 - i. association
 - ii. self
 - iii. global
 - iv. local
 - v. parameter.
(b) Briefly write about messages and sequencing with an illustrative diagram. [10+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) What are the properties of a well-structured component diagram?
(b) What are the contents, common properties and common uses of component diagrams? Explain briefly. [4+12]
8. (a) Draw the use case diagram for the library system and explain the relationships. [6]
(b) Draw a sequence diagram for the use case Lend Item and explain [5]

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(c) Draw a collaboration diagram for the add Title use case and explain [5]
