UNIT – I

Introduction to UML

SHORT ANSWER QUESTIONS

S. No.	Questions
1.	**Define** UML.
2.	**Explain** modeling.
3.	**Describe** the history ofuml.
4.	**State** the goals of UML.
5.	**Describe** the importance of modeling.
6.	**Define** the basic building blocks of uml.
7.	**Explain** the things in uml.
8.	**Classify** structural things.
9.	**Classify** behavioral things in uml.
10.	**Define** grouping things.
11.	**Define** class. Draw the relationship for the given objects i. Teaching assistant , student,employee ii. Country, city, capital, ordinarycity
12.	**Define** class and object. Draw a Use Case diagram for the following objects Mechanic, Diagnose , Fix Car, Drive Car, Owner
13.	**Define** an Interface.
14.	**Define** collaboration.
15.	**Describe** component.
16.	**Explain** about active class
17.	**Compare** relationships.
18.	**Define** UML diagrams.
19.	**Explain** common mechanisms in uml.
20.	**What** are the rules of UML.
21.	**Explain** in detailed about stereotypes and tagged values.
22.	**Explain** why object oriented approach is preferable when compared to other approaches?
23.	**What** is an artifact?
24.	**What** are the adornments in the UML?
25.	**What** are the four aims of modeling?

LONG ANSWER QUESTIONS

1.	(a) **State** Why is it necessary to have a variety of diagrams ina model of asystem? (b) **State** Which UML diagrams give a static view and which give a dynamic view of asystem.
2.	**Discuss** the principles ofmodeling.
3.	**Pick** the ones that are related. Justify. i. Behavioral things,verbs ii. Structural things,nouns iii. Generalization, specialization,adjectives iv. Associations,verbs.
4.	**Explain** the various relationships in UML briefly.
5.	**Explain** the following with UML notation i. Behavioral things ii. Grouping things iii. Annotationalthings

6. **Define** the following:
   (a) use casedriven
   (b) architecturecentric
   (c) iterativeprocess
   (d) Incrementalprocess
   (e) stakeholder
   (f) artifact
   (g) usecase
   (h) Activeclass
7. **Explain** model? What are the aims of modeling?
8. **Explain** briefly about the various diagrams in UML.
9. (a) **Enumerate** any sixartifacts.
   (b) **Explain** the extensibility mechanisms inUML.
10. **Enumerate** the object orientedmodeling.
11. **Explain** the various views considered in modeling a system's Architecture?
12. **Enumerate** the UML approach to software development life cycle?
    Explain the various phases.
13. **Enumerate** the steps to model different views of a system.
14. **Explain** the UML approach to SDLC.
15. **Explain** briefly the classification of things with UML notation
16. **Write** about structural things of UML vocabulary. Give UML notation.
17. **Explain** briefly about following terms:
    a) Stereotypes
    b) Tagged Values
    c) Constraints
18. **What** is UML? Where can the UML to be used?
19. **Draw** the architecture of a software-intensive system and explain.
20. **Illustrate** the conceptual model of UML in detail.

UNIT – II

Basic Structural Modeling, Advanced Structural Modeling

SHORT ANSWER QUESTIONS

S.No.	Questions
1.	**Define** classes.
2.	**Explain** about name.
3.	**Describe** an attribute.
4.	**Define** responsibilities.
5.	**Define** modeling vocabulary of system.
6.	**Define** distribution of responsibilities in a system.
7.	**Define** dependency.
8.	**Define** generalization. Draw the relationship for the given objects i. Pen, Roller Pen, Ball Pen , Top ii. Car, Engine, Transmission
9.	Explain association.
10.	**Discuss** about aggregation.
11.	**List** the simple dependencies.
12.	**Demonstrate** the modeling of single inheritance.
13.	**Discuss** modeling structural relationships.
14.	**Define** note.
15.	**Define** stereotypes.
16.	**List** tagged values.
17.	**Explain** constraints.
18.	**Illustrate** how to model comment.
19.	**Illustrate** how to model different views of a system.
20.	**Explain** modeling of new semantics.
21.	**Define** common uses of class diagrams.
22.	**State** common properties in class diagram
23.	Create new classes called ‘lamp’, ‘bulb’ and ‘switch’ in the logical view browser with the help of the relationships in UML
24.	**State** the interfaces.
25.	Name the roles and multiplicity for ‘Person , Organization’
26.	**Define** classifiers.
27.	**Define** package. Explain concepts of package.
28.	**What** is navigation?
29.	**Explain** the levels of visibility.
30.	**Distinguish** between interface and class.
31.	**Draw** the Object diagram for ‘Window, Console Window, Event’

LONG ANSWER QUESTIONS

1.	**Define** relationship. Explain the four adornments that apply to an Association
2.	a) **Enumerate** the steps to modeling structured relationships. b) **Draw** the Class diagram for Motor, Steering Motor, Main Motor
3.	**Define** the following: i. System ii. Model iii. subsystem

iv. Use case

4. **Contrast** is-a relationship with has-a relationship.
5. **Define** modeling non software things and primitive type.
6. **Enumerate** modeling simple dependencies.
7. a) **Interpret** relation between interfaces, types androles.
   b) **Enumerate** modeling new buildingblocks.
8. a) **Enumerate** the steps to model different views of asystem.
   b) **Enumerate** modeling comment's and newsemantics
9. a) **Enumerate** the steps to model complexviews.
   b) **Enumerate** modeling newproperties.
10. a) **Enumerate** the steps to model structural relationships.
    b) **Enumerate** modeling seams in asystem.
11. **Enumerate** modeling static and dynamic type.
12. a) **Enumerate** modeling group of elements.
    b) **Enumerate** object diagram.
13. **Contrast** simple aggregation with composite aggregation.
14. **Enumerate** modeling different levels of abstraction.
15. **Explain** forward and reverse engineering in case of class diagrams
16. a) **Enumerate** the steps to model the vocabulary of a system.
    b) **Explain** the UML's Structural Diagrams briefly
17. a) **Illustrate** modeling of collaboration.
    b) **Discuss** modeling a logical database schema.
18. a) **Discuss** modeling object structure.
    b) **Contrast** object diagram with class diagram.
19. a) **Explain** about generalization with an example.
    b) **Describe** interfaces, types and roles with examples.
20. a) **What** are the five constraints applied to association relationships. Explain briefly.
    b)**What** is visibility of an element owned by a package?
21. **Draw** and explain the class diagram for an ATM bank system.
22. a) **Discuss** common modelingtechniques of class diagram.
    b) **Explain** about structural diagrams.
23. a) **Briefly** explain the four adornments that apply to all association.
    b) **Enumerate** the steps to model webs of relationships.

UNIT – III

Basic Behavioral Modeling-I, Basic Behavioral Modeling – II

SHORT ANSWER QUESTIONS

S. No.	Questions
1.	**Define** interactions.
2.	**Explain** about context.
3.	**Describe** about association.
4.	**Discuss** about self.
5.	**Explain** about global.
6.	**Discuss** about local scope.
7.	**Define** parameter.
8.	**Explain** messages in uml.
9.	**Discuss** about sequencing.
10.	**Discuss** about procedural sequence.
11.	**Explain** about flat sequence.
12.	**Discuss** How to model flow of control.
13.	**Explain** collaboration diagrams.
	Draw the relationship for the given objects i)Student, UG Student, PG Student, Tutor ii) Party, Person, Organization
14.	**Discuss** how to forward engineer sequence diagrams.
15.	**Discuss** how to reverse engineer collaboration diagrams.
16.	**State** new link.
17.	**Explain** about destroyed.
18.	**Describe** about transient in detail.
19.	**Illustrate** the common properties of interaction diagrams.
20.	**Define** Use case.
21.	**Interpret** the relationship between Use cases and actors.
22.	**Demonstrate** the need of Use case diagram.
23.	**Demonstrate** an Actor.
24.	**Demonstrate** the relationship between use cases and test cases.
25.	**Demonstrate** an Activity Diagram.
26.	**Define** object flow.
27.	**Give** the graphical representation of messages, links and sequencing of interactions.
28.	**Distinguish** between action state and activity state.

LONG ANSWER QUESTIONS

1.	**a) Explain** How to model flow of control by organization. **b) Explain** types of requirements should not be documented in use Cases.
2.	a) **Describe** interaction diagrams. What are their contents and common properties. b) **Define** semantic equivalence between two kinds of interaction diagrams.
3.	a) **Enumerate** the steps to model flows of control by time ordering. b) **Explain** forward engineering and reverse engineering of interaction diagrams.
4.	**Design** a sequence diagrams that specifies the flow of control involved in initiating a simple, two-party phone call.

5. **Design** a collaboration diagram that specifies the flow of control involved in registering a new student at a school.
6. **Consider** the use case "withdraw amount" related to ATM transaction modeling. Draw both the interaction diagrams for the use case. Explain briefly.
7. **Discuss** the properties and common uses of sequence diagrams and collaboration diagrams.
8. **Discuss** components of a activity diagram.
9. **Describe** Messages and Links.
10. **Describe** Sequencing in Interaction diagrams.
11. **Design** a use case diagram to model the behavior of a cellular phone. Explain briefly.
12. **Discuss** the contexts, common properties and common uses of use case diagrams.
13. **Explain** the significance of context in modeling use cases.
14. **Demonstrate** the various adornments to ends of links denoted as standard stereotypes? Explain about objects and roles.
15. a) **Explain** the use of forward engineering and reverse engineering use casediagrams.
    b) **Contrast** action with activity.
16. **Design** a use case diagram that depicts the context of a credit card validation system. Explain briefly.
17. a) **Design** the UML diagram to model the requirements of asystem.
    b) **Discuss** various parts of a transition. Explainbriefly.
18. a) A retail system will interact with customers who place and track orders. **Illustrate** UML diagram that uses various usecases.
    b) **Enumerate** steps to model workflow and operation.
19. **Explain** about use cases and actions and use cases and flow of events.
20. **How** branching is represented in activity diagram. Elaborate on it.
21. a) **Explain** about forking and joining concepts in activity diagram with an example.
    b) **Draw** swim lane flowchart for financial accounting template and customize it to show your processes and procedures.
22. **Draw the use case diagram and the activity diagram** for an online airline reservation system. Summarize the purpose of each use case, actor, and its importance. Briefly explain various activity states and action states in the activity diagram.
23. a) **Discuss** modeling behavior of an element in use case diagram.
    b) **Discuss** modeling an operation in activity diagram.
24. **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.
25. **Demonstrate** actors in use case diagram.
26. **Describe** activity diagram for online shopping.

UNIT-IV

Advanced Behavioral Modeling, Architectural Modeling.

SHORT ANSWER QUESTIONS

S. No.	Questions
1.	**Illustrate** the characteristics of a well-structured active class and active object.
2.	**Define** event and signal.
3.	**Summarize** various parts of a transition.
4.	**Illustrate** family of Signals.
5.	**Demonstrate** exceptions in behavioral modeling.
6.	**Discuss** Event trigger.
7.	**State** Guard condition.
8.	**Define** state Machine.
9.	**Illustrate** the steps to model the distribution of objects.
10.	**Define** Node.
11.	**Demonstrate** how nodes are organized.
12.	**Explain** the steps required to model processors and devices.
13.	**Discuss** the contents of component diagrams.
14.	**State** common uses of component diagrams.
15.	**Compare** components and classes.
16.	**State** how component and interface are related.
17.	**Discuss** the kinds of components.
18.	**Discuss** the standard stereotypes UML defines.
19.	**Describe** the steps to enumerate executable release.
20.	**What** is node? How to organize nodes in UML?
21.	**Describe** the common uses of deployment diagrams?

LONG ANSWER QUESTIONS

1.	**Enumerate** the steps in modeling timing constraints. Illustrate with a UML diagram and explain.
2.	**Consider** an object diagram that models the distribution of certain objects In a real-time system. Draw the diagram and explain briefly.
3.	(a) **Enumerate** the steps to model a family ofsignals. (b) **Enumerate** the steps to model inter processcommunication.
4.	**Design** a UML diagram which models IPC in a distributed reservation system with processes spread across four nodes. Briefly explain.
5.	**State** 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.
6.	**Illustrate** modeling lifetime of an object and modeling exceptions with UML diagram.
7.	a) **Enumerate** the steps to model multiple flows of control. b) **Enumerate** the steps to model distribution ofobjects.
8.	a) **Define** event and signal. **Explain** the four kinds of events modeled by UML. b) **Enumerate** the steps to model reactive objects.
9.	**Contrast** action with activity. Define state and event. What are the various parts of a state? Explain briefly.

10. **Explain** the four kinds of events modeled by UML.

11. (a) **Enumerate** the steps to model adaptable systems.Illustrate with a UML diagram.
(b) **Explain** the common uses of componentdiagrams.

12. a) **Illustrate** modeling source code and executablerelease.
b) **Illustrate** modeling physical database and adaptablesystems.

13. **Define** component. Contrast differences between components and classes? How are component and interface related?

14. **Demonstrate** the contents, common properties and common uses of component diagrams? Explain briefly

15. **Enumerate** the steps to model the following. Illustrate UML diagrams and explain briefly.
(a) Modeling processes anddevices.
(b) Modeling distribution ofcomponents.

16. a) **Define** node. Contrast node withcomponents.
b) **Illustrate** modeling Fully distributedsystem.

17. **Enumerate** the steps to model an embedded and client server system. Illustrate with a UML diagram.

18. **Enumerate** the steps to model the following. Illustrate with UML diagrams and explain briefly
(a) Tables, files anddocuments
(b) API
(c) Sourcecode.

19. a) **Enumerate** the steps to model the objects that migrate.
b) Explain the following:
i) History states
ii) Time and Space

20. **Explain** the forward engineering tool and reverse engineering tool for a sample code with respect to the state chart diagram.

21. **What** is meant by state machine? **Discuss** about sequential sub states and history states with an example.

22. **What** are components? Show the stereotypes that apply to components.

23. **Explain** about communication and synchronization with a suitable example.

24. **Explain** the forward engineering and reverse engineering in case of component diagrams.

Unit V

Patterns And Frameworks, artifacts diagrams, Case Study: The Unified Library application.

SHORT ANSWER QUESTIONS

S. No.	Questions
1.	**Explain** problem statement for unified library application.
2.	**Discuss** actors in library application.
3.	**Design** classes in library application.
4.	**Illustrate** objects in library application.
5.	**Design** use cases in library application.
6.	**Discuss** action states in library application.
7.	**Define** use case for librarian.
8.	**State** nodes in library.
9.	**Compare** sequence and collaboration in library application.
10.	**Explain** packages in library application
11.	**Explain** Patterns and architecture
12.	**Define** frameworks.
13.	**Explain** in detail about the following models i) Analysis model. ii) Design model.
14.	**Explain** in detail about the following models i) Business model. ii) Deployment model.
15.	**Explain** in detail about the following models i) Use case model. ii) Domain model.
16.	**Explain** in detail about the following models i) Process model. ii) Deployment model.

LONG ANSWER QUESTIONS

1. **Design** class diagram for library Application .
2. **Design** object diagram for library Application.

3. **Design** use cases diagram for library Application.
4. **Design** sequence diagram for library Application.
5. **Design** collaboration diagram for library Application.
6. **Design** activity diagram for library Application.
7. **Design** statechart diagram for library Application.
8. **Design** component diagram for library Application.
9. **Design** deployment diagram for library Application.
10. **Design** Class diagram with common mechanisms for library Application.
11. **List** the steps involved while developing a unified library application.
12. a) **Enumerate** the steps to model design patterns.
    b) **Enumerate** the steps to model architectural patterns.
13. **Explain** “Issuing of a book” operation using collaboration diagram.
14. **Discuss** about artifact diagrams.
15. **Distinguish** between patterns and frameworks**.**
16. **Draw** the interaction diagram for login usecase in library application.