SRM VALLIAMMAI ENGINEERING COLLEGE
(An Autonomous Institution)

SRM Nagar, Kattankulathur– 603203

DEPARTMENT OF
COMPUTER SCIENCE AND ENGINEERING

QUESTION BANK

IV SEMESTER

CS3462 - OBJECT ORIENTED ANALYSIS AND DESIGN

Regulation 2023

Academic Year 2025-26 (Even Semester)

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UNIT I - UNIFIED PROCESS AND USE CASE DIAGRAMS

SYLLABUS: Introduction to OOAD with OO Basics – What is the UML? – Iterative, Evolutionary And Agile – Agile methods and attitudes – Agile modeling – Unified Process – Inception and Use cases – Use cases and the Use case model – Applying UML – Use case diagrams – Relating Use cases – include, extend and generalization – When to use Use-cases.

PART A

Q.No	Questions	Level	Competence
1.	**Define** OOAD.	BTL1	Remember
2.	**What** is Analysis and Design?	BTL1	Remember
3.	**Distinguish** between method and messages in object.	BTL2	Understand
4.	**What** is the main advantage of Object Oriented Development?	BTL1	Remember
5.	What test can help to find useful use cases?	BTL1	Remember
6.	**Give** the different formats of use cases.	BTL2	Understand
7.	**What** is an object? Give an example	BTL1	Remember
8.	What is UML? **List** out the UML Diagrams.	BTL1	Remember
9.	**Give** the kinds of actors in use case.	BTL2	Understand
10.	**Define** Unified Process (UP)**. List** the 4 phases in UP.	BTL1	Remember
11.	**Define** Generalization Relationship.	BTL1	Remember
12.	**Distinguish** between Include and Extend use case relationships.	BTL2	Understand
13.	**Describe about** iterative and evolutionary development.	BTL2	Understand
14.	**Give** the primary goals in the design of UML	BTL2	Understand
15.	**Give** the relationship used in Use case.	BTL2	Understand
16.	What are the three ways and perspectives to **Apply** UML?	BTL2	Apply
17.	**Explain** the concepts of use case modeling.	BTL2	Understand
18.	When to use Use cases? Evaluate it.	BTL1	Remember
19.	What is your views about inception in Use case.	BTL1	Remember
20.	Name the UML diagrams used for the following: a) Modeling Requirements b) Modeling Workflows c) Modeling behavior of an object. d) Interaction between groups of objects.	BTL1	Remember
21.	**What** is Agile modeling?	BTL1	Remember
22.	**Describe** about attitudes in agile modeling	BTL2	Understand
23.	**Demonstrate** the phases of UP	BTL2	Understand
24.	**List** out several UP Disciplines.	BTL1	Remember

PART – B			
1.	**Explain** briefly about the Four Major phases of Unified Process with neat diagram. (16)	BTL4	Analyze
2.	By considering the Library management system, Model the object oriented System Development and give the use case model for the same(use include, extend and generalization) (16)	BTL3	Apply
3.	**Explain** Use case modeling with example? (16)	BTL4	Analyze
4.	(i) **Examine** the various sections in the Use Case template with example. (8) (ii) **Classify** the Tests that are used to find useful use cases. (8)	BTL3	Apply
5.	(i) What artifacts may start in Inception? How much UML is required during Inception? (8) (ii) **Elaborate** the major difference between Evolutionary and water fall requirements. (8)	BTL 5	Create
6.	(i) **Examine** are the requirements in UP artifacts? (8) (ii) Describe the various categories of Requirements? (8)	BTL4	Analyze
7.	**Draw and Explain** the use case model for online Exam.	BTL6	Create
8.	(i) **Illustrate** use case diagram for payroll system. (8) (ii) **Classify** the various format of use case. (8)	BTL3	Apply
9.	**Generalize** how to do iterative, evolutionary analysis and design? (16)	BTL6	Create
10.	**List and Model** the Various UML diagrams and explain the purpose of each diagram. (16)	BTL3	Apply
11.	(i) Define use case Diagram? Model a use case diagram for a Banking System. **Explain** the business rules you are considering. (8) (ii) Consider the following use Cases that play a role in the Banking System you have modeled: 1. Deposit 2.Withdraw Model and draw the use case diagrams for the above two use cases. (8)	BTL4	Analyze
12.	(i) **Summarize** one Success scenario for ATM system. (8) (ii) **Give** the steps to find actors and goals. (8)	BLT2	Understand
13.	**Examine** the various relationships used in Use Case and also write a short note on each relationship. (16)	BTL4	Analyze
14.	**Explain** with an example, how use case modeling is used to describe functional requirements, Identify actors, scenario and use cases for the example. (16)	BTL5	Evaluate
15.	**Design** and illustrate the use case model for activities involved in ordering food in a restaurant from the point when the customer enters a restaurant to the point when he leaves the restaurant. (16)	BTL6	Create
16.	**Explain** the concept of agile methods, attitudes and agile modeling.(16)	BTL4	Analyze
17.	(i) **Explain** about use case model for a case study of your choice. (8) (ii) What is Unified process? Evaluate, whether UP is iterative or incremental? **Explain** it. (8)	BTL5	Evaluate

UNIT II - ELABORATION & UML DIAGRAMS			
SYLLABUS: Elaboration – UML Class diagram–Domain Model – Finding conceptual classes and description classes – Associations – Attributes – System sequence diagram – Logical Architecture and UML Package diagram – UML interaction diagram – Sequence diagram–Communication diagram.			
PART – A			
1.	**Define** Conceptual class.	BTL1	Remember
2.	**Define** attribute? List out the types of attributes.	BTL1	Remember
3.	**Express** the meaning of Elaboration and What are the tasks	BTL2	Understand
4.	**Define** Class Diagram?	BTL1	Remember
5.	**Express** why we call a domain model a "VisualDictionary".	BTL2	Understand
6.	**Give** the Relationships used in class diagram.	BTL2	Understand
7.	**Define** Domain Model. How to **create a** Domain model?	BTL1	Remember
8.	**List** out the Components of Domain model?	BTL1	Remember
9.	**Compare** Aggregation and Composition.	BTL2	Understand
10.	**Outline** the usage of Description class.	BTL2	Understand
11.	**Give** the meaning of abstract conceptual class.	BTL2	Understand
12.	**Compare** sequence diagram and Use case diagram.	BTL2	Understand
13.	Illustrate the concepts of Association.	BTL2	Understand
14.	**Give** the uses of Sequence Diagram.	BTL2	Understand
15.	**Differentiate** Class diagram and Interaction diagram.	BTL2	Understand
16.	Illustrate the concepts of Noun Phrase Identification from use cases.	BTL2	Understand
17.	**Give** the strategies to find Conceptual classes**.**	BTL2	Understand
18.	**Define** class diagram.	BTL1	Remember
19.	**Give** the concepts of Class Hierarchy.	BTL2	Understand
20.	**When** to use class diagram?	BTL1	Remember
21.	What are the uses of UML Package Diagram	BTL1	Remember
22.	**Define** Package. Draw UML notation for Package.	BTL1	Remember
23.	**Illustrate** the concepts and uses of Communication Diagram.	BTL2	Understand
24.	**Define** Domain Model Refinement.	BTL1	Remember
PART B			
1.	(i)Build the UML notation for class diagram with example. (8) (ii)**Describe** the concepts of link, association and Inheritance. (8)	BTL3	Apply
2.	What is Elaboration? **Explain** why elaboration is complex? (16)	BTL5	Evaluate
3.	Examine the strategies used to identify conceptual classes. Explain the steps to create a domain model used for representing conceptual classes . (16)	BTL4	Analyze
4.	(i) Write briefly about elaboration. (6) **(**ii) **Compare** elaboration and inception with an example. (10)	BTL5	Evaluate
5.	**Design** the Class diagram for Airline Reservation System? Draw the conceptual classes for the same? (16)	BTL6	Create
6.	(i) **Analyze** the concepts of Descriptions classes with the mobile phone Domain. (8) (ii) **Explain** about association and formulate the guidelines to be followed with UML with suitable example. (8)	BTL4	Analyze

7.	**Explain** in detail about Domain Model refinement. (16)	BTL4	Analyze
8.	(i) Analyze aggregation and composition diagrams with example. (4) (ii) Analyse the following: a) Generalization. (3) b) Specialization. (3) c) Conceptual class hierarchies. (3)	BTL4	Analyze
9.	(i)Build an use case diagram with example. (4) (ii)**Discuss** the topic on a) Conceptual subclass. (3) b) Conceptual super class. (3) c) Multiplicity. (3)	BTL3	Apply
10.	Explain the uses, concepts and notations are used in Sequence Diagram. (16)	BTL5	Evaluate
11.	**Illustrate** with an example relationship between sequence diagram and use cases diagram. (16)	BTL3	Apply
12.	(i)**Discuss** in detail about the Finding Conceptual class Hierarchies. (10) (ii)**Discuss** briefly about association classes and association role. (6)	BTL6	Create
13.	**Distinguish between** Aggregation and Composition with an example. (16)	BTL4	Analyze
14.	(i) **Analyze** the guidelines to define a conceptual subclass with suitable example. (8) (ii) **Analyze** the guidelines to define a conceptual super class with suitable example. (8)	BTL4	Analyze
15	**Design** the Class diagram for Hospital management system? Find and draw conceptual classes for the same? (16)	BTL5	Evaluate
16.	**Analyze** and design for Library Information System which comprises the following notations and explain them. (i)Aggregation. (6) (ii) Composition. (5) (iii) Association. (5)	BTL4	Analyze
17.	(i) **Discuss** the logical architecture and UML package Diagram.(8) (ii) **Discuss** how Synchronous and asynchronous messages are depicted in communication diagram. (8)	BTL6	Create

UNIT III - APPLYING UML & IMPLEMENTATION UML DIAGRAMS			
SYLLABUS: Activity diagram – When to use activity diagrams – State machine diagram and Modelling – When to use State Diagrams – Implementation Diagrams – Component and Deployment Diagrams – When to use Component and Deployment diagrams – Mapping Design to code.			
PART-A			
Q.No.	**Question**	**Level**	**Competence**
1.	Express what is state machine diagram.	BTL2	Understand
2.	Compare Events, States, and Transitions .	BTL2	Understand
3.	What the elements of Deployment diagram?	BTL2	Understand
4.	Define Data Flow Modelling.	BTL1	Remember
5.	Define Business Process Modelling.	BTL1	Remember
6.	when to use state diagram?	BTL1	Remember
7.	List the two nodes of Deployment Diagram.	BTL1	Remember
8.	when to use component diagrams?	BTL2	Understand
9.	Define Component.	BTL1	Remember
10.	Demonstrate the similarities and dissimilarities of state independent and State dependent objects.	BTL2	Understand
11.	Differentiate between Component and Deployment diagram	BTL2	Understand
12.	Mention the purpose of Activity diagram and specify its elements.	BTL1	Remember
13.	Name the basic elements of a Deployment diagram.	BTL1	Remember
14.	List the elements of component diagram.	BTL2	Understand
15.	Outline the need for State Diagram.	BTL2	Understand
16.	Differentiate rake and swimlane.	BTL2	Understand
17.	List the Features of UML component.	BTL1	Remember
18.	when to use activity diagram?	BTL1	Remember
19.	List the uses of rake symbol with an example.	BTL1	Remember
20.	What is the goal of mapping design to code?	BTL1	Remember
21.	How to create Class Definitions from DCDs?	BTL2	Understand
22.	Give the activity diagram of order management system.	BTL1	Remember
23.	What do you mean by State?	BTL1	Remember
24.	Define test-driven development.	BTL2	Understand

PART-B

Q.No.	Question	Level	Competence
1.	Draw Order Processing System using state machine diagram and Summarize the Protocols and Legal Sequences. (16)	BTL2	Understand
2.	Describe the steps to Apply State Machine Diagrams and discuss about the physical states in telephone object. (16)	BTL1	Remember
3.	Analyze about UML Deployment and Component diagram with an example. (16)	BTL4	Analyze
4.	Interpret UML state machine diagram and Modeling. (16)	BTL4	Analyze

5.	Compare the elements of component and deployment diagram and explain with suitable example. (16)	BTL5	Evaluate
6.	Analyze the UML activity diagram, using an example point out the features of basic UML activity diagram notation. (16)	BTL4	Analyze
7.	(i) What is the purpose of State Chart diagram? (5) (ii) Recall how to draw state chart diagram with an example. (10)	BTL2	Remember
8.	(i) Design and explain the activity diagram for an Online Purchase System. (8) (ii) Represent the activity diagram for the following Scenario, Booking a ticket on Indian railways e-ticket system (IRCTC). (8)	BTL6	Creating
9.	Describe briefly about "when to use State diagram." (16)	BTL1	Remember
10.	What is fork and merge .discuss the Guideline to Apply Activity Diagrams. (16)	BTL5	Evaluate
11.	(i) When to use activity diagrams. (3) (ii) Describe the Implementation diagrams with example. (10)	BTL1	Remember
12.	Draw and examine briefly about NextGen Activity Diagram. (16)	BTL4	Analyze
13.	(i) Identify when to use UML deployment and Component diagrams. (8) (ii) Draw the diagrams for banking applications. (8)	BTL3	Apply
14.	Apply the notations used in deployment diagram to draw the Next Generation POS System. (16)	BTL3	Apply
15.	With an example explain "when to use Activity diagram". (16)	BTL3	Apply
16.	Determine the procedure for mapping Design to code. (16)	BTL5	Evaluate
17.	summarize about the constructs (notations) used in an activity diagram with an example. (16)	BTL5	Evaluate

UNIT IV - DESIGN PATTERNS AND METHODOLOGY

SYLLABUS: GRASP: Designing objects with responsibilities – Creator – Information expert – Low Coupling – High Cohesion – Controller Design Patterns – creational – factory method – structural – Bridge – Adapter – behavioural – Strategy – observer –Mapping design to code – Applying GoF design patterns

PART-A

Q.No.	Question	Level	Competence
1.	Define Design Pattern.	BTL1	Remember
2.	when a pattern is said to be a good pattern.	BTL1	Remember
3.	"A system must be loosely coupled and highly cohesive"-Justify.	BTL2	Understand
4	LIst the limitations of Factory Pattern.	BTL1	Remember
5.	Define modular design.	BTL1	Remember
6.	When to use Factory method pattern and list its advantages.	BTL1	Remember
7.	Define creator.	BTL1	Remember
8.	Give the list of structural patterns used during design phase of software development.	BTL2	Understand
9.	Give the benefits of Low coupling.	BTL2	Understand
10.	Tell the need of Information Expert.	BTL1	Remember
11.	Compare and contrast coupling and cohesion.	BTL2	Understand
12.	What are the steps for mapping design to code?	BTL1	Remember
13.	identify as to which object oriented methodology is well suited for (i) Design (ii) Analysis (iii) Full life cycle	BTL1	Remember

	(iv) Real time systems.		
14.	Define Refactoring.	BTL1	Remember
15.	List the Inputs to object design.	BTL1	Remember
16.	Outline the benefits and the types of adapter pattern.	BTL2	Understand
17.	Define Observer Pattern.	BTL1	Remember
18.	List the four phases of object oriented modeling Techniques (OMT).	BTL1	Remember
19.	Interpret the benefits of controller and give an outline on bloated controller.	BTL2	Understand
20.	Give the benefits of bridge pattern.	BTL2	Understand
21.	How to Apply the GRASP Patterns?	BTL2	Understand
22.	What is meant by Low Coupling?	BTL1	Remember
23.	Who is creator?	BTL1	Remember
24.	Define patterns.	BTL1	Remember

PART-B

Q.No.	Question	Level	Competence
1.	What is GRASP? Explain the design patterns and principles used in it. (16)	BTL5	Evaluate
2.	(i) Analyze the design principles in object modeling. (6) (ii)Examine in detail the GRASP method for designing objects with example. (10)	BTL4	Analyze
3.	Identify your views about Structural patterns with suitable example. (16)	BTL3	Apply
4.	Generalize your idea on Controller pattern with example and also write short note on bloated controller. (16)	BTL6	Create
5.	Illustrate the following GRASP patterns: (i) Creator (4) (ii) Information Expert (4) (iii) Low coupling (4) (iv) High cohesion (4)	BTL3	Apply
6.	Analyze about Factory method in detail. (16)	BTL4	Analyze
7.	Identify and describe the patterns that can be used for the following. (i) To provide an interface for crating families of objects without specifying classes.(8) (ii) To ensure that a class has only one instance and provide a global point of access to it. (8)	BTL3	Apply
8.	Explain the steps involved in mapping design to code? Recall it with an example.(16)	BTL4	Analyze
9.	Illustrate in detail about Behavioral pattern.(16)	BTL3	Apply
10.	Assess in detail about GOF Design pattern and describe it. (16)	BTL5	Evaluate
11.	(i) Differentiate Adapter and Bridge pattern.(8) (ii) Analyze the concept of Singleton pattern.(8)	BTL4	Analyze
12.	Generalize in detail about RDD. (16)	BTL6	Create
13.	(i) Examine the information expert (or) expert. (8) (ii)Analyze Nextgen POS Application. (8)	BTL4	Analyze
14.	(i) Compare cohesion and coupling with suitable example.(10) (ii) Evaluate and state the role and patterns while developing system design.(6)	BTL5	Evaluate
15.	Design the Use-Case Realizations with GoF Design Patterns (16)	BTL3	Apply
16.	How to Determine the Visibility of the Design Model?(16)	BTL5	Evaluate
17.	Assess about the Patterns for Assigning Responsibilities. (16)	BTL5	Evaluate

UNIT V - TESTING			
SYLLABUS: Object Oriented Methodologies – Software Quality Assurance – Impact of object orientation on Testing – Test driven development and Agile concepts – Documenting Architecture – Case study – Next Gen PoS system – Monopoly Game.			
PART-A			
Q.No.	**Question**	**Level**	**Competence**
1.	List out the Myer's debugging principles.	BTL1	Remember
2.	Outline the term SQA.	BTL2	Understand
3.	Summarize the main tools of Quality Assurance.	BTL2	Understand
4.	predict the impact object orientation in testing.	BTL2	Understand
5.	Define the term Object interoperability.	BTL1	Remember
6.	Give the basic activities are performed in using debugging tool.	BTL2	Understand
7.	Define test plan? What are its components?	BTL1	Remember
8.	List the need of quality assurance.	BTL1	Remember
9.	Define the Jacobson methodology.	BTL1	Remember
10.	Define black box testing?	BTL1	Remember
11.	Name the different kinds of errors you might encounter when you run your program.	BTL1	Remember
12.	Define Test-Driven Development.	BTL1	Remember
13.	predict which object oriented methodology is well suited for (i) Design (ii) Analysis	BTL1	Remember
14.	Describe POS system and list the components of POS system.	BTL2	Understand
15.	Define OMT object model.	BTL1	Remember
16.	Tell the concepts of implication of Inheritance.	BTL1	Remember
17.	Interpret the four phases of object oriented modeling Techniques (OMT).	BTL2	Understand
18.	Define Object-Oriented Business Engineering (OOBE).	BTL1	Remember
19.	Differentiate RumBaugh methodology and Booch methodology.	BTL2	Understand
20.	What are test cases? List the guidelines for developing quality assurance test cases.	BTL1	Remember
21.	List the Agile Methods and Attitudes.	BTL1	Remember
22.	predict, as to which object oriented methodology is well suited for (i) Full life cycle (ii) Real time systems	BTL1	Remember
23.	Differentiate OMT object model and OMT Dynamic model.	BTL2	Understand
24.	Describe the key areas of SQA.	BTL2	Understand

PART-B

Q.No.	Question	Level	Competence
1.	Explain Booch's methodology of object oriented analysis and design. (16)	BTL5	Evaluate
2.	Illustrate the significance of object orientation testing. (16)	BTL3	Apply
3.	Examine the Myer's debugging principles. (16)	BTL4	Analyze
4.	Summarize the different testing strategies. How to develop test plans guided by Thomas. (16)	BTL5	Evaluate

5.	(i) List the guidelines for developing quality assurance test cases. (8) (ii) What is statement and branch testing coverage in object oriented testing? Explain. (8)	BTL4	Analyze
6.	Discover the importance of (i) Object oriented Business Engineering. (8) (ii) Object oriented Software Engineering. (8)	BTL4	Analyze
7.	(i) Sketch the guidelines for developing quality assurance Test cases described by Freedman and Thomas adapted for the UA. (8) (ii) Identify the steps involved to make the testing successful? (8)	BTL3	Apply
8.	What is a POS system? Analyze about Inception Phase. (16)	BTL4	Analyze
9.	Explain the following: (i) Guideline for developing a user satisfaction test. (8) (ii) White box testing. (8)	BTL5	Evaluate
10.	Formulate the different test cases to estimate about the Student Marks Analysis system. (16)	BTL6	Create
11.	Why do we follow standards particularly for testing any Quality Assurance (QA)?Explain in detail. (16)	BTL4	Analyze
12.	Develop the test cases for the Net bank ATM System. (16)	BTL 6	Create
13.	Compare and contrast the object oriented methodology of Booch, Rumbaugh and Jacobson. (16)	BTL4	Analyze
14.	(i) Experiment the diagrams associated with Booch Methodology. (8) (ii) Identify and highlight the features of Jacobson methodologies. (8)	BTL3	Apply
15.	Describe the following: (i) Black box testing. (8) (ii) Debugging. (8)	BTL3	Apply
16.	Explain briefly the impact object orientation in testing. (16)	BTL5	Evaluate
17.	Evaluate the Unit, Integration, and system testing for currency converter application. (16)	BTL5	Evaluate