SRM VALLIAMMAI ENGINEERING COLLEGE

SRM Nagar, Kattankulathur – 603 203

DEPARTMENT OF
COMPUTER SCIENCE AND ENGINEERING

QUESTION BANK

V SEMESTER

CS8592 OBJECT ORIENTED ANALYSIS AND DESIGN

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Prepared by

Dr.B.Vanathi, Professor & Head /CSE

Mr.K.Shanmugam, Assistant Professor/CSE

QUESTION BANK

SUBJECT   : CS8592 OBJECT ORIENTED ANALYSIS AND DESIGN
SEM / YEAR: V/III

UNIT I - UNIFIED PROCESS AND USE CASE DIAGRAMS			
SYLLABUS: Introduction to OOAD with OO Basics - Unified Process – UML diagrams – Use Case –Case study – the Next Gen POS system, Inception -Use case Modelling – Relating Use cases – include, extend and generalization – When to use Use-cases			
PART A			
Q.No	**Questions**	**BT Level**	**Competence**
1.	**Wha**t is an object? Give an example	BTL1	Remember
2.	**What** is the main advantage of Object Oriented Development?	BTL1	Remember
3.	**Distinguish** between method and messages in object.	BTL2	Understand
4.	**What** is Analysis and Design?	BTL1	Remember
5.	Define Use Case. **Point out** what test can help find useful use cases?	BTL4	Analyze
6.	**Give** the different formats of Use cases.	BTL2	Understand
7.	**Define** OOAD?	BTL1	Remember
8.	What is UML? **List** out the UML Diagrams.	BTL1	Remember
9.	**Classify** the Three kinds of actors in use case.	BTL4	Analyze
10.	**Define** Unified Process (UP). **List** the 4 phases in UP.	BTL1	Remember
11.	**Illustrate** the concepts of Generalization Relationship.	BTL3	Apply
12.	**Comparison** between Include and Extend use case relationships.	BTL4	Analyze
13.	**Describe** POS system? List the components of POS system.	BTL2	Understand
14.	**Describe** the Primary goals in the Design of UML	BTL2	Understand
15.	**Illustrate** the relationship used in Use case.	BTL3	Apply
16.	What are the three ways and perspectives to **Apply** UML?	BTL3	Apply
17.	**Generalize** the concepts of Use case Modeling and list the advantages of Use case Modeling.	BTL6	Create
18.	When to use Use cases? **Evaluate** it?	BTL5	Evaluate
19.	**Generalize** your views about inception in Use case.	BTL6	Create
20.	**Evaluate** and 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.	BTL5	Evaluate

PART – B			
1.	(i).What is UP? (3) **(ii).Explain** briefly about the Four Major phases of Unified Process? (10)	BTL4	Analyze
2.	By considering the Library management system, Perform the object oriented System Development and **give** the use case model for the same(use include, extend and generalization) (13)	BTL2	Understand
3.	**Explain** the Fully Dressed use case with an example?(7) **Explain** the Guidelines for writing and finding use cases? (6)	BTL4	Analyze
4.	(i).**Examine** the various sections in the Use Case template with example.(8) (ii).**Classify** the various Tests used to find useful use cases.(5)	BTL3	Apply
5.	(i).What artifacts may start in Inception? How much UML is required during Inception? (7) (ii). **Identify** the major difference between Evolutionary and water fall requirements.(6)	BTL1	Remember
6.	(i).What are the requirements in UP artifacts? **(5)** **(ii).List** the various categories of Requirements? (8)	BTL1	Remember
7.	**Describe** the use case model for online Exam. (13)	BTL2	Understand
8.	(i).**Illustrate** use case diagram for payroll system. (8) (ii).**Classify** the various format of use case. (5)	BTL3	Apply
9.	**(i).Generalize** the concepts of Next Gen POS system?Briefly explain about Inception Phase.	BTL6	Create
10.	**List** the Various UML diagrams and explain the purpose of each diagram. (13)	BTL1	Remember
11.	**Explain** Use case modeling with example? (13)	BTL4	Analyze
12.	(i).**Give** one Success scenario for ATM system. (7) (ii). **Give** the steps to find actors and goals. (6)	BLT2	Understand
13.	**Describe** a suitable example showing the various relationships used in Use Case and also give a short note on each relationship. (13)	BTL1	Remember
14.	**Explain** with an example, how use case modeling is used to describe functional requirements, Identify actors, scenario and use cases for the example. (13)	BTL5	Evaluate
PART -C			
1.	**Explain** the following terms (i). UP Disciplines (4) (ii).OOA and OOD (4) (iii). Abstract and Base Use case(4) (iv). Reverse Engineering and Forward Engineering(3)	BTL5	Evaluate

2.	A Library lends books and magazines to member, who is registered in the system. It also maintains the purchase of new books and magazines for the Library. A member can reserve a book or magazine that is not currently available in the library, so that when it is returned or purchased by the library, that person is notified. The library can easily create, replace and delete information about the books, members, and reservation in the system. The books transactions are stored in the database. The fine list while the member returns the book after the due date must be generated. **Design** the use case diagram and discover the users and actors of this system, and the interactions between them must be depicted.(15)	BTL6	Create
3.	**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.	BTL6	Create
4.	**Explain** the benefits and concepts of use case and use case model and **analyze** the relating use cases have in ATM system.(15)	BTL4	Analyze

UNIT II - STATIC UML DIAGRAMS

SYLLABUS: Class Diagram— Elaboration – Domain Model – Finding conceptual classes and description classes – Associations – Attributes – Domain model refinement – Finding conceptual class Hierarchies – Aggregation and Composition - Relationship between sequence diagrams and use cases – When to use Class Diagrams

PART – A			
1.	**Define** Class Diagram?	BTL1	Remember
2.	**Define** attribute? List out the types of attributes.	BTL1	Remember
3.	**Express** the meaning of Elaboration and What are the tasks performed in elaboration?	BTL2	Understand
4.	**Define** Conceptual class.	BTL1	Remember
5.	**Express** why we call a domain model a"VisualDictionary".	BTL2	Understand
6.	**Illustrate** the Relationships used in class diagram	BTL3	Apply
7.	**Define** Domain Model..How to **create** Domain model?	BTL6	Create
8.	**List** out the Components of Domain model?	BTL1	Remember
9.	**Compare** Aggregation and Composition.	BTL5	Evaluate
10.	**Illustrate** the usage of Description class.	BTL3	Apply
11.	**Give** the meaning of abstract conceptual class.	BTL2	Understand
12.	**Comparison** between sequence diagram and Use case diagram.	BTL4	Analyze
13.	**Analyze** the concepts of Association.	BTL4	Analyze
14.	**Generalize** the use of Sequence Diagram.	BTL6	Create
15.	**Differentiate** Class diagram and Interaction diagram.	BTL2	Understand
16.	**Analyze** the concepts of Noun Phrase Identification from use cases.	BTL4	Analyze
17.	**Summarize** the strategies to find Conceptual classes.	BTL5	Evaluate
18.	**Define** Use case Diagram	BTL1	Remember
19.	**Illustrate** the concepts of Class Hierarchy.	BTL3	Apply
20.	**When** to use class diagram?	BTL1	Remember
PART-B			
1.	(i) **Describe** the UML notation for class diagram with example.(8) (ii).**Describe** the concepts of link, association and Inheritance(7)	BTL1	Remember

2.	What is Elaboration? **Explain** why elaboration is complex?(13)	BTL5	Evaluate
3.	**Describe** the strategies used to identify conceptual classes. Describe the steps to create a domain model used for representing conceptual classes.(13)	BTL1	Remember
4.	(i).Write briefly about elaboration (4) **(ii).Describe** the difference between elaboration and inception with an example.(9)	BTL1	Remember
5.	**Design** the Class diagram for Airline Reservation System? Find and draw conceptual classes for the same?(13)	BTL6	Create
6.	**(i).Analyze** the concepts of Descriptions classes with the mobile phone Domain.(7) **(ii). Explain** about association and formulate the guidelines to be followed with UML with suitable example.(6)	BTL4	Analyze
7.	**Explain** in detail about domain Model refinement.(13)	BTL4	Analyze

8.	**(i).Illustrate** about aggregation and composition with example.(7)
	
	 (ii). **Illustrate** the topic on
	
	         a).Generalization (2)
	
	         b).Specialization (2)
	
	         c).Conceptual class hierarchies.(2)
		BTL3	Apply

9.	**(i).Discuss** about use case diagram with example. (7)
	
	 (ii)**.Discuss** the topic on
	
	         a).Conceptual subclass (2)
	
	         b)Conceptual super class (2)
	
	         c) Multiplicity (2)
		BTL2	Understand

10.	**Discuss** the uses, concepts and notations are used in Sequence Diagram.(13)	BTL2	Understand
11.	**Illustrate** with an example relationship between sequence diagram and use cases. (13)	BTL3	Apply
12.	**(i).Describe** in detail about the Finding Conceptual class Hierarchies.(8) **(ii).Describe** briefly about association classes and association role.(5)	BTL1	Remember
13.	**Differentiate** and benefits of Aggregation and Composition.(13)	BTL2	Understand
14.	**(i).Analyze** the guidelines to define a conceptual subclass with suitable example. (7) (ii). **Analyze** the guidelines to define a conceptual super class with suitable example.(6)	BTL4	Analyze
PART-C			
1.	With a suitable example explain how to **design** a class. Give all possible representation in a class (such as: name, attribute, visibility, methods, and responsibilities).(15)	BTL6	Create

2.	For the Next Gen POS systems design, **explain** the following Conceptual class hierarchies. (i). Conceptual super class (3) (ii).Conceptual subclass (4) (iii). Authorization Transaction classes.(4) (iv). Abstract Conceptual classes. (4)	BTL5	Evaluate

3.	A University conducts examinations and the results are announced. Prepare a report for the following:
	
	        • Print the marks in the register number order semester wise for each department
	
	        • Print the Arrear list semester wise.
	
	        • Prepare a Rank list for each department.
	
	        • Prepare the final aggregate mark list for final year students.
	
	      Identify the problem statement and Design and Explain the classes for each sequence. **Design** the Use case, Class, and Sequence diagrams for designing this system. (15)
		BTL6	Create

4.	**Classify** the following Items and justify your answer. (15) Bike, tiger , chair, man, dog, lion, child, spider, crocodile, fish, boat, aeroplane, mango, pineapple, deer, horse.	BTL4	Analyze

UNIT III - DYNAMIC AND IMPLEMENTATION UML DIAGRAMS

SYLLABUS: Dynamic Diagrams – UML interaction diagrams - System sequence diagram – Collaboration diagram – When to use Communication Diagrams - State machine diagram and Modelling –When to use State Diagrams - Activity diagram – When to use activity diagrams Implementation Diagrams - UML package diagram - When to use package diagrams - Component and Deployment Diagrams – When to use Component and Deployment diagrams

PART – A

1.	**Define** System sequence diagram.	BTL1	Remember
2.	What are the Common Notations in UML Interaction Diagram?	BTL1	Remember
3.	**Illustrate** the concepts and uses of Communication Diagram.	BTL3	Apply
4.	**Compare** Activity and state chart diagram? Mention the Elements of an Activity Diagram.	BTL5	Evaluate
5.	**List** out the Types of Interactions diagram.	BTL1	Remember
6.	**Show** the SSD for Borrow book scenario.	BTL3	Apply
7.	**Differentiate** the strengths and weaknesses of Sequence and Communication Diagram.	BTL2	Understand
8.	**Interpret** the meaning of event, state and Transition.	BTL2	Understand
9.	**Define** State Chart Diagram? **When** to use State Diagram?	BTL1	Remember
10.	**Explain** how Synchronous and asynchronous messages are depicted in communication diagram.	BTL5	Evaluate
11.	**Differentiate** Component and deployment diagram.	BTL2	Understand
12.	**Analyze** the use of UML Package Diagram	BTL4	Analyze
13.	**Define** Package. Draw UML notation for Package.	BTL1	Remember

14.	When to use Deployment diagram? **Analyze** it.	BTL4	Analyze
15.	**Design** the notation of Component and Node.	BTL6	Create
16.	**Describe** the basic elements of a Deployment Diagram.	BTL2	Understand
17.	What is package diagram? **Classify** the three layers of package diagram.	BTL3	Apply
18.	When to use Component Diagram? **Analyze** it.	BTL4	Analyze
19.	**Generalize** the concepts of Node and Component.	BTL6	Create
20.	**List** the two types of deployment diagram node.	BTL1	Remember
PART – B			
1.	**(i).Compare** sequence diagram and communication diagram with suitable example. (8) (ii).**Explain** the Concepts of frames in UML.(5)	BTL5	Evaluate
2.	(i).What is SSD? (3) **(ii).Create** SSD for Library Management System.(10)	BTL6	Create
3.	**Demonstrate** the Interaction Diagram notations and explain it?(13)	BTL3	Apply
4.	**(i).Illustrate** about UML deployment and Component diagrams. (7) (ii).Draw the diagrams for banking applications. (6)	BTL3	Apply
5.	**Describe** UML state machine diagram and modeling.(13)	BTL1	Remember
6.	(i).When to use activity diagrams. (3) **(ii).Describe** the situations with example.(10)	BTL1	Remember
7.	**Explain** about activity diagram with an example.(13)	BTL4	Analyze
8.	Describe the logical architecture and UML package Diagram.	BTL2	Understand
9.	(i).With an example **describe** notations used in sequence diagram for the following: (i).Object destruction ,(2) (ii).Frames (2) (iii).Conditional message (2) (ii).Briefly **describe** about Operation contracts. (7)	BTL1	Remember
10.	(i).What are the system sequence diagrams? (3) **(ii).Differentiate** the relationship between system sequence diagrams and use cases? Explain with an Example.(10)	BTL2	Understand
11.	**Describe** communication diagram with an example. (13)	BTL1	Remember
12.	**Discuss** about UML deployment and component diagrams with suitable example.(13)	BTL2	Understand
13.	(i).What is the Purpose of state chart diagram? (4) (ii).How to draw state chart diagram? **Explain. (9)**	BTL4	Analyze
14.	**Compare** sequence versus collaboration diagram with suitable example.(13)	BTL4	Analyze
PART-C			

1.	**Consider** the hospital management system application with the following requirements.(15) (i).System should handle the in-patient, out - patient information through receptionist. (ii). Doctors are allowed to view the patient history and give their prescription. (iii). There should be a information system to provide the required information. **Explain** and give state chart, component and deployment diagrams.	BTL5	Evaluate
2.	Write a problem statement for Quiz System. **Design** the UML Use Case diagram, Activity diagram, Class diagram, Sequence diagram, State chart diagram and Package diagram.(15)	BTL6	Create
3.	What is Collaboration diagram? How does it differ from sequence diagram? **Design** the Collaboration diagram to model the details of a seminar. The display is to obtain the details of seminar and the courses enrolled in the seminar. Then it obtains the details of the seminar. . The display is to obtain the details of seminar and the courses enrolled in the seminar. Then it obtains the details of the students enrolled in the seminar. It finds the number of seats left to enroll for the seminar.(`15)	BTL6	Create
4.	For Airline Ticket reservation system **explain** and draw the following UML diagrams (i).sequence and Collaboration diagram(booking a ticket) (7) (ii). Activity diagram. (4) (iii). State chart diagram.(4)	BTL4	Analyze

UNIT IV - DESIGN PATTERNS

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 –Applying GoF design patterns – Mapping design to code

PART – A		
1. **Define** Design Pattern.	BTL1	Remember
2. **Illustrate** the concepts of GRASP.	BTL3	Apply
3. "A system must be loosely coupled and highly cohesive"-**Justify.**	BTL5	Evaluate
4. **Discover** the Limitations of Factory Pattern.	BTL3	Apply
5. **Define** modular design.	BTL1	Remember
6. **Analyze** the situation to use Factory method pattern and its advantages.	BTL4	Analyze
7. **Generalize** your view on creator	BTL6	Create
8. **Summarize** the list of structural patterns used during design phase of software development.	BTL5	Evaluate
9. **Analyze** the concepts of Coupling and Low coupling.	BTL4	Analyze
10. **Interpret** the need of Information Expert.	BTL2	Understand
11. **Distinguish** between coupling and cohesion.	BTL2	Understand
12. **When** to use Patterns?	BTL1	Remember
13. **Analyze** the benefits of controller.	BTL4	Analyze
14. **Define** Refactoring.	BTL1	Remember

15.	**Generalize** the concepts of responsibility. What are the various types of responsibilities?	BTL6	Create
16.	**Discuss** the benefits and the types of adapter pattern.	BTL2	Understand
17.	**Define** Observer Pattern.	BTL1	Remember
18.	**Define** TDD. Mention the advantages of TDD.	BTL1	Remember
19.	**Give** the GOF design patterns.	BTL2	Understand
20.	**Illustrate** the benefits of bridge pattern.	BTL3	Apply
PART – B			
1.	**What** is GRASP? **Describe** the design patterns and principles used in it.(13)	BTL1	Remember
2.	**(i). Explain the** design principles in object modeling.(5) (ii).**Explain** in detail the GRASP method for designing objects with example.(8)	BTL4	Analyze
3.	**Demonstrate** in detail about the various categories of Design pattern.(13)	BTL3	Apply
4.	**(i).Generalize** your idea on **C**ontroller pattern with example (7) (ii).Generalize the concepts of Façade, session and bloated controller.(6)	BTL6	Create
5.	**Explain** in detail about GOF Design pattern. (13)	BTL5	Evaluate
6.	**(i).Give** an account on Factory method. (8) (ii).Discuss the topic on coupling and mention its types.(5)	BTL 2	Understand
7.	**Identify and describe** the patterns that can be used for the following. Also identify which a) To provide an interface for crating families of objects without specifying classes.(7) b) To ensure that a class has only one instance and provide a global point of access to it. (6)	BTL1	Remember
8.	**Discuss** in detail about mapping design to code concepts in detail.(13)	BTL2	Understand
9.	**(i).Illustrate** your views about Structural patterns.(13) (ii).What is Visibility? **Classify** the ways of visibility and explain it.(13)	BTL3	Apply
10.	**Examine** the following GRASP patterns: (i)Creator, (3) (ii).Information Expert, (4) (iii)Low coupling, (3) (iv).High cohesion. (3)		Remember
11.	**(i).Examine** in detail about Behavioral pattern. (7) (ii).**Describe** the concepts of Singleton Pattern. (6)		Remember

12.	Discuss the topic on (i).Adapter Pattern (4) (ii). Observer Pattern (5) (ii).Factory Pattern (4)	BTL2	Understand
13.	**Explain** about the implementation model (Mapping design to code) and give the NextGen POS program solution. (13)	BTL4	Analyze
14.	**Analyze** the Strategy pattern in detail. (13)	BTL4	Analyze
PART-C			
1.	**Analyze** and categories of Design pattern. Analyze the creational pattern by using with Maze game. (15)	BTL4	Analyze
2.	**Generalize** the design issues in implementation of Singleton pattern. (15)	BTL6	Create
3.	**Create** the observer pattern by using your own application and explain the sections of the design pattern. (15)	BTL6	Create
4.	**Explain** the GRASP pattern(Creator,Infromation Expert, Low coupling) by using Monopoly game.(15)	BTL5	Evaluate
UNIT V TESTING			
SYLLABUS: Object Oriented Methodologies – Software Quality Assurance – Impact of object orientation on Testing – Develop Test Cases and Test Plans			
1.	**List** out the Myer's debugging principles.	BTL1	Remember
2.	**Describe** the term SQA.	BTL2	Understand
3.	**Give** the main tools of Quality Assurance.	BTL2	Understand
4.	**Illustrate** the impact object orientation in testing.	BTL3	Apply
5.	**Define** the term Object interoperability.	BTL1	Remember
6.	**Summarize** the basic activities are performed in using debugging tools.	BTL5	Evaluate
7.	**Define** test plan? What are its components?	BTL1	Remember
8.	Why quality assurance is needed? **Summarize** it.	BTL5	Evaluate
9.	**Give** the Booch methodology digarams.	BTL2	Understand
10.	**Define** block box testing?	BTL1	Remember
11.	**Illustrate** the different kinds of errors you might encounter when you run your program?	BTL3	Apply
12.	**List** out the Testing strategies.	BTL1	Remember
13.	**Analyze** as to which object oriented methodology is well suited for (i). Design (ii). Analysis (iii).Full life cycle (iv). Real time systems.	BTL4	Analyze
14.	**Analyze** the Booch system development process.	BTL4	Analyze
15.	What are the steps needed to create a test plan? **Illustrate** it.	BTL3	Apply
16.	**Generalize** the concepts of implication of Inheritance.	BTL6	Create
17.	**Give** the four phases of object oriented modeling Techniques(OMT).	BTL2	Understand
18.	**Comparison** between patterns and frameworks.	BTL4	Analyze
19.	**Generalize the impact of an object orientation on testing.**	BTL6	Create
20.	What is test cases? **List** the guidelines for developing quality assurance test cases.	BTL1	Remember
PART – B			
1.	**Explain** Booch's methodology of object oriented analysis and design.(13)	BTL5	Evaluate
2.	**Describe** the significance of object orientation testing.(13)	BTL2	Understand

3.	**Explain** Myer's debugging principles.(13)	BTL4	Analyze
4.	**Describe** the different types of testing strategies.(13)	BTL2	Understand
5	(i).**List** the guidelines for developing quality assurance test cases.(7) (ii).What are statement and branch testing coverage in object oriented testing? Explain. (6)	BTL1	Remember
6.	**Illustrate** the concepts of Continuous testing. (13)	BTL3	Apply
7.	(i). Sketch the guidelines for developing quality assurance Test cases described by Freedman and Thomas adapted for the UA. (7) (ii).What are the steps involved to make the testing successful? **Illustrate** it.(6)	BTL3	Apply
8.	**Define** test plan? (3) **List** out the steps are followed in developing a test plan?(10)	BTL1	Remember
9.	. **Describe** the following: (i) Guideline for developing a user satisfaction test. (3) ii) White box testing (4) iii) Black box testing (4) iv) Debugging (2)	BTL1	Remember
10.	**Generalize** the different testing strategies. How to develop test plans guided by Thomas. (13)	BTL6	Create
11.	Why do we follow standards for testing any particularly QualityAssurance(QA)? (13)	BTL1	Remember
12.	(i).Why is a Unified approach to software development necessary? **Discuss** it. (7) **(ii).Discuss** in detail the Unified approach to software development with a neat diagram. (6)	BTL2	Understand
13.	(i).**Compare** and Contrast the object oriented methodology of Booch, Rumbaugh and Jacobson. (7) (ii).**Explain** about a Unified approach to software development. (6)	BTL 4	Analyze
14.	(i).**Explain** the diagrams associated with Booch Methodology. (7) (ii).**Analyze** and highlight the features of Jacobson methodologies.(6)	BTL 4	Analyze
PART-C			
1.	**Explain** the analysis and the methodology by Booch, Shaler/Mellor, Coad/Yourdon, Rambausch compared to booch briefly. In which aspect Booch analysis is successful.(15)	BTL5	Evaluate
2.	**Analyze** the Unit, Integration, and system testing for currency converter application.(15)	BTL 4	Analyze
3.	**Develop** the test cases for the via Net bank ATM System.(15)	BTL 6	Create
4.	**Develop** the various testing strategies for Software quality assurance.(15)	BTL 6	Create