**TYBCS**

**Semester – I**

**Object Oriented Software Engineering**

**Question Bank**

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**Chapter 1:- Object Oriented Concepts and Principles**

1. What is object orientation?
2. How object oriented system developments is carried out?
3. Write a note on Object Oriented Analysis?
4. Write a note on Object Oriented Design?
5. How the objects & classes are identified in an object model?
6. Explain characteristics of object.
7. Write a note on inheritance & polymorphism.

**Chapter 2:- Introduction to UML**

1. What are goals of UML?
2. Discuss the advantages of using UML.
3. Discuss different views supported by UML and diagrams used to model these views.
4. In what sense UML is unified? How does modeling help in software development?
5. What are the different types of relationships supported in UML?
6. What is the significance of Packages?
7. Explain the Building Blocks of UML.

**Chapter 3:- Basic Structural Modeling**

1. What is Qualifier? Explain with suitable example.
2. Differentiate between links and associations.
3. ‘A state is an abstraction of attribute values and links of an objects ‘Comment.
4. Explain generalization by giving suitable example.
5. How the classes are identified in an object model?
6. Explain the significance of role names in object diagrams.
7. What is a model? What are the essential characteristics of a model?
8. How multiplicity is handled in an object model?
9. Discuss the significance of coupling and cohesion.
10. Explain the syntax of an attribute in the UML.
11. Explain the process of forward engineering for the use case diagram.

**Chapter 4:- Advanced Structural Modeling**

1. What are abstract classes? What is their significance?
2. What is multiple inheritance? How it can it be shown using generalization?
3. Explain recursive aggregates with suitable example.
4. Differentiate between aggregation and association.
5. Differentiate between aggregation and generalization.
6. What are candidate keys?
7. How constraints are handled in behavioral modeling?
8. what is meta data?
9. What does the object diagrams signify?

**Chapter 5:-Basic Behavioral Modeling**

1. What are components of use case model?
2. Explain ‘Extends’ relationship with suitable example.
3. Describe the components of activity diagram.
4. Describe the components and uses of interaction diagrams.
5. Explain ‘uses’ and ‘communicates’ relationship with suitable example.
6. How are ‘start’ and ‘end’ states depicted in dynamic model? What do they signify?
7. ‘State diagrams depict the life cycle of an object’ comment
8. What are activities and actions in dynamic model?

**Chapter 6:- Object Oriented Design**

1. What is an interactive development?
2. How are iterative development and Unified Process related?
3. Explain the role played by use cases in an object oriented analysis.
4. Write a note on Inception and requirement understanding.
5. How a use case model helps in an analysis phase from inception to Elaboration?

**Chapter 7:- Object Oriented Design**

1. What are generic components of OO design model?
2. Write notes on:
   1. Booch Method.
   2. The coad and Yourdan method.
   3. Jacobson method.
   4. Raumbaugh method.
3. Explain the system design process from object oriented point of view.
4. Discuss the importance of system design.
5. Discuss in brief the different steps used inn constructing object modelin analysis phase of OMT technology.
6. Discuss the advantage of Object Oriented Methodology.
7. Discuss different methods of managing stored data.
8. How subsystems can be organized?
9. Write a note on object design process.

**Chapter 8:- Architectural Modeling**

1. What are Components?
2. How Components are organized?
3. Explain the usage of component diagrams with suitable examples?
4. Explain the need for deployment diagrams with suitable examples.
5. What are collaboration diagrams?
6. Describe the components of sequence diagram.

**Chapter 9:- Testing**

1. What is testing and debugging?
2. Explain the Testing Life Cycle.
3. Write a note on Object Oriented testing strategies?
4. Write a note on following:
   1. Black Box and White Box Testing
   2. Alpha and Beta Testing
   3. Stress Testing
   4. Regression Testing
   5. Performance Testing
   6. Acceptance Testing
5. How the test cases are designed for OO software?
6. Write a note on Inter Class Test case Design.
7. Write a short note on Integration Testing.
8. Explain different types of testing.

**Chapter 10:- Case Studies**

1. Prepare an object diagram for a graphical document editor that supports grouping, which is a concept used in variety of graphical editors. Assume that a document is composed of several sheets. Each sheet contains drawing objects, including text, geometrical objects, possibly including other groups A group must contain at least two drawing objects. A drawing object can be a direct member of at most one group. Geometrical objects include circles, ellipses, rectangles, lines and squares.
2. Prepare an object model to describe undirected graph consists of a set of vertices and a set of edges. Edges cannot pair of vertices your model should capture only the structure of the graphs that is connectivity, and need not be concerned with geometrical details such as location of vertices or lengths of edges.
3. Prepare an object and state transition diagrams for priority queues or heaps storing numbers, where in the operations of the shift up and shift down are possible.
4. People use elevators to move from one floor to another. Discuss different scenarios and prepare a sequence diagram showing different events exchanges between objects.
5. A cassette player has on/off, stop/eject, play, rewind and fast forward buttons. The first two buttons allow toggling between the two states. Prepare a list of states, events and activities and draw the state diagram.
6. A system for distributing electronic mail over the network is needed. Each user of the system should be able to send mail from any computer. All the received mails are stored at a central server. The user can receive mail at any computer. One or two machines with larger data space also allows saving messages in files. There should be provisions for forwarding mail and sending mail to several users at once using address list. Draw the component and deployment diagram.
7. Prepare a class diagram giving attributes and operations and state transition diagram for both stack and queue implemented using linked list.
8. An employee of a company stays in a flat or a bungalow. It may be owned by company employee or may be rented by either the company or the employee. The owners who let houses to company may themselves be company employees. Tenant in a flat has to pay society charges apart from rent while bungalow tenant has to pay additional water and electricity charges. Draw an object diagram for the above description.
9. Prepare a data flow diagram for a system for processing results of students. Student fills in the examination form giving details about subject and centre etc., which is an input to the system. Student pays examination fees and given fee receipt and admit card. Examination is conducted at various centers. Centers provide the absentee report. The evaluation department provides marks of students in each subject. The mark sheet and the merit list are the output of the system.
10. Library system of a university is to be computerized. The members can be students, university departments and colleges affiliated to the university. The information about available books should be available with all these members. The student has to return book within 15 days and is charged fine for the delay.

Number of books that can be issued to him are restricted to five. If the books are not available or copies are not available, the member can issue demand requests which are used for procurement of books. Dealers send list of new books, which are categorized according to subject and subject wise list is then sent to respective department for approval. Approved books are then procured. Model the system using case approach. Draw sequence diagram for use cases and draw the class diagram. Also give component and deployment diagram.

1. Draw data flow diagram for preparing grade sheet of student of a course and finding four scholars to be awarded scholarships. Input to the system is and objective test paper.
2. Prepare object diagram showing at least 6 relationship among the following object classes. Show multiplicity and add at least 65 attributes. File system, File directory, ASCII file, Disk, ordinary File, drive, track.
3. People use elevators to move from one floor to another. Discuss different scenarios and prepare a sequence diagram showing different events and event exchanges between objects.
4. Consider an Automatic water level control system, which is used for controlling the water flow. Identify the different states and draw a state transition diagram.
5. Prepare a class diagram giving attributes and operations for both stack and gueue implementation using linked list.
6. Draw activity diagram for considering different scenarios for ice-cream preparing machine where you can get different flavors.
7. Draw class and use case diagram for library management system.
8. Draw a class diagram for “MOBILE COMPANY”. They have different distributors at different areas. Different facilities are provided such as incoming calls free, sending E-mails, songs can be seen etc.
9. Draw state chart and sequence diagram for a Telephone line.
10. Draw component and Deployment diagram for E-mail system.
11. Consider an ATM for a banking system. Identify all the classes and use cases and show class and use case diagram.
12. Draw a sequence diagram for search Engine (google.com, yahoo.com) for searching a specified text, site or document over an Internet. Draw a component diagram for maintaining a Customer relationship Management in an organization.
13. Draw class and use case diagram for “Point-of-Sale” Terminal for the sale and payment of the customer.
14. Draw a class diagram for “Tata Sky” which want to launch the DTH system. Number of distribution have been appointed. It has facilities like a complete Glide, Menu driven, sports and movies scanned and displayed on the screen, Audio Channels etc.
15. Draw state diagram and activity diagram for considering different scenarios for Ice- cream Vending machine.
16. Draw a component and deployment for ‘Placement Consultancy’.
17. Draw a class diagram for ‘University Examination System’. University has different courses for which both internal and external examinations are conducted and mark list is generated for the same.
18. Consider a ‘Fixed Deposit System’. The system allows customers to perform various transactions. Discuss different scenarios and draw a sequence diagram and object diagram for the same.
19. Draw a class and use case diagram for ‘E-shopping system’.
20. Draw a collaboration diagram for ‘Student Admission System’.
21. Consider the case where Mr. X gives a telephonic call to Mr. Y. Discuss the different scenarios and draw sequence diagram for the same.
22. Draw a class diagram for ‘Hospital Management System’.
23. Prepare use case diagram for ‘Bus Reservation System’.
24. Draw deployment diagram for building access management system.
25. Draw a collaboration diagram for ‘Enrolling Students in the Seminar’ .
26. Prepare an object diagram showing at least six relationships among the following object classes. Include association, aggregation and generalization. Show multiplicity and add at least one attribute to each class, card, deck, hand, collection of cards, discard file, draw file.
27. Draw a deployment diagram for a web page.
28. Draw a class diagram for ‘PLACEMENT Agency’.
29. Prepare use case diagram for ‘Library Management System’.
30. Draw a collaboration diagram for ‘E-purchasing’.
31. Draw state diagram for tea/coffee making machine.
32. Identify the different states of Food Processor along with juicer and prepare state Transition diagram and activity diagram for the functioning of Food Processor.
33. Draw a collaboration diagram for Railway reservation system. The passenger is required to fill a reservation form giving details of his journey. The counter clerk ensures whether the place is available and prepares a booking statement.