TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division
2079 Chaitra

Exam.		Regular	
Level	BE	Full Marks	80
Programme	BEI	Pass Marks	32
Year / Part	III / II	Time	3 hrs.

Subject: - Object Oriented Software Engineering (CT 659)

✓ Candidates are required to give their answers in their own words as far as practicable.
✓ Attempt **All** questions.
✓ The figures in the margin indicate **Full Marks**.
✓ Assume suitable data if necessary.

1. a) Explain the Spiral Life cycle Model with its advantages and disadvantages. [6]

   b) Explain requirement engineering process in software development. [6]

2. Explain how OOA, OOD and OOP are related. How can we identify objects in a system? Explain with appropriate examples. [3+5]

3. What are the elements of the Conceptual Model of UML? Explain. [4]

4. Assume following scenario and draw use case diagram, Activity diagram and sequence diagram. [5+5+5]

   Customer request for the Menu. Menu is provided to the customer from the database of food ordering system. Customer select the dishes from the list. Customer can add the dishes if required. Manager confirm the order and send invoice to customer. Customer pays the bill that is generated from the system and manager process the order for delivery.

5. Briefly explain Iterative development in OOSE. What are the different disciplines of Unified Process? Explain. [4+4]

6. Define the basic component of Object-oriented design model. Explain about system design process with its basic activities involved in the object-oriented design. [4+4]

7. Why testing is necessary in system development? Differentiate between thread –based testing and use-based testing. [3+4]

8. What are the factors to be considered while selecting a project? List any two examples of potential risk areas involved in OOSE projects and how can we manage them? [2+4]

9. What are the steps to generate multiple class random test curves? Explain. [4]

10. Write short notes on: [2×4]

    a) Class relationships
    b) Multiple class testing

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1. a) Elaborate the meaning and need of Software Engineering? How do you differentiate Classical and Modified Waterfall Lifecycle model? [2+2]

   b) What is Requirement Engineering? Differentiate between Functional and Non-Functional Requirements. [1+3]

2. a) What are the differences between function/data methods and object-oriented methods for system development? [3]

   b) How can we identify potential classes and object of an object model? Explain with an example. [5]

3. a) Prepare a Use Case diagram for Online Movie Ticket booking System with necessary assumptions. [6]

   b) "The UML is a language for Visualizing, Specifying, Constructing and Documenting the artifacts of a software-intensive system." Elaborate this statement. [4]

4. Draw a class diagram for the Flight Management System with necessary assumptions. [6]

5. Briefly explain Iterative development in OOSE. What are the different phases of Unified Process (UP)? Explain. [4+4]

6. a) Briefly explain partitioning the analysis model in system design process. [4]

   b) Explain the different layers of objected-oriented design pyramid. [4]

7. a) What are the basic OO testing strategies? [4]

   b) List out the overall approaches for designing Object Oriented Test Case. [4]

8. What are the factors to be considered while selecting a project? How can we calculate the effort and duration of a project using COCOMO model? Explain with an example of your own. [2+6]

9. Write short note on :

       i) Agile Software Development
       ii) Software Quality Assurance
       iii) Class Relationships
       iv) Multiple class testing [4×4]

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2080 Ashwin

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Programme	BEI	**Pass Marks**	32
Year / Part	III / II	**Time**	3 hrs.

Subject: - Object Oriented Software Engineering *(CT 659)*

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1. Explain prototype process model with its pros and con's. Explain the requirement engineering process used in software development. [5+5]

2. a) Differentiate between function/data methods and object-oriented methods for system development. [4]

   b) How can we identify potential classes and object of an object model? Explain with an example. [6]

3. Explain conceptual model of UML. [4]

4. Briefly explain object design process in OOSE. [5]

5. Explain the Unified process with its phases. Use suitable diagrams to elaborate you answer. [8]

6. a) Draw the use case diagram for "Car Rental System". [5]

   b) Draw the class diagram for "Library Management system". [5]

7. What are the factors to be considered while selecting the first project in OOSE? Explain. How risk management process is carried out in object oriented software engineering? Explain. [4+4]

8. How can you differentiate between Software Verification and Software Validation? Explain the different strategies for Integration Testing of Object-oriented systems. [2+4]

9. Calculate effort of a project, which is an organic project having a size of 48 KDLOC using COCOMO model. [3]

10. Write short notes on: [4×4]

    a) Software Quality Assurance
    b) Class Relationships
    c) Inheritance and polymorphism
    d) Software metrics

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1. What are the major activities of requirement engineering process? Explain functional and Non functional requirements with proper example of each. [4+4]

2. Define concept of OOAD. Explain different phases of Unified Process (UP). [2+6]

3. a) What are the major concepts of object orientation? What are the benefits of object orientation? [2+4]

   b) Differentiate between structured and object oriented approach of system design. [4]

4. What are the basic building blocks of UML? What are the various types of UML diagrams drawn to handle static and dynamic component of software under development? [7]

5. What are the major features of object based DBMS? How object based DBMS differs from RDBMS? [2+4]

6. Is there any linkage between system design and object design? Explain. What are the major components of object oriented design model? [2+4]

7. For the case study given below identify classes, attributes, methods, relationships between classes and draw class case diagram. [7]

   ABC bank has many branches, each of which has an address and branch number. Each branch may have upto three extension counters. A customer opens accounts at a branch. Each account is uniquely identified by an account number; it has a balance and a credit overdraft limit. There are many types of accounts like a saving account. a current account and a credit card account which has an expiry date and can have secondary cards attached to it. It is possible to have a joint account (e.g. for a husband and wife). Each type of account has a particular interest rate, a monthly fee and a specific set of privileges (e.g. ability to write cheques, insurance for purchase etc. ABC bank is divided into divisions and subdivisions (such as Risk Management, Planning, Investments and Consumer), the branches are considered subdivisions of the consumer division. Each division has a manager and a set of other employees. 'Each customer is assigned a particular employee as his or her 'personal banker'.

8. Explain include and extends relationships in use case diagram. [2+5]
   For the case study given below identify all the actors, use cases and relationships also draw use case diagram.
   Software version of Monopoly game
   This will run as a simulation; the user will configure the game (i.e. indicate the number of players etc), start the simulation and let the game run to its conclusion. A trace log will be created to record each move a player makes. The simulation should include the rules of the game and keep track of the amounts each player earns/loses throughout the game. The simulation should allow the user to select various strategies to be employed by the players in the game.

9. How Object Oriented based software Testing differs from conventional type of software testing? Explain how unit testing can be conducted in context of Object Oriented system development. [2+5]

10. What could be the possible risks in software development projects? Explain Risk Management process with proper flow diagram. [2+4]

11. Write short notes on: [2×4]

    a) CRC in object modeling
    b) Object Oriented design metrics

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