

END TERM EXAMINATION

FOURTH SEMESTER [MCA] MAY JUNE- 2018

Paper Code: MCA-208

Subject: Object Oriented Analysis and Design

Time: 3 Hours

Maximum Marks: 75

Note: Attempt five questions in all including Q.No1 which is compulsory. Select one question from each unit.

- Q1 Answer the following:- (2.5x10=25)
- (a) What is modeling? Explain how modeling can play an important role in designing a system.
 - (b) What is the difference between include and extends. Explain with example.
 - (c) Define data types and abstract data types.
 - (d) What are the structural things in UML? Explain with suitable examples.
 - (e) Describe attributes and operations with respect to an object with relevant example.
 - (f) Distinguish between analysis object model & Dynamic model.
 - (g) What are behavioral things in UML? Explain with suitable examples.
 - (h) What is the significance of rounds in the spiral model?
 - (i) How do you identify the Actors in particular system? Give example.
 - (j) What is a use case model? Why is the use case modeling useful in analysis?

UNIT-I

- Q2
- (a) What is RUP? Explain the various phases of RUP along with their outcomes? (6)
 - (b) Explain the following:- (6.5)
 - i. Object modeling technique
 - ii. HOOD and OMT
- Q3
- (a) Establish the relationships between roles, activities and artifacts in RUP. (6.5)
 - (b) Differentiate between the following:- (6)
 - i. Aggregation and generalization
 - ii. Aggregation and composition
 - iii. Association and dependency

UNIT-II

- Q4
- The system of Automatic prospectus purchasing machine controls the process of purchase of prospectus forms. The machine can be used by several customers at the same time and each customer can purchase and type and number of prospectus forms at a particular time. This system should enable the customer to enter the prospectus type (as displayed on screen) and the number of prospectus to be purchased. The system should also enquire the customer about the mode of payment. According to the mode of payment (cash/credit card) the required verifications must be made before the final delivery of form to the customer. The system must also prompt an alarm to the operator when the number of prospectus reaches the least optimum level.

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The operator should also periodically collect cash from the machine to ensure that no theft or robbery takes place. It should also start and stop the machine and should load the prospectus at the end of each day. In case of any fraud in case of credit card or fake money, no form will be delivered and an alarm will be generated. If customer has inserted few amounts then a beep should be produced once and if no amount is deposited or less amount is deposited then no form will be delivered and the money deposited will be retained by the machine permanently.

The machine should also provide a receipt to the customer after the completion of transaction smoothly. The machine should also enables the operator to generate daily reports of total sales of prospectus of different types, amount received in cash and amount received via credit card.

- i. Identify entity, Interface and control objects. (4)
- ii. What are the uses cases that can be identified in the system? (3)
- iii. Identify various associations between objects and construct complete object oriented solution. (5.5)

Q5 (a) Consider the Hospital Management System with the following requirements:

- The system should handle the in-patient and out-patient information through the receptionist.
- Doctors can view the patient history and give their prescriptions
- There should be an additional system to provide the desired information. Identify entity, interface and control classes along their relationships. (6)

(b) Take an example of Airways company that has a booking officer in different cities of India. The customer can make reservations, cancellations, and rescheduling in the booking office. The company wants to design an online system which connect the headquarter database with all the branches so that the information is available instantaneously. **Construct an analysis model of the above system.** (6.5)

UNIT-III

Q6 (a) Take an example of Airways Company that has a booking officer in different cities of India. The customer can make reservations, cancellations, and rescheduling in the booking office. The company wants to design an online system which connect the headquarter database with all the branches so that the information is available instantaneously. **Write the use case description of "making reservations". Construct a sequence and collaboration diagram.** (8)

(b) What is the purpose of centralized structure in a sequence diagram? Differentiate between centralized and decentralized structures. (4.5)

Q7 The ABC banks want you to write a software application that runs its ATMs. The bank has customers, and a customer has one or more accounts in the bank. Consider the example of withdrawing cash from an ATM machine. Construct the following: (6+6.5)

- (i) scenario diagram
- (ii) scenario matrix and test case matrix

- Q8 (a) Differentiate between activity and state chart diagram with example and symbols. (6)
- (b) Consider an example of stack where two operations push and pop are allowed. There are four events namely: new, push, pop and destroy with understood meaning. Identify the states and draw their state chart diagram. (6.5)

- Q9 (a) What is UML? Explain the building blocks of UML. (6)
- (b) Construct an activity diagram for automatic water controller system. (6.5)
