

**MASTER OF COMPUTER
APPLICATIONS
(MCA) (REVISED)**

**Term-End Examination
December, 2025**

**MCS-032 : OBJECT ORIENTED ANALYSIS AND
DESIGN**

Time : 3 Hours

Maximum Marks : 100

Note : *Question No. 1 is compulsory. Attempt any **three** questions from the rest.*

1. (a) Read the situation given below :

"An organization wants to automate its recruitment process. The system should accept the online applications for various posts offered by various departments of the organization. The system is also desired to verify the eligibility criteria and offer interview

letter and allocate the venue and schedule for the interview to the applicants."

Perform the following for this system :

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- (i) Draw class diagram.
- (ii) Draw object diagram.
- (iii) Draw usecase diagram.
- (iv) Draw dataflow diagram.

Note : Make necessary assumptions, wherever required.

- (b) Explain the utility of collaboration diagram with the help of an example. 5
- (c) Explain the use of class diagram with the help of an example. 5
- (d) Expand the abbreviation 'UML'. Is UML a language ? If yes, then identify the phase of Object Oriented Modeling (OOM) to which it belongs. Justify your answer. 5
- (e) Briefly discuss various notations used in state chart diagram and usecase diagram. 5

2. (a) List the models used for the description of any system by using OOM technique. Among the listed models which of the model is most important ? Justify. Also, list the diagrams related to each model. 8
- (b) What is inheritance ? Explain how inheritance is adjusted with the help of an example. 7
- (c) What do you understand by the term 'Association' in the UML diagram ? Briefly describe the various types of associations available in UML. 5
3. (a) What is concurrency ? Explain the issues involved in identifying the concurrency in a system with suitable example. 5
- (b) Draw state diagram for online reservation of Railway ticket. 5
- (c) How does a good software design differ from a bad software design ? You are required to critically comment on the role of UML models in software designing. 5

- (d) Draw usecase diagram for ATM cash withdrawal. 5
4. Differentiate between the following : $5 \times 4 = 20$
- (a) Structural diagram and Behavioral diagram
 - (b) Dynamic modeling and Functional modeling
 - (c) Generalization and Specialization
 - (d) Aggregation and Generalization
 - (e) Relational databases and Object Oriented databases
5. Write short notes on the following : $5 \times 4 = 20$
- (a) Object Oriented Modeling (OOM) and its benefits
 - (b) Encapsulation and its benefits
 - (c) Multiple inheritance
 - (d) Mapping Associations to tables
 - (e) Design optimization techniques

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