

Dr. Babasaheb Ambedkar Open University
Term End Examination January – 2026

Course	: MCA	Date	: 21/02/2026
Subject Code	: MCA-301	Time	: 03:00pm to 05:15pm
Subject Name	: Object Oriented Unified Modeling	Duration	: 02.15 Hours
		Max. Marks	: 70

Section A

Answer the following (Attempt any three) (30)

1. What is Object Oriented Analysis (OOA)? Explain the difference between analysis and design in object-oriented development.
2. Define Web Engineering. Explain its characteristics, objectives, and challenges in detail.
3. Explain Unified Modeling Language (UML) in detail. Discuss its goals, features, and importance in software development.
4. Explain the Collaboration Diagram in detail. Discuss its notations and role in representing object interactions.
5. Explain different UML diagrams and classify them into structural and behavioral diagrams.

Section B

Answer the following (Attempt any four) (20)

1. Explain cardinality and modality in object-oriented modelling with suitable examples.
2. What are design patterns? Explain their role in improving software reusability.
3. What is usability in web design? Explain its key components.
4. Explain different UML relationships used in modelling.
5. Explain the components of a sequence diagram.
6. What is a timing diagram? Where is it used in UML modelling?

Section C

Part – A (Multiple Choice Questions) (10)

- 1 Domain Analysis mainly helps in:
A Increasing coding speed only B Systematic software reuse
C Reducing hardware cost D Eliminating testing
- 2 Which model represents the static structure of an OO system?
A Object-relationship model B Object-behaviour model
C State model D Interaction model
- 3 Which concept ensures a module performs a single task?
A Coupling B Inheritance
C Cohesion D Polymorphism
- 4 Design patterns primarily promote:
A Code duplication B Hardware optimization
C Data redundancy D Software reuse
- 5 Which is a major challenge in web engineering?
A Low user interaction B Rapid technology change
C No maintenance required D Fixed requirements

- 6 Requirement analysis in web applications mainly identifies:
A Server configuration B Programming language
C User needs and constraints D Network topology
- 7 Architectural design of a web application mainly deals with:
A Page layout B System structure
C Font styles D Color schemes
- 8 Accessibility in web design ensures:
A Use by people with disabilities B Fast internet
C Browser compatibility only D High graphics quality
- 9 Which UML element represents a real-world entity?
A Relationship B Package
C Diagram D Class
- 10 Association in UML represents:
A Inheritance B Dependency
C Structural relationship D Message flow

Part – B (Do as Directed)

(10)

State whether the following statements are true or false

- 1 Domain analysis is performed only after coding is completed.
- 2 Interaction overview diagrams are unrelated to activity diagrams.
- 3 Sequence diagrams show interaction between objects in chronological order.
- 4 Collaboration diagrams focus more on object organization than time sequence.
- 5 Structural diagrams represent the static aspects of a system.
- 6 A class in UML cannot have attributes and operations together.
- 7 UML replaces programming languages in software development.
- 8 Navigation design defines how users move between web pages.
- 9 Requirement analysis identifies functional and non-functional needs of a web application.
- 10 Web applications usually have static requirements that rarely change.
