

Dr. BabasahebAmbedkar Open University
Term End Examination February – 2026

Course	: BCA	Date	: 17-Feb-2026
Subject Code	: BCAR-502	Time	: 11:30am to 01:45pm
Subject Name	: Object Oriented Analysis and Design	Duration	: 02.15 Hours
		Max. Marks	: 70

Section A

Answer the following (Attempt any three) (30)

1. List and explain features of OOP.
2. Discuss Object Behavior Model in detail.
3. Explain the different roles and responsibilities of members in a Web Engineering team.
4. Explain Content Architecture and Web Application (WebApp) Architecture in detail.
5. Describe the nine diagrams of UML and explain their purpose in system modeling.

Section B

Answer the following (Attempt any four) (20)

1. What are generic components of the Object Oriented Analysis Model?
2. Draw and explain the Object-Oriented Design (OOD) pyramid and describe its different layers.
3. Write a note on the WebE Design Pyramid.
4. What is Unified Modelling Language (UML)?
5. What are different UML Tools? Explain in brief.
6. List and explain terminology used in Interaction Diagrams.

Section C

Part – A (Multiple Choice Questions) (10)

Q-1 In Object Oriented Programming, a class is best described as:

- | | |
|------------------------------|-------------------------------------|
| A) An instance of an object | B) A blueprint for creating objects |
| C) A method inside an object | D) A database table |

Q-2 Encapsulation mainly refers to:

- | | |
|--|--|
| A) Inheriting properties from parent class | B) Data and methods into a single unit |
| C) Hiding system requirements | D) Replacing functions |

Q-3 Inheritance establishes which type of relationship?

- | | |
|----------|-----------|
| A) Has-a | B) Uses-a |
| C) Is-a | D) Owns-a |

Q-4 Domain analysis is primarily performed to:

- | | |
|---------------------------------|-------------------------------------|
| A) Reduce compilation errors | B) Enable systematic software reuse |
| C) Improve hardware performance | D) Test software modules |

Q-5 A CRC card contains information about:

- A) Database tables
- B) Class name, responsibilities, and collaborators
- C) Hardware components
- D) Programming syntax

Q-6 Cardinality in object modelling specifies:

- A) The speed of execution
- B) Number of operations in a class
- C) No. of object occurrences in a relationship
- D) Type of inheritance

Q-7 Which UML diagram emphasizes the sequence of message exchange over time?

- A) Collaboration Diagram
- B) Sequence Diagram
- C) Class Diagram
- D) State Diagram

Q-8 In a state diagram, a guard condition must evaluate to:

- A) Integer value
- B) Boolean value
- C) String value
- D) Floating value

Q-9 In Object Oriented Design, cohesion refers to:

- A) Dependency between modules
- B) Strength of relationship among modules
- C) Performing a single well-defined task
- D) Interface complexity

Q-10 In layered architecture, the presentation layer is mainly responsible for:

- A) Database storage
- B) Processing algorithms
- C) User interface handling
- D) Memory management

Part – B (State whether the following statements are true or false)

(10)

- 1 Abstraction focuses only on irrelevant details of an object.
- 2 A subclass can override the methods of its superclass.
- 3 Domain analysis is usually tied to a single software project only.
- 4 Collaborations in CRC modelling identify relationships between classes.
- 5 Modality indicates whether participation in a relationship is mandatory or optional.
- 6 In a one-to-many relationship, each occurrence on both sides must be exactly one.
- 7 Interaction diagrams describe how objects collaborate in a use case.
- 8 An action in a state transition is interruptible.
- 9 Low coupling and high cohesion are desirable in modular design.
- 10 In client/server subsystem communication, services flow in only one direction.
