

**DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE Regular/Supplementary Winter Examination – 2024**

**Course:** Computer Engineering **Subject Code & Name:** BTCOC503: Software Engineering **Branch:** Computer Engineering **Semester:** V

**Time:** 3 Hours **Max. Marks:** 80

**Instructions:**

1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Assume suitable data if necessary.

**Q.1 Multiple Choice Questions (1 mark each):**

1. Which of the following is NOT a typical phase in the software development life cycle (SDLC)? (a) Testing (b) Deployment (c) Prototyping (d) Compilation (1)
2. A use case diagram primarily models which aspect of a system? (a) Data flow (b) User interactions (c) Class relationships (d) System architecture (1)
3. What is the primary purpose of requirements elicitation? (a) To design the system (b) To test the system (c) To understand user needs (d) To implement the system (1)
4. Which model depicts the system's static structure? (a) State diagram (b) Activity diagram (c) Class diagram (d) Sequence diagram (1)
5. Which diagram best represents the flow of control within a system? (a) Class diagram (b) Activity diagram (c) Deployment diagram (d) Use case diagram (1)
6. What is the main goal of software requirements validation? (a) To ensure requirements are feasible (b) To gather requirements (c) To design the system (d) To implement the system (1)
7. Which technique is used to manage changing requirements throughout the software development lifecycle? (a) Waterfall model (b) Requirements traceability matrix (c) Prototyping (d) Agile methodology (1)
8. What does UML stand for? (a) Unified Modeling Language (b) Universal Modeling Language (c) User Modeling Language (d) Unified Machine Language (1)
9. A context model typically represents: (a) Internal system details (b) System boundaries and interactions with external entities (c) Data flow within the system (d) Algorithm design (1)
10. Which of the following is a common behavioral modeling technique? (a) Entity-relationship diagram (b) State machine diagram (c) Data flow diagram (d) Class diagram (1)
11. What is the purpose of a software requirements specification document? (a) To design the user interface (b) To describe what the software should do (c) To plan the project schedule (d) To write the code (1)

12. Which model focuses on the interactions between different parts of a system? (a) Structural model (b) Behavioral model (c) Interaction model (d) Context model (1)

**Q.2 (UNIT 1):**

A) Define software requirements engineering. Explain the different types of software requirements with examples. (6) B) Discuss the importance of requirements traceability in software development. How can a requirements traceability matrix help in managing changes? (6)

**Q.3 (UNIT 2):**

A) Elaborate on the process of requirements elicitation. Discuss at least three different elicitation techniques with their advantages and disadvantages. (6) B) Explain the concept of requirements validation. Describe various techniques used to validate software requirements. (6)

**Q.4 (UNIT 3): Solve any TWO of the following:**

A) Explain the concept of system modeling and its importance in software development. (6) B) Describe different types of UML diagrams used for system modeling and their applications. (6) C) Illustrate with examples how context models and interaction models contribute to a comprehensive understanding of a system. (6)

**Q.5 (UNIT 4): Solve any TWO of the following:**

A) Explain the different types of structural models used in software engineering. (6) B) Discuss the importance of behavioral modeling in understanding system dynamics. (6) C) Compare and contrast different behavioral modeling techniques, providing examples of their use. (6)

**Q.6 (UNIT 5): Solve any TWO of the following:**

A) What is model-driven architecture (MDA)? Explain its advantages and disadvantages. (6) B) Discuss the role of model transformation in MDA. (6) C) Describe how model-driven development can improve software development processes. (6)