**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) Requirements Gathering b) Testing c) Deployment d) Prototyping (1)
2. What does UML stand for? a) Unified Modeling Language b) Universal Modeling Language c) Unified Machine Language d) Universal Machine Language (1)
3. A use case diagram primarily models: a) Class relationships b) System behavior c) Data flow d) Database schema (1)
4. Which model emphasizes iterative development and incremental delivery? a) Waterfall b) Spiral c) Agile d) V-model (1)
5. What is the purpose of requirements validation? a) To gather requirements b) To verify requirements are correct and consistent c) To manage requirements d) To elicit requirements (1)
6. A software requirements specification (SRS) document should be: a) Informal and brief b) Formal, unambiguous, and complete c) Only understandable by developers d) Written only after the software is developed (1)
7. Which elicitation technique involves observing users in their natural work environment? a) Interviews b) Surveys c) Prototyping d) Ethnographic studies (1)
8. What is a context diagram used for? a) Showing detailed system interactions b) Defining the system boundary and its interaction with the environment c) Modeling data flow d) Representing class relationships (1)
9. Which diagram is best suited for visualizing the flow of control in a system? a) Class diagram b) State diagram c) Sequence diagram d) Use case diagram (1)
10. Which of the following is a key principle of Agile software development? a) Extensive documentation upfront b) Fixed requirements c) Iterative development d) Waterfall approach (1)
11. What is the primary goal of software requirements management? a) To avoid changes b) To control and track changes to requirements c) To write detailed specifications d) To conduct user interviews (1)

12. Which model is best known for its risk management approach? a) Waterfall b) Spiral c) Agile d) Prototyping (1)

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

A) Explain the different software development life cycle (SDLC) models. Compare and contrast at least three models, highlighting their advantages and disadvantages. (6) B) Describe the importance of requirements engineering in the overall software development process. What are the potential consequences of poor requirements engineering? (6)

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

A) Discuss various requirements elicitation techniques, giving specific examples of when each technique would be most appropriate. (6) B) Explain the process of requirements validation and verification. What are some common techniques used in each process? (6)

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

A) Explain the concept of system modeling and its significance in software development. Discuss the different types of system models. (6) B) Describe different types of UML diagrams (at least three) with examples illustrating their use in software design. (6) C) What are behavioral models? Explain the purpose of state diagrams and activity diagrams in representing system behavior. (6)

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

A) Discuss the importance of software design principles (e.g., modularity, abstraction, information hiding) in creating robust and maintainable software. (6) B) Explain different architectural patterns (e.g., layered, client-server, MVC) and their suitability for different types of applications. (6) C) Describe the process of designing user interfaces, considering usability principles and design guidelines. (6)

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

A) Explain the different testing levels in software development (unit, integration, system, acceptance). (6) B) Discuss various software testing techniques (e.g., black-box, white-box, regression testing) and their applications. (6) C) Describe the importance of software maintenance and the different types of software maintenance activities. (6)