

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Regular/Supplementary Winter Examination – 2024

Course: Computer Engineering

Subject Code & Name: BTCOC501: Software Engineering

Branch: Computer Engineering

Semester: V

Time: 3 Hours Max. Marks: 60

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Instructions:

1. All questions are compulsory.
  2. Figures to the right indicate full marks.
  3. Assume suitable data if necessary.
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Q.1 Choose the correct answer for the following Multiple Choice Questions.

1. Which of the following is the first step in the Software Development Life Cycle (SDLC)? (1)
  - a) Testing
  - b) Design
  - c) Requirement Gathering
  - d) Implementation
- What is the purpose of software engineering? (1)
  - a) To create visually appealing user interfaces
  - b) To develop and maintain large software systems
  - c) To write code as quickly as possible
  - d) To minimize project costs
- Which of the following is a functional requirement? (1)
  - a) The system should be user-friendly.
  - b) The system should be secure.
  - c) The system should allow users to create accounts.
  - d) The system should be reliable.
- Which of the following is a technique used for requirements elicitation? (1)
  - a) Coding
  - b) Testing
  - c) Interviews
  - d) Debugging
- What is the purpose of requirements validation? (1)
  - a) To ensure the code is bug-free
  - b) To ensure the requirements are correct and complete
  - c) To estimate the project timeline
  - d) To allocate resources to the project
- Which of the following is NOT a key activity in requirements management? (1)
  - a) Requirements elicitation

- b) Requirements analysis
- c) Requirements documentation
- d) Code optimization
- Which type of model describes the relationships between different parts of the system? (1)
  - a) Context Model
  - b) Interaction Model
  - c) Structural Model
  - d) Behavioral Model
- Which diagram is used to represent the interactions between actors and the system? (1)
  - a) Class Diagram
  - b) Activity Diagram
  - c) Use Case Diagram
  - d) State Diagram
- Which model focuses on the dynamic aspects of the system's behavior? (1)
  - a) Structural Model
  - b) Behavioral Model
  - c) Context Model
  - d) Data Model
- What is the primary goal of Model-Driven Development (MDD)? (1)
  - a) To improve code readability
  - b) To automate software development from models
  - c) To enhance user interface design
  - d) To simplify software testing
- What is the role of architectural patterns in software design? (1)
  - a) To provide reusable solutions to common architectural problems
  - b) To enforce strict coding standards
  - c) To optimize code for performance
  - d) To create visually appealing user interfaces
- Which of the following is a creational design pattern? (1)
  - a) Observer
  - b) Singleton
  - c) Strategy
  - d) Template Method

Q.2 Solve the following:

- A. Explain the different phases of the Software Development Life Cycle (SDLC) and their significance. (6)
- Describe the essential characteristics of a good Software Requirements Specification (SRS) document. (6)

Q.3 Solve the following:

- A. Explain the different techniques used for requirements elicitation, highlighting their advantages and disadvantages. (6)
- Describe the process of requirements validation and the various techniques used for it. (6)

Q.4 Solve any TWO of the following:

- A. Explain the purpose of Context Models and Interaction Models in system modeling, providing relevant examples. (6)
- Describe the different types of UML diagrams used for Structural Modeling, including class diagrams and component diagrams, with examples. (6)
  - Explain the concept of Behavioral Modeling with suitable examples, including state diagrams and activity diagrams. (6)

Q.5 Solve any TWO of the following:

- A. What are the key considerations when making architectural design decisions? Explain with examples. (6)
- Describe the layered architectural style and its advantages. How does it differ from the client-server architecture? (6)
  - Explain the importance of design patterns in software architecture. Discuss the Model-View-Controller (MVC) architectural pattern with an example. (6)

Q.6 Solve any TWO of the following:

- A. Explain the Factory design pattern with a UML diagram and a code snippet. (6)
- Describe the Observer design pattern and its benefits in decoupling components. Provide a real-world example. (6)
  - Discuss the challenges of implementing design patterns in legacy systems and strategies to overcome them. (6)

Best of Luck!