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

Instructions:

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

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) Requirements Gathering

   d) Deployment

2. What is the primary goal of software engineering? (1)

   a) To write complex code

   b) To develop reliable and maintainable software

   c) To maximize programmer productivity

   d) To create visually appealing interfaces

3. Which of the following is an example of a non-functional requirement? (1)

   a) The system shall allow users to log in with a username and password.

   b) The system shall calculate the total cost of items in a shopping cart.

   c) The system shall generate a report of all sales transactions.

   d) The system shall have a response time of less than 2 seconds.

4. What is the purpose of requirements elicitation? (1)

a) To validate the software design.

b) To gather requirements from stakeholders.

c) To test the software functionality.

d) To manage the software development team.

5. Which validation technique involves a formal review by a team of experts? (1)

a) Prototyping

b) Inspection

c) User Testing

d) Interviewing

6. What is the importance of Requirements Management? (1)

a) To define the project scope

b) To control changes to requirements throughout the project lifecycle

c) To allocate resources

d) To track project progress

7. Which of the following is NOT a type of system model? (1)

a) Context Model

b) Interaction Model

c) Structural Model

d) Coding Model

8. What does a sequence diagram represent? (1)

a) The data flow within a system

b) The interaction between objects in a time-ordered sequence

c) The structure of the system's database

d) The different components of a system

9. Which model focuses on the relationships between different components of the system? (1)

a) Context Model

b) Structural Model

c) Behavioral Model

d) Interaction Model

10. What is the main advantage of Model-Driven Architecture (MDA)? (1)

    a) Increased development speed

    b) Portability and platform independence

    c) Improved code quality

    d) Reduced testing effort

11. What is the role of architectural patterns in software design? (1)

    a) To provide reusable solutions to common design problems at a high level

    b) To enforce strict coding standards

    c) To optimize code for performance

    d) To create visually appealing user interfaces

12. Which of the following is an example of a creational design pattern? (1)

    a) Observer

    b) Strategy

    c) Singleton

    d) Template Method

Q.2 Solve the following:

A) Explain the concept of requirements engineering and its importance in software development. (6)

B) Discuss various requirements elicitation techniques with examples. (6)

Q.3 Solve the following:

A) Describe the different activities involved in the Requirements Validation process. (6)

B) Explain the importance of change management in Requirements Management and discuss techniques for managing requirement changes. (6)

Q.4 Solve any TWO of the following:

A) What is system modeling? Explain its significance in software development. (6)

B) Describe the different types of UML diagrams with their purposes. (6)

C) Explain the concept of behavioral modeling with suitable examples. (6)

Q.5 Solve any TWO of the following:

A) Explain the importance of software architecture in software development. (6)

B) Describe different architectural styles and their suitability for different types of applications. (6)

C) Discuss the role of quality attributes in architectural design. (6)

Q.6 Solve any TWO of the following:

A) What are design patterns? Explain the key elements of a design pattern. (6)

B) Describe the Factory design pattern with a suitable example and explain its benefits. (6)

C) Explain the Observer design pattern and its usage in event-driven systems. (6)

Best of Luck!