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 NOT a characteristic of good software?
   a) Maintainability
   b) Reliability
   c) Efficiency
   d) Obfuscation (1)

2. What is the primary goal of Software Engineering?
   a) To produce high-quality software within budget and time.
   b) To write complex code.
   c) To find and fix bugs.
   d) To create aesthetically pleasing interfaces. (1)

3. Which of the following is a non-functional requirement?
   a) User authentication.
   b) Data storage.
   c) Performance.
   d) Calculation of discounts. (1)

4. Which activity is NOT part of requirements elicitation?
   a) Interviewing stakeholders.
   b) Documenting existing systems.
   c) Code review.
   d) Prototyping. (1)

5. Which of these is a requirement validation technique?
   a) Black-box testing.
   b) Use case modeling.

c) Requirements review.
d) Agile development. (1)

6. Which of the following is a key aspect of Requirements Management?
   a) Version control of requirements documents.
   b) Stakeholder communication.
   c) Change management.
   d) All of the above. (1)

7. What type of model depicts the dependencies of a system on its environment?
   a) Structural model.
   b) Behavioral model.
   c) Context model.
   d) Data model. (1)

8. Which diagram shows interactions between actors and the system?
   a) Class diagram.
   b) Activity diagram.
   c) Use case diagram.
   d) State diagram. (1)

9. Which model illustrates the dynamic aspects of a system over time?
   a) Static model.
   b) Behavioral model.
   c) Context model.
   d) Functional model. (1)

10. What is the core idea behind Model-Driven Architecture (MDA)?
    a) Separation of concerns between platform-independent and platform-specific models.
    b) Using agile methodologies for modeling.
    c) Focusing on user interface design.
    d) Automated testing. (1)

11. Design patterns represent:
    a) Ready-made code snippets to copy and paste.
    b) Solutions to recurring design problems.
    c) Specific algorithms for data processing.
    d) UML diagrams. (1)

12. Which of the following is a creational design pattern?
    a) Observer.
    b) Strategy.
    c) Singleton.
    d) Template Method. (1)

Q.2 Solve the following:

A) Explain the software development life cycle (SDLC) and its various phases. (6)

B) Discuss the different software process models, highlighting their advantages and disadvantages. (6)

Q.3 Solve the following:

A) Explain the importance of requirements elicitation and discuss different techniques used for it. (6)

B) Describe the process of requirements validation and explain the different validation techniques. (6)

Q.4 Solve any TWO of the following:

A) What is system modeling? Explain the different types of system models with examples. (6)

B) Describe how UML diagrams are used for system modeling. Explain different UML diagrams with their purpose. (6)

C) Explain Behavioral Modeling and illustrate it with state diagrams and activity diagrams using suitable examples. (6)

Q.5 Solve any TWO of the following:

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

B) Describe the different architectural styles, such as layered, client-server, and microservices. (6)

C) What are architectural design patterns? Explain with examples of commonly used architectural patterns. (6)

Q.6 Solve any TWO of the following:

A) Describe the Creational design patterns with examples. (6)

B) Explain Structural design patterns and their benefits with suitable examples. (6)

C) Explain Behavioral design patterns and their benefits with suitable examples. (6)

Best of Luck!