

Faculty of Engineering

End Semester Examination May 2025

IT3CO36 Software Engineering

Programme	:	B.Tech.	Branch/Specialisation	:	IT
Duration	:	3 hours	Maximum Marks	:	60

Note: All questions are compulsory. Internal choices, if any, are indicated. Assume suitable data if necessary.
 Notations and symbols have their usual meaning.

Section 1 (Answer all question(s))				Marks	CO	BL
Q1. Which is the most important feature of the spiral model?				1	1	1
<input type="radio"/> Quality management	<input checked="" type="radio"/> Risk management					
<input type="radio"/> Performance management	<input type="radio"/> Efficiency management					
Q2. Which of these software engineering activities are not a part of software processes?				1	1	1
<input type="radio"/> Software validation	<input type="radio"/> Software development					
<input type="radio"/> Software dependency	<input checked="" type="radio"/> Software dependency					
Q3. Which diagrams are used to illustrate the interactions between objects visually?				1	2	1
<input type="radio"/> UML Activity	<input type="radio"/> UML Class					
<input type="radio"/> UML Package	<input checked="" type="radio"/> UML Collaboration					
Q4. What is a Functional Requirement?				1	2	1
<input checked="" type="radio"/> Specifies the tasks the program must complete	<input type="radio"/> Specifies the tasks the program should not complete					
<input type="radio"/> Specifies the tasks the program must not work	<input type="radio"/> All of the mentioned					
Q5. A _____ defines a set of standards for components, including interface standards, usage standards, and deployment standards.				1	3	1
<input type="radio"/> Component Interfaces	<input checked="" type="radio"/> Component Model					
<input type="radio"/> Component Composition	<input type="radio"/> Component-based software engineering					
Q6. Cohesion is a qualitative indication of the degree to which a module				1	3	1
<input type="radio"/> Is connected to other modules and the outside world	<input type="radio"/> Can complete its function in a timely manner					
<input checked="" type="radio"/> Focuses on just one thing	<input type="radio"/> Can be written more compactly					
Q7. Software Testing with real data in the real environment is known as-				1	4	1
<input type="radio"/> Regression Testing	<input checked="" type="radio"/> Beta Testing					
<input type="radio"/> Alpha Testing	<input type="radio"/> none of the mentioned					
Q8. White-Box Testing is done by-				1	4	1
<input type="radio"/> Users	<input checked="" type="radio"/> Software Developers					
<input type="radio"/> Software Architect	<input type="radio"/> All of the mentioned					
Q9. Which of the following is NOT a step in the risk management process?				1	5	1
<input type="radio"/> Risk Monitoring and Control	<input type="radio"/> Risk Identification					
<input type="radio"/> Risk Analysis	<input checked="" type="radio"/> Risk Elimination					

Q10. Which estimation technique relies on the analogy of past projects to estimate the effort required for the current project? 1 5 1

- Effort Distribution
- COCOMO Models
- Function Point Based Metrics
- Project Scheduling

Section 2 (Answer all question(s))

Q11. Define Software Engineering. Explain its significance in modern software development. Marks CO BL
2 1 1

Rubric	Marks
Define Software Engineering.	1
Explain its significance in modern software development.	1

Q12. Discuss the evolution of software engineering highlighting major milestones and paradigm shifts. 3 1 2

Rubric	Marks
software engineering highlighting	1
major milestones and paradigm shifts.	2

Q13. (a) Compare and contrast the Waterfall and Incremental process models, highlighting their advantages and disadvantages. 5 1 1

Rubric	Marks
Waterfall and Incremental process models	2
advantages and disadvantages.	3

(OR)

(b) Explain the Rational Unified Process (RUP) and its various phases. Discuss how RUP differs from traditional waterfall models in software development.

Rubric	Marks
Explain the Rational Unified Process (RUP) and its various phases.	3
Discuss how RUP differs from traditional waterfall models in software development	2

Section 3 (Answer all question(s))

Q14. Explain the importance of requirement analysis in the software development life cycle. Discuss three techniques used in requirement elicitation. Marks CO BL
3 2 3

Rubric	Marks
Explain the importance of requirement analysis in the software development life cycle.	1
Discuss three techniques used in requirement elicitation.	2

Q15. (a) Explain the various types of relationships in Class Based Modelling. Provide examples for each type and discuss their implications in software design and development.

7 2 1

Rubric	Marks
Explain the various types of relationships in Class Based Modelling.	4
Provide examples for each type and discuss their implications in software design and development.	3

(OR)

(b) Discuss the differences between structural and behavioral models in software engineering. Provide examples of each type of model and explain their significance in understanding system requirements and behavior.

Rubric	Marks
Discuss the differences between structural and behavioral models in software engineering.	4
Provide examples of each type of model and explain their significance in understanding system requirements and behavior.	3

Section 4 (Answer all question(s))

Marks CO BL

Q16. Explain the concept of Configuration Management in software engineering. Discuss its importance in ensuring the integrity and traceability of software artifacts throughout the development lifecycle.

4 3 3

Rubric	Marks
Explain the concept of Configuration Management in software engineering.	2
Discuss its importance in ensuring the integrity and traceability of software artifacts throughout the development lifecycle.	2

Q17. (a) Describe the State Machine View and its significance in software design. Provide examples of real-world systems where the State Machine View can be effectively applied.

6 3 2

Rubric	Marks
Describe the State Machine View and its significance in software design.	4
Provide examples of real-world systems where the State Machine View can be effectively applied.	2

(OR)

(b) Compare and contrast the Sequence Diagram and Collaboration Diagram as two types of Interaction Diagrams in UML. Illustrate with examples how each diagram represents the dynamic behavior of a system.

Rubric	Marks
Compare and contrast the Sequence Diagram and Collaboration Diagram as two types of Interaction Diagrams in UML.	4
Illustrate with examples how each diagram represents the dynamic behavior of a system.	2

Section 5 (Answer all question(s))

Marks CO BL

Q18. Discuss the significance of software testing in ensuring the quality and reliability of software systems. 4 4 3
Explain how testing activities contribute to the verification and validation process.

Rubric	Marks
Discuss the significance of software testing in ensuring the quality and reliability of software systems.	2
Explain how testing activities contribute to the verification and validation process.	2

Q19. (a) Explain the concept of software patterns and discuss different types of patterns commonly used in software design. Provide examples of each type of pattern and explain their application in real-world scenarios. 6 4 1

Rubric	Marks
Explain the concept of software patterns and discuss different types of patterns commonly used in software design.	4
Provide examples of each type of pattern and explain their application in real-world scenarios.	2

(OR)

(b) Describe the Object-Oriented Testing approach and its key principles. Discuss the challenges associated with testing object-oriented systems and how these challenges can be addressed effectively.

Rubric	Marks
Describe the Object-Oriented Testing approach and its key principles.	3
Challenges associated with testing object-oriented systems and how these challenges can be addressed effectively.	3

Section 6 (Answer any 2 question(s))

Marks CO BL

Q20. Explain the COCOMO (Constructive Cost Model) and its different variants. Discuss how COCOMO models can be used for software project estimation and resource allocation. 5 5 3

Rubric	Marks
Explain the COCOMO Model and its different variants.	3
Discuss how COCOMO models can be used for software project estimation and resource allocation.	2

Q21. Discuss the process of Risk Assessment in software projects. Identify and explain various techniques used for identifying, analyzing, and prioritizing risks in software development. 5 5 4

Rubric	Marks
Discuss the process of Risk Assessment in software projects.	2
Identify and explain various techniques used for identifying, analyzing, and prioritizing risks in software development.	3

Q22. Explain the concept of Software Metrics and its importance in software engineering. Discuss different types of metrics and how they can be used to measure and improve the quality and productivity of software development projects.

5 5 3

Rubric	Marks
Explain the concept of Software Metrics and its importance in software engineering.	2
Discuss different types of metrics and how they can be used to measure and improve the quality and productivity of software development project	3
