



Parul University
Faculty of Engineering and Technology
Parul Institute of Engineering and Technology
Computer Science and Engineering(AI&DS)
Department

Subject Name	Software Eng.	A.Y	2025-26
Subject Code	303105253	Semester	IV
Chapter-1			
Sr No	Question	COs	B.T
1	Define Software Engineering.	CO1	L1 – Remember
2	What are software characteristics?	CO1	L1/L2 – Remember/Understand
3	What are layered technologies in software engineering?	CO1	L2 – Understand
4	Define software process, method, and tool.	CO1	L2 – Understand
5	List the applications of software engineering.	CO1	L1 – Remember
6	What is the difference between product and process?	CO1	L2 – Understand
7	Define the term "software process model."	CO2	L1 – Remember
8	What are the key features of the Waterfall model?	CO2	L2 – Understand
9	Explain the generic view of software engineering with a neat diagram.	CO1	L2 – Understand
10	Describe in detail the Waterfall , Incremental , and Spiral models.	CO2	L4 – Analyze
11	Compare prototype and concurrent development models.	CO2	L4 – Analyze
12	What are the advantages and limitations of evolutionary models?	CO2	L3/L5 – Apply/Evaluate
13	What is Agile development? Discuss its importance in modern software industries.	CO3	L2 – Understand
14	Explain the Agile Manifesto and the principles of agility.	CO3	L2/L4 – Understand/Analyze
15	Describe Extreme Programming (XP) in detail with practices.	CO3	L4 – Analyze
16	Explain other Agile models such as Scrum and Crystal Methods .	CO3	L4 – Analyze
17	Compare traditional models with Agile models.	CO3	L4 – Analyze
18	List Agile tools used in industry and their advantages.	CO4	L1/L2 – Remember/Understand
Chapter-2			
1	Define the management spectrum.	CO1	L1 – Remember

2	What is the W5HH principle?	CO1	L1/L2 – Remember/Understand
3	Define scope and feasibility study.	CO1	L2 – Understand
4	What are the key steps in project planning?	CO1	L2 – Understand
5	Define risk management.	CO1	L1 – Remember
6	What is effort estimation?	CO1	L2 – Understand
7	What is project monitoring?	CO2	L1 – Remember
8	Define quality planning.	CO2	L2 – Understand
9	Discuss the management spectrum in software project management.	CO1	L2 – Understand
10	Explain the W5HH principle with suitable examples.	CO2	L4 – Analyze
11	Describe the process of planning a software project.	CO2	L4 – Analyze
12	Explain project scheduling and staffing in detail.	CO2	L3/L5 – Apply/Evaluate
13	What are the steps in risk management? Explain risk identification and control.	CO3	L2 – Understand
14	Discuss different methods of effort estimation (COCOMO, FP analysis).	CO3	L2/L4 – Understand/Analyze
15	Explain the components of a software project management plan (SPMP).	CO3	L4 – Analyze
16	Describe the role of people, product, process, and project in software management.	CO3	L4 – Analyze
17	How is project progress monitored and controlled?	CO3	L4 – Analyze
18	Write short notes on: a) Risk Assessment b) Scheduling Techniques c) Quality Assurance Planning	CO4	L1/L2 – Remember/Understand
	Chapter 3		
1	Define requirement engineering.	CO1	L1 – Remember
2	What are functional and non-functional requirements?	CO1	L2 – Understand
3	What are the major steps of requirement engineering?	CO1	L2 – Understand
4	Define use cases.	CO1	L1/L2
5	What is requirements validation?	CO2	L2 – Understand
6	What are requirement specification documents?	CO2	L2 – Understand
7	Explain the process of requirements engineering.	CO2	L4 – Analyze
8	Discuss the importance of problem recognition in requirement analysis.	CO1	L3 – Apply

9	What are the tasks of requirements engineering?	CO2	L2 – Understand
10	Explain use case modeling with examples.	CO2	L3/L4
11	How is a Software Requirements Specification (SRS) prepared?	CO3	L4 – Analyze
12	What is requirements validation? Describe the techniques used.	CO3	L4 – Analyze
13	Compare functional specification with non-functional specification.	CO1	L2/L4
14	Discuss the importance of requirements analysis in software development.	CO3	L4 – Analyze
	Chapter 4		
1	Define software architecture.	CO1	L1 – Remember
2	What are design concepts?	CO1	L2 – Understand
3	What is the difference between data and information?	CO1	L1/L2
4	What is an E-R diagram?	CO1	L1 – Remember
5	Define architectural style.	CO2	L2 – Understand
6	What is component-level design?	CO2	L2 – Understand
7	Explain the design model in software engineering.	CO2	L3 – Apply
8	Describe different architectural styles and patterns.	CO2	L4 – Analyze
9	What is data design? Explain its importance.	CO1	L2 – Understand
10	Discuss object-oriented design and its principles.	CO3	L4 – Analyze
11	Explain control flow and data flow models with examples.	CO2	L3/L4
12	What are alternative architectural designs?	CO2	L4 – Analyze
13	Define and explain data dictionary and its uses.	CO3	L2 – Understand
14	Compare functional-oriented and object-oriented design.	CO3	L4 – Analyze
15	Draw an E-R diagram for a library management system.	CO2	L3 – Apply
16	Discuss procedural design and its modeling techniques	CO3	L3/L4
	Chapter 5		
1	What are programming principles and guidelines?	CO1	L2 – Understand

2	Define coding standards.	CO1	L1 – Remember
3	What is incremental development of code?	CO2	L2 – Understand
4	Define unit testing.	CO2	L1/L2 – Remember/Understand
5	What is code inspection?	CO2	L2 – Understand
6	What is cyclomatic complexity?	CO3	L2 – Understand
7	Define Halstead metrics.	CO3	L2 – Understand
8	Explain programming practices and their importance.	CO1	L3 – Apply
9	What are different code evaluation and management techniques?	CO4	L3 – Apply
10	Describe unit testing for procedural and class-based units.	CO2	L3 – Apply
11	Discuss the process of test case design.	CO2	L4 – Analyze
12	Explain and compare different software metrics.	CO3	L4 – Analyze
13	Calculate cyclomatic complexity for a given control flow graph.	CO3	L3 – Apply
14	Discuss Halstead's measure and its relevance.	CO3	L4 – Analyze
15	What is Knot Count metric? Compare it with size and complexity metrics.	CO3	L4 – Analyze
Chapter 6			
1	Define software testing.	CO1	L1 – Remember
2	What are the levels of testing?	CO1	L2 – Understand
3	What is boundary value analysis?	CO2	L2 – Understand
4	What is pairwise testing?	CO2	L3 – Apply
5	Define quality assurance and quality control.	CO3	L2 – Understand
6	What are ISO 9000 and ISO 9001 standards?	CO3	L1/L2 – Remember/Understand
7	What is software reliability?	CO3	L2 – Understand
8	Explain the software testing process in detail.	CO2	L4 – Analyze
9	Differentiate between black-box and white-box testing.	CO2	L3 – Apply
10	Explain boundary value analysis and state-based testing.	CO2	L3 – Apply
11	What is the psychology of testing?	CO4	L4 – Analyze
12	Describe the SQA activities and their importance.	CO3	L4 – Analyze
13	Explain various software review techniques.	CO3	L3 – Apply
14	Discuss software quality metrics and their types.	CO4	L4 – Analyze
15	What are the costs of quality? Explain with examples.	CO4	L4 – Analyze

16	Discuss reliability models used in software engineering.	CO4	L4 – Analyze
	Chapter 7		
1	What are CASE tools?	CO1	L1 – Remember
2	Define system dependability.	CO1	L2 – Understand
3	What is SCRUM?	CO2	L1/L2 – Remember/Understand
4	Define resilience engineering.	CO2	L2 – Understand
5	What are the attributes of dependable systems?	CO1	L2 – Understand
6	Explain the architecture of CASE tools.	CO2	L3 – Apply
7	Describe the role of CASE tools in software development.	CO2	L3 – Apply
8	What is Scrum development? Explain its process and roles.	CO3	L4 – Analyze
9	Discuss reliability, safety, and security engineering in detail.	CO3	L4 – Analyze
10	Explain resilience engineering and its significance.	CO3	L4 – Analyze
11	Describe how dependability is ensured in software systems.	CO3	L4 – Analyze
12	Compare traditional and modern CASE tools used in industries.	CO4	L4 – Analyze
	Chapter 8		
1	Define software reuse.	CO1	L1 – Remember
2	What is component-based software engineering (CBSE)?	CO1	L1/L2 – Remember/Understand
3	Define distributed software engineering.	CO1	L1 – Remember
4	What is service-oriented architecture (SOA)?	CO1	L1 – Remember
5	Define real-time software engineering.	CO1	L1 – Remember
6	What is systems engineering?	CO1	L1 – Remember
7	Explain software reuse and its advantages.	CO2	L2/L3 – Understand/Apply
8	Discuss component-based software engineering in detail.	CO2	L4 – Analyze
9	What are the characteristics and challenges of distributed systems?	CO2	L4 – Analyze
10	Explain service-oriented software engineering with an example.	CO3	L3 – Apply
11	Describe real-time software engineering and its design issues.	CO3	L4 – Analyze
12	What is systems engineering? Explain “systems of systems” concept.	CO3	L4 – Analyze
13	Compare traditional SE with service-oriented and distributed SE.	CO4	L4 – Analyze
14	Compare traditional SE with service-oriented and distributed SE.	CO4	L4 – Analyze

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