23CS411 SOFTWARE ENGINEERING

UNIT -I

Q.No	QUESTIONS	CO's	Bloom's Level
	PART A		
1.	What is software engineering?	CO1	K1
2.	Name the different layers in software engineering.	CO1	K1
3.	What are the main activities included in the generic software engineering process framework?	CO1	K1
4.	What is the purpose of the requirement gathering phase in software engineering?	CO1	K1
5.	Define the term "software process" in the context of software engineering.	CO1	K1
6.	What does the design phase in software engineering involve?	CO1	K1
7.	What is meant by the term "software lifecycle" in software engineering?	CO1	K1
8.	What are the general principles of software engineering?	CO1	K1
9.	List any three common myths about software development.	CO1	K1
10.	What is the purpose of the software engineering principles in the development process?	CO1	K1
11.	What is the Waterfall model in software development?	CO1	K1
12.	Define the Incremental process model.	CO1	K1
13.	What distinguishes Evolutionary process models from other software development models?	CO1	K1
14.	What does the Concurrent process model aim to achieve in software development?	CO1	K1
15.	Name any example of a Specialized process model used in software engineering.	CO1	K1
16	What is the Unified Process in software development?	CO1	K1
17	Define the Personal Software Process (PSP).	CO1	K1
18	What is the purpose of the Team Software Process (TSP)?	CO1	K1
19	What are process assessment and improvement approaches used for in software engineering?	CO1	K1

20	What are Agile process models, and what is their main focus?	CO1	K1
	PART B		
1.	Explain in detail the general principles and myths of software development (13)	CO1	K2
2.	How would you implement the Waterfall Model for a project that has a fixed set of requirements and minimal expected changes?" (13)	CO1	K3
3.	How would you use the Incremental Process Model for a project with partially defined requirements that will evolve over time? (13)	CO1	K3
4.	Explain the key characteristics of an evolutionary process model ? (13)	CO1	K2
5.	i) How would you manage multiple development teams working on different modules of a system using the Concurrent Model ? (7) ii) In a project where speed is critical (e.g., a prototype or a rapidly evolving startup product), how might you apply a Specialized Model like Rapid Application Development (RAD)? (6)	CO1	K3
6.	Explain the concept of a Personal Process Model (PPM) and how it helps individuals improve their software development practices?? (7) Explain the role of team process models in software development, and how they help improve collaboration and efficiency within a development team? (6)	CO1	K2
7.	If your team is facing frequent integration issues, how could process assessment and improvement help solve this problem? (13)	CO1	K3
8.	Explain the core principles of the Agile process model and how they contribute to flexibility and responsiveness in software development? (13)	CO1	K2

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UNIT – II

Q.No	QUESTIONS	CO's	Bloom's Level
	PART A		
1	What is Requirements Engineering in software development?	CO2	K1
2	Define functional requirements in the context of software engineering.	CO2	K1
3	What are nonfunctional requirements, and how do they differ from functional requirements?	CO2	K1
4	Give an example of a functional requirement for a software application.	CO2	K1
5	Give an example of a nonfunctional requirement for a software system.	CO2	K1
6	What is a requirement specification template in software engineering?	CO2	K1
7	Define the term "eliciting requirements" in the context of software development.	CO2	K1
8	What is the purpose of requirements analysis in the software development process?	CO2	K1
9	What is typically included in a requirement specification document?	CO2	K1
10	Name two technique used for eliciting requirements in software engineering.	CO2	K1
11	What is requirements modeling in software engineering?	CO2	K1
12	Define class-based modeling in the context of requirements modeling.	CO2	K1
13	What is a flow-oriented model, and how is it used in software development?	CO2	K1
14	What does a behavioral model represent in requirements modeling?	CO2	K1
15	Name two benefit of using class-based modeling for requirements specification.	CO2	K1
16	What are the key components of the design process in software development?	CO2	K1
17	What are design model dimensions, and why are they important in software design?	CO2	K1
18	Name two example of a design concept used in software engineering.	CO2	K1
19	What is software architecture and why is it important in software development?	CO2	K1
20	Define architectural styles in software engineering.	CO2	K1
	PART B		

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1.	Analyze the following case scenario of a mobile e-commerce application and differentiate the functional and nonfunctional requirements. In your response, provide examples of each and explain why each requirement falls into its respective category. **Scenario:** A mobile e-commerce application is being developed for a retail company that sells electronics. The application should allow users to browse products, view detailed specifications, add items to the cart, proceed to checkout, and make payments. It will also offer real-time tracking of shipments, customer reviews, and recommendations based on browsing history. • The application must allow users to create an account using their email and password. • The system should ensure that user data is encrypted during transmission. • The application must display product images in high resolution. • The system should allow customers to make payments using credit cards or mobile wallets. • The application must handle up to 5,000 concurrent users during peak shopping periods. • The system should recover from a server crash within 5 minutes. • Users must be able to view product recommendations based on their browsing history.	CO2	K4
2.	How would you apply the requirement specification template for a new e-commerce platform? (13)	CO2	K3
3	**Scenario:** Imagine you're working on a project to develop an inventory management system for a retail company. The system needs to manage inventory, track sales, handle supplier information, and support multiple users, including warehouse managers, sales staff, and administrators. **Question:** Can you analyze how the different user roles (warehouse managers, sales staff, and administrators) will interact with the inventory management system, and what potential conflicts or overlaps might arise in their access to certain features, such as stock updates or pricing changes?	CO2	K4
4	Explain the importance of requirement analysis in the software development process, and how it helps ensure that	CO2	K2

	the final product meets user needs? (13)		
5	Explain the purpose of a Use Case Diagram and how it helps in identifying the interactions between users and the system?? (13)	CO2	K2
6	Explain the primary difference between architectural styles and architectural patterns. How do they relate to the design of a software system?? (13)	CO2	K2
7	Explain the purpose of a Data Flow Diagram (DFD) and how it helps in visualizing the flow of information within a system?" (13)	CO2	K2
8	How would you design a user interface for an online learning platform, ensuring that it is easy to navigate through courses and learning materials? (13)	CO2	K3

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UNIT – III

Q.No	QUESTIONS	CO's	Bloom's Level
	PART A		
1.	Identify the importance of selective testing in unit test.	CO3	K1
2.	When are stubs and drivers used?	CO3	K1
3.	Define regression testing.	CO3	K1
4.	Summarize the criteria and corresponding tests that are applied for all test phases.	CO3	K2
5.	Compare cluster testing and thread-based testing.	CO3	K2
6.	List any four characteristics that lead to testable software.	CO3	K1
7.	State the importance of performance testing.	CO3	K2
8.	How are graph matrices useful in basis path testing?	CO3	K2
9.	What is the role of model-based testing in black box testing?	CO3	K1
10.	What are the psychological considerations in debugging?	CO3	K1
11.	Draw the layers of the SCM process.	CO4	K1
12.	Label any two major capabilities that are integrated with the version control system.	CO4	K1
13.	Compare access control and synchronization control.	CO4	K2
14.	What is CSR?	CO4	K1
15.	State the advantages of FP.	CO4	K1
16.	Mention the three software design complexity measures.	CO4	K1
17.	Write the formula for data complexity.	CO4	K1
18.	State the formula for DSQI computation.	CO4	K1
19.	Name the two methods to estimate the number of classes.	CO4	K1
20.	List the importance of coupling and cohesion.	CO4	K2
	PART B		
1.	Describe the testing strategy for conventional software with neat diagrams. (13)	CO3	K2
2.	Demonstrate the white box testing techniques with suitable examples. (13)	CO3	K3
3.	Demonstrate the various black box techniques with appropriate examples. (13)	CO3	K3

4.	Explain the art of debugging with the schematic representation of the debugging process. (13)	CO3	K2
5.	Examine the process of SCM with a neat illustration and describe the importance of each layer in it. (13)	CO4	K3
6.	Deliberate the metrics for requirements model and give suitable examples. (13)	CO4	K3
7.	Summarize the metrics for design models and state the formulations for each model. (13)	CO4	K2
8.	Outline the metrics for testing, source code and maintenance by giving the appropriate formulations. (13)	CO4	K2

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UNIT-IV

Q.No	QUESTIONS	CO's	Bloom's Level
	PART A		
1.	What is vendor management in SQA?	CO5	K1
2.	List any four elements of SQA.	CO5	K1
3.	Point out the importance of SQA plan as a SQA task.	CO5	K1
4.	State the attributes of the SQA goal - design quality.	CO5	K2
5.	Why Pareto principle is used in statistical SQA?	CO5	K1
6.	Show the error index computation formula.	CO5	K1
7.	Define software reliability.	CO5	K1
8.	Mention the applications of software reliability.	CO5	K1
9.	What is SQA Plan?	CO5	K1
10.	What is the purpose of an SQA Plan in software development?	CO5	K1
11.	Mention the three characteristics of modern software.	CO5	K1
12.	Why are human resources considered the most important component in the success of a software project?	CO5	K1
13.	What are the categories of stakeholders in software process?	CO5	K1
14.	What are the three key components of Jerry Weinberg's MOI model of leadership for effective project management?	CO5	K1
15.	What are the four organizational paradigms for software engineering teams suggested by Constantine?	CO5	K1
16.	What are the key factors a team must consider when selecting a process model for a software project?	CO5	K1
17.	What are the project factors that should be considered when planning the structure of software engineering teams?	CO5	K1
18.	What is agile team?	CO5	K1
19.	Define software scope.	CO5	K1
20.	What are the two major areas in problem	CO5	K1

	decomposition?		
	PART B		
1.	Describe the following: i)Elements of SQA. (6) ii)Goals, attributes and metrics of SQA. (7)	CO5	K2
2.	Examine the various aspects of software reliability and its metrics. (13)	CO5	K3
3.	i)How does a company achieve ISO 9001:2000 registration, and what are the key requirements addressed by this standard? (6) ii) What is the purpose of an SQA Plan, and what are the key components recommended for its structure to ensure effective software quality assurance? (7)	CO5	K2
4.	Examine the key elements of the project management spectrum.(13)	CO5	K3
5.	What are the 4P's in Project Management Spectrum? Explain about the People component in detail.(13)	CO5	K2
6.	Explain in detail about the important component of people.(13)	CO5	K2
7.	What are the steps involved in Process component in Software Management Spectrum? Explain in detail. (13)	CO5	K2
8.	Discuss about the Following i) W^5HH Principle (9) ii) What are the critical practices in SQA that ensure high-quality software delivery?(4)	CO5	K2

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UNIT –V

Q.No	QUESTIONS	CO's	Bloom's Level
	PART A		
1.	What are the challenges in software maintenance?	CO6	K1
2.	List the types of Maintenance.	CO6	K1
3.	Write about software Maintenance Process.	CO6	K1
4.	List the factors affecting the maintenance cost.	CO6	K1
5.	What is the need for software Maintenance?	CO6	K1
6.	Describe about software supportability.	CO6	K1
7.	Define Software Reengineering.	CO6	K1
8.	Define Business Process Reengineering.	CO6	K1
9.	Define Reverse Engineering.	CO6	K1
10.	Write about the important issues in Reverse Engineering.	CO6	K1
11.	What is mean by code Restructuring?	CO6	K1
12.	Write about Data Restructuring.	CO6	K1
13.	What is the role of data models during reverse engineering?	CO6	K1
14.	What are the three basic questions to be addressed during the reverse engineering of a user interface?	CO6	K1
15.	What are the levels of abstraction analyzed to understand procedural abstractions in reverse engineering?	CO6	K1
16.	What are the two levels of abstraction involved in the reverse engineering of data, and what is their focus?	CO6	K1
17.	Why is the cost of maintaining a line of source code significantly higher than its initial development?	CO6	K1
18.	What is the key benefit of using automated tools in software reengineering?	CO6	K1
19.	Write the features of client-server Architecture.	CO6	K1
20.	Define the parameters of cost-benefit analysis and	CO6	K2

	write the formula of cost-benefit analysis model for reengineering.		
	PART B		
1.	Explain the different types, issues of software maintenance and its process with neat diagram.(13)	CO6	K2
2.	Discuss the following i)Software Supportability (7) ii)Reengineering (6)	CO6	K2
3.	Illustrate the Business process reengineering in detail(13).	CO6	K3
4.	Explain the stages involved in the software reengineering process with neat diagram.(13)	CO6	K2
5.	Illustrate the Key Concepts and Process of Reverse Engineering in Software Development.(13)	CO6	K3
6.	Discuss Reverse Engineering to Understand Data, Processing, and User Interfaces.(13)	CO6	K2
7.	Discuss the process of Forward Engineering.(13)	CO6	K2
8.	Discuss the following i)What is software restructuring? Discuss its types.(7) ii) Explain the Economics of Reengineering in Software Development.(6)	CO6	K2