

**STELLA MARIS COLLEGE (AUTONOMOUS) CHENNAI 600 086**  
**(For candidates admitted during the academic year 2023 – 2024 & thereafter)**

**M. Sc. DEGREE EXAMINATION, NOVEMBER 2024**  
**INFORMATION TECHNOLOGY**  
**FIRST SEMESTER**

**COURSE : MAJOR CORE**  
**PAPER : SOFTWARE ENGINEERING**  
**SUBJECT CODE: 23CS/PC/SE14**  
**TIME : 3 HOURS**

**MAX. MARKS: 100**

Q. No.	SECTION A (10 X 2 =20)	CO	KL
	<b>Answer all the questions:</b>		
1	Define the term Software Engineering.	CO1	K1
2	Outline the steps involved in the scrum process.	CO2	K2
3	Define requirements engineering and list its main tasks.	CO1	K1
4	State the purpose of activity diagram.	CO2	K2
5	What are design patterns and why are they used in software design?	CO1	K1
6	Explain the difference between informal reviews and formal technical reviews.	CO2	K2
7	Define the term unit testing. List its main objectives.	CO1	K1
8	Explain the difference between white box testing and black box testing.	CO2	K2
9	Define the term LOC.	CO1	K1
10	What is the use of timeline charts in project scheduling?	CO2	K2
Q. No.	SECTION B (4 X 5 = 20)	CO	KL
	<b>Answer all the questions:</b>		
11	<p>Illustrate how modularity can be used to enhance the reusability and maintainability of a software system. Provide an example of how modular design principles can be applied to a typical software project.</p> <p style="text-align: center;"><b>(OR)</b></p> <p>Identify and explain the impact of the agile process on the end product compared to the waterfall model.</p>	CO3	K3
12	<p>Identify and explain the importance of the traceability matrix in managing requirements changes throughout the software development lifecycle.</p> <p style="text-align: center;"><b>(OR)</b></p> <p>Apply the principles of swimlane diagrams to a real-world process. Illustrate how this diagram can help clarify responsibilities and interactions within a given scenario.</p>	CO3	K3
13	<p>Apply the liskov substitution principle to a class hierarchy example. Explain how adherence to this principle affects code reusability and maintainability.</p> <p style="text-align: center;"><b>(OR)</b></p> <p>Design a test case template for integration testing. Explain how each section of the template helps in ensuring the test case is comprehensive.</p>	CO3	K3

14	<p>Critique the Software Configuration Management process and analyze the impact of these enhancements on project success.</p> <p style="text-align: center;"><b>(OR)</b></p> <p>Formulate a plan for deriving Function Points from a software project.</p>	CO4	K4	
<b>Q. No.</b>	<b>SECTION C</b>	<b>(6 X 10 = 60)</b>	<b>CO</b>	<b>KL</b>
	<b>Answer all the questions:</b>			
15	<p>Apply the principle of separation of concerns to a software design scenario. Illustrate how separating different concerns within a software system can improve maintainability and scalability.</p> <p style="text-align: center;"><b>(OR)</b></p> <p>Identify the significance of state diagrams in modeling system behavior. Provide an example of how a state diagram can be used to describe the lifecycle of an object within a system.</p>	CO3	K3	
16	<p>Analyse the principles of Arlow and Neustadt's rules of thumb with practical examples from a requirement engineering project.</p> <p style="text-align: center;"><b>(OR)</b></p> <p>Evaluate the effectiveness of use case diagrams and sequence diagrams in capturing and communicating requirements.</p>	CO4	K4	
17	<p>Evaluate the role of McCall's quality factors and ISO 9126 quality factors in assessing software quality.</p> <p style="text-align: center;"><b>(OR)</b></p> <p>Analyse various software quality assurance techniques to create a comprehensive quality assurance plan.</p>	CO4	K4	
18	<p>Determine a comprehensive testing strategy to ensure high software quality.</p> <p style="text-align: center;"><b>(OR)</b></p> <p>Evaluate the role of cost of quality in a software development project that faced significant defects. Analyze how understanding and managing this cost can improve defect management and overall software quality.</p>	CO5	K5	
19	<p>Explain a testing framework that incorporates automated testing, manual testing, and exploratory testing for a large-scale distributed system.</p> <p style="text-align: center;"><b>(OR)</b></p> <p>Explain a detailed project management plan that addresses training, defect prevention, and root cause analysis for project delays.</p>	CO5	K5	
20	<p>Design a comprehensive software development lifecycle (SDLC) model that incorporates continuous integration, test driven development, agile methodologies.</p> <p style="text-align: center;"><b>(OR)</b></p> <p>Design an innovative project scheduling framework that combines traditional scheduling tools with advanced risk management techniques.</p>	CO6	K6	

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