

 VIT-AP UNIVERSITY		Final Assessment Test – Winter Semester (2024-25) – May 2025	
Course Code: SWE2004		Maximum Marks: 100	Duration: 180 Mins
Set NO: 01		Course Title: Software Design and Architecture	
Date: 03/05/2025		Exam Type : Closed Book	School: SCOPE
		Slot: B ₂	Session: FN
Keeping mobile phone/smart watch, even in 'off' position is treated as exam malpractice			
General Instructions if any:			
1. "fxseries" -non Programmable calculator are permitted: NO 2. Reference tables permitted: NO			

PART – A: Answer any TEN Questions, Each Question Carries 10 Marks (10×10=100 Marks)

1. Imagine you are part of a software development team building a large-scale project. How would the improper handling of coupling and cohesion affect your project in terms of maintenance, debugging, and scalability? Justify your answer with scenarios. **(10 M)**
2. A cloud-based e-commerce platform needs to handle millions of users, ensure security, and guarantee availability. List the key design viewpoints required and their role in the system's architecture. **(10M)**
3. In a web application developed using JSP, developers have directly embedded Java code for database operations, business logic, and UI presentation within the same JSP file. Over time, this has made the application difficult to maintain, debug, and scale. Analyze how this approach leads to tight coupling between the presentation layer and business logic. What design strategies or best practices would you recommend overcoming this problem and improving the architecture of the application? **(10 M)**
4. Imagine you are designing a Library Management System using the Jackson System Development (JSD) approach. How would you identify and represent the key entities, their related processes, and important events in the system? Explain how the principles of JSD help in organizing these components for better system analysis and design. **(10 M)**
5. What challenges might arise when applying SADT (Structured Analysis and Design Technique) to the design of a large-scale software system? Propose suitable strategies or solutions to overcome these challenges. **(10M)**
6. How does SSADM differ from Agile methodology? In what types of software projects would SSADM be a more suitable choice over Agile? Support your answer with proper justification. **(10 M)**
7. Software systems can be designed using various architectural styles, each with its own principles and applications. Identify and critically analyze different types of software architectural styles. Illustrate your explanation with suitable real-world examples and discuss where each style is most effectively applied. **(10 M)**

8. Imagine you are tasked with designing an Online Document Conversion System that handles multiple formats like Word, PDF, and Text. How would you apply the Pipes and Filter architectural style to this system? Identify and explain the possible filters, pipes, and their roles in processing the document flow efficiently. (10M)
9. A university intends to implement a shared information system (SIS) to integrate and manage the information flow across all its departments. Discuss the potential advantages this system could bring to the university, as well as the possible challenges it may face during its development and implementation. (10M)
10. Discuss the key differences between User Interface (UI) Architecture in mobile applications and web applications. Highlight how design principles, development approaches, and user experience considerations vary between the two platforms. (10M)
11. Consider a scenario where you are developing an online food delivery system. Identify and explain the suitable Design Patterns that can be applied in designing this system. Justify the selection of each pattern based on its role and functionality within the application. (10M)
12. Discuss the significance of selecting appropriate Architectural Design Patterns in software development projects. Explain how the right choice of architecture impacts the performance, scalability, maintainability, and overall success of the software system. (10M)

QP MAPPING

Q. No.	E/A/T	Module Number	Marks	BL	CO Mapped	PO Mapped	PEO Mapped	PSO Mapped
Q1	E	1	10	3	1	1,2,3,4,5,6	-	1
Q2	A	1	10	2	1,2	1,2,3,4,5,6	-	1
Q3	A	2	10	2	2	1,2,3,4,5,6	-	1
Q4	T	2	10	4	1,3	1,2,3,4,5,6	-	1
Q5	T	3	10	3	1	1,2,3,4,5,6	-	1
Q6	A	3	10	3	1	1,2,3,4,5,6	-	1
Q7	E	4	10	2	1,2	1,2,3,4,5,6	-	1
Q8	E	4	10	2	2	1,2,3,4,5,6	-	1
Q9	A	5	10	4	1,3	1,2,3,4,5,6	-	1
Q10	T	5	10	3	1	1,2,3,4,5,6	-	1
Q11	A	6	10	3	1	1,2,3,4,5,6	-	1
Q12	E	6	10	2	1,2	1,2,3,4,5,6	-	1