Course Code: **23MC2T08**

BONAM VENKATA CHALAMAYYA INSTITUTE OF TECHNOLOGY & SCIENCE
(AUTONOMOUS)
I – MCA II - Semester Regular/Supplementary Examinations (BR23), June/July - 2025
Software Engineering and Design Patterns (MCA)

Time: 3 hours   Max. Marks: 70

Answer any Five Questions One Question for One UNIT
ALL the Question Carry Equal Marks

	UNIT-I	Marks	CO	BL
1.a)	Describe the impact of scale and change on software systems with real-life examples.	7M	CO 1	BL2
b)	What are the key features of the Agile model? How does it address limitations of traditional models?	7M	CO 1	BL2
	OR			
2.a)	Differentiate between Process and Project in the context of software engineering. Provide examples.	7M	CO 1	BL2
b)	You are assigned to build a customer support chatbot. Which process model would you use and why?	7M	CO 1	BL3

	UNIT-II	Marks	CO	BL
3.a)	Illustrate how use-cases help in functional specification with a practical example.	7M	CO2	BL3
b)	Explain how to estimate the effort for a medium-sized software development project.	7M	CO2	BL3
	OR			
4.a)	Describe different approaches used for requirements analysis. How do they differ?	7M	CO2	BL2
b)	Explain the requirement gathering process and the role of stakeholders.	7M	CO2	BL2

	UNIT-III	Marks	CO	BL
5.a)	Suppose you're designing a smart home application. Suggest how to apply design for reuse principles.	7M	CO3	BL3
b)	What is software architecture? Explain the role of architectural styles in system design.	7M	CO3	BL2
	OR			
6.a)	Construct a layered architecture for a library management system. Explain the functions of each layer.	7M	CO3	BL3
b)	Compare structured analysis with object-oriented design. What are their respective benefits?	7M	CO3	BL2

	UNIT-IV	Marks	CO	BL
7.a)	Using UML, represent the workflow of an online shopping cart using activity and interaction diagrams.	7M	CO4	BL3
b)	Explain the difference between deployment and component diagrams. Provide use cases for both.	7M	CO4	BL2
	OR			
8.a)	Draw a statechart diagram for a traffic light system and explain its transitions.	7M	CO4	BL3

b)	What are component diagrams? Explain their role in implementation and deployment phases.	7M	CO4	BL2

UNIT-V		**Marks**	**CO**	**BL**
9.a)	What are structural design patterns? Describe the Adapter and Proxy patterns with examples.	7M	CO5	BL2
b)	Design a solution for a text editor that allows plugins using structural patterns.	7M	CO5	BL3

<div align="center">OR</div>

10.a)	Compare the Façade and Decorator patterns. Provide situations where each would be suitable.	7M	CO5	BL2
b)	Design a pattern-based solution for a report generation system that supports multiple formats (PDF, Excel, HTML).	7M	CO5	BL3

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