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B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

June 2025 Semester End Main Examinations

Programme: B.E. **Semester: VI**

Branch: Artificial Intelligence and Machine Learning **Duration: 3 hrs.**

Course Code: 24AM6PCSEP **Max Marks: 100**

Course: Software Engineering and Project Management

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

Important Note: Completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages. Revealing of identification, appeal to evaluator will be treated as malpractice.

				CO	PO	Marks
			UNIT - I			
1	a)		Signify the importance of requirements elicitation.	CO1	PO1	**06**
	b)		Identify three functional and non-functional requirements each for an e-commerce website.	CO1	PO1	**06**
	c)		Elucidate the seven principles of Software Engineering Practice.	CO1	PO1	**08**
			OR			
2	a)		Compare Iterative Model and Spiral Model.	CO2	PO1	**08**
	b)		Illustrate the nature of a software when compared with other engineering disciplines	CO1	PO1	**06**
	c)		Elucidate with examples why functional requirements should be non-ambiguous?	CO2	PO2	**06**
			UNIT - II			
3	a)		Design an activity diagram that elaborates the details of logging into an e-mail system.	CO3	PO3	**05**
	b)		Design a flow graph to calculate factorial of a number and calculate its cyclomatic complexity.	CO2	PO2	**08**
	c)		Prepare Sequence diagram for a session with an "Online Stock Broker.	CO3	PO3	**07**
			OR			
4	a)		Prepare a use case diagram for a Vehicle System showing "extend" and "include". Consider all associations that connect between actors and use cases.	CO2	PO2	**06**

		b)	Consider the purchase of gasoline from an electronic gasoline pump. i. prepare a use-case diagram. Normally the customer pays cash for a gas purchase. Add extend relationships to handle the incremental behavior of paying by credit card outside or paying by credit card inside. Add an include relationship to represent the optional purchase of a car wash. ii. list and explain the relevance of each actor. iii. Summarize the purpose of each use case with a sentence	*CO3*	*PO3*	**08**
		c)	Differentiate coupling and cohesion with a suitable example. Identify what type of coupling is best suited for the following python code ***# Module A*** *def process_data(data):* *return data * 2* ***# Module B*** *def use_data(data):* *processed_data = process_data(data)* *print(processed_data)* ***# Example usage*** *use_data(5) # Output: 10*	*CO2*	*PO2*	**06**
			UNIT - III			
	5	a)	Compare white box testing and black box testing.	*CO3*	*PO2*	**05**
		b)	In a system designed for postal services 'payment: Letters up to 100g are called as 'light'. Postal rates for sending the light letters up to 10 g are $25. The next 40 g should be played by $35. Each next 25 g up to 100g should be paid by an extra $10. Design Boundary value analysis and equivalence partitioning for "grams".	*CO3*	*PO2*	**07**
		c)	Design a control flow graph for calculating biggest number among three numbers. Also calculate cyclomatic complexity for the same.	*CO3*	*PO2*	**08**
			OR			
	6	a)	Compare Pre-Alpha, Alpha Testing and Beta Testing.	*CO3*	*PO2*	**06**
		b)	Identify and briefly explain different strategies for loop testing.	*CO3*	*PO2*	**07**
		c)	Provide boundary value analysis and also equivalence classes for the following requirement. Also design test cases for the same. 1. Accept the Phone number 2. Accept Age field of length between 04 to 100.	*CO2*	*PO2*	**07**
			UNIT - IV			
	7	a)	Provide CRC representation of MVC Patterns and discuss the significance of the same.	*CO3*	*PO3*	**06**
		b)	Illustrate Pipe and filter pattern data flow with active filter.	*CO3*	*PO3*	**07**

		c)	Analyze the following requirements which employs layer pattern. Map the corresponding requirements to the best suitable layer accordingly. i. How the system behaves on the business rules. ii. Main Programs and other components. iii. Tables, Index's and Search Engine usage. iv. Business Process is written as business rules v. System behavior for the defined business rules.	*CO3*	*PO3*	**07**
			OR			
	8	a)	Design a CRC card for MVC pattern designed for maintain student's database from enrollment to degree granting. Justify the statement.	*CO3*	*PO3*	**07**
		b)	Design a data flow diagram for pipe and filter pattern where in the Data Source is an active and Filter and sink will be passive.	*CO3*	*PO3*	**07**
		c)	Illustrate the role of pattern in software product development.	*CO4*	*PO1*	**06**
			UNIT - V			
	9	a)	Describe the components of Software Project Management.	*CO1*	*PO1*	**06**
		b)	Provide the types of training and development activities and describe the skills developed through training.	*CO4*	*PO1*	**06**
		c)	Explicate pricing and costing in software project management.	*CO4*	*PO1*	**08**
			OR			
	10	a)	Discuss the key aspects and benefits of teamwork in project management.	*CO3*	*PO1*	**05**
		b)	Identify the key differences of product, process, people and technology.	*CO1*	*PO1*	**08**
		c)	Design a Gannt chart for a software product from requirements gathering to deployment for a period of 20 weeks.	*CO4*	*PO3*	**07**

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