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

Autonomous Institute Affiliated to VTU

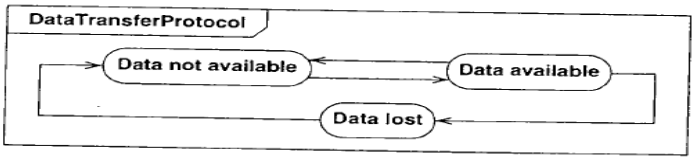
June / July 2025 Semester End Main Examinations

Programme: B.E. **Semester: V**
Branch: Information Science and Engineering **Duration: 3 hrs.**
Course Code: 22IS5PCSEO **Max Marks: 100**
Course: Software Engineering and Object Oriented Modeling Design

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.

		UNIT - I	CO	PO	Marks
1	a)	Illustrate the stages of Software Lifecycle model with a neat diagram	CO1	PO1	06
	b)	Analyze the stages in Testing Process with a neat diagram and describe in detail	CO1	PO2	06
	c)	Define Activities, Tasks and Resources in software engineering. Identify the activities, tasks and resources for "TicketDistributor Project" and explain each of them in detail	CO1	PO1	08
		OR			
2	a)	Describe the incremental development approach.	CO1	PO1	06
	b)	Illustrate work products for a token distributor project.	CO1	PO1	06
	c)	Elucidate the roles and responsibilities for designing a project for managing a travel agency.	CO2	PO2	08
		UNIT - II			
3	a)	Consider a Flight ticket reservation system. a. List two actors and explain the relevance of each actor. b. List four use cases at a comparable level of abstraction. Summarize the purpose of each use case suitably. c. Prepare a Sequence diagram for a Flight ticket reservation system. Include Activations and time lines.	CO2	PO2	06
	b)	Prepare a class diagram for **Managing Credit Card Accounts** group of classes given below. Add relationships (association & generalization) to diagram. Use association names, association end names where needed. Show necessary attributes & operations. Also use qualified association & show multiplicity. Explain your diagram.	CO2	PO3	06
	c)	Consider a online shopping System for the below set of use cases. (Prepare a use case diagram using include, extend and generalization relationships). a)Take customer order b) Identify customer	CO2	PO2	08

			c) Sell Customer specific product d) Handle customer transaction			
			OR			
	4	a)	A product is to be installed to control elevators in a building with **m** floors. The problem concerns the logic required to move elevators between floors according to the following constraints: • Each elevator has a set of m buttons, one for each floor. These illuminate when pressed and cause the elevator to visit the corresponding floor. The illumination is canceled when the elevator visits the corresponding floor. • Each floor, except the first floor and top floor has two buttons. One to request and up-elevator and one to request a down-elevator. These buttons illuminate when pressed. The illumination is canceled when an elevator visits the floor and then moves in the desired direction. • When an elevator has no requests, it remains at its current floor with its doors closed. Draw the sequence diagram for the above scenario including Activations and time lines.	***CO2***	***PO3***	**06**
		b)	In a personal Computer, a disk controller is typically used to transfer a stream of bytes from a floppy disk drive to a memory buffer with the help of a host such as the central processing unit(CPU) or a direct memory access (DMA) controller. Figure below shows a partially completed and simplified state diagram for the control of the data transfer. The controller signals the host each time a new byte is available. The data must then be read and stored before another byte is ready. When the disk controller senses the data has been read, it indicates that data is not available, in preparation for the next byte, If any byte is not read before the next one comes along, the disk controller asserts a data lost error signal until the disk controller is reset. Analyze the diagram and add the following: reset, indicate data not available, indicate data available, data read by host, new data ready, and indicate data lost.  	***CO2***	***PO2***	**06**
		c)	Consider the financial organization which offers loans to the customers. The customers of this organization can get loan based on pledging any of the source to get the loan of required amount i.e. the gold, the life insurance policies or the proof of the service where the customer is working along with the salary certificate. If a customer wants to apply for the loan by pledging all the three sources, show how the verification and validation of these sources take place before the loan is sanctioned to the customer. Construct an activity diagram for this process. Use swimlanes to show the various interactions.	***CO2***	***PO3***	**08**

			UNIT - III			
	5	a)	Analyze the classifications of requirements elicitation activities based on the source of the requirements and explain each of them in detail	*CO3*	*PO2*	**06**
		b)	Identify the Functional and Non Functional requirements of an Automated Petrol Pump System.	*CO3*	*PO1*	**06**
		c)	Analyze the different properties checked during Requirement validation and explain each of them with an example.	*CO3*	*PO2*	**08**
			OR			
	6	a)	Explain Green field engineering, re-engineering and interface engineering.	*CO1*	*PO1*	**06**
		b)	Explain the FURPS+ model and its significance in software engineering.	*CO1*		**06**
		c)	Illustrate Completeness, Consistency, Clarity, and Correctness for a User friendly Mobile application system.	*CO3*	*PO2*	**08**
			UNIT - IV			
	7	a)	Describe the model elements used during testing with neat UML class diagram.	*CO4*	*PO1*	**06**
		b)	Differentiate between Inspection and Walkthrough.	*CO4*	*PO2*	**06**
		c)	Identify the Equivalence classes and selected valid inputs for testing the method computing the number of days in a given month.	*CO4*	*PO2*	**08**
			OR			
	8	a)	For the given code, draw the control flow graph and compute the cyclomatic complexity. IF A = 354 THEN IF B > C THEN A = B ELSE A = C END IF END IF PRINT A	*CO3*	*PO2*	**06**
		b)	Explain Boundary Value analysis with an example.	*CO1*	*PO1*	**06**
		c)	Prepare Test cases for a Web application login page considering both Valid and Invalid cases.	*CO4*	*PO3*	**08**
			UNIT - V			
	9	a)	Differentiate Plan-driven and Agile development with neat diagrams.	*CO5*	*PO2*	**06**
		b)	Describe the Pipe and Filter architecture with a neat diagrams.	*CO5*	*PO1*	**06**
		c)	Giving reasons for your answer based on the type of system being developed, suggest the most appropriate structural model that might be used as a basis for managing the development of the following systems. Justify and Explain with neat diagram ➢ An Aadhar Authentication system ➢ Digital Library system	*CO5*	*PO3*	**08**

			OR			
	10	a)	Describe the Extreme programming practices.	***CO5***	***PO1***	**06**
		b)	Analyze the problems of agile approach for large and long-lifetime systems with an example.	***CO5***	***PO2***	**06**
		c)	Design the Task network and Time line chart for a developing a software for hospital Management system assuming 8 tasks, 6 milestones and 5 tasks having dependencies and also show the critical path.	***CO5***	***PO3***	**08**

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