U.S.N.										

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

Autonomous Institute Affiliated to VTU

August 2024 Semester End Main Examinations

Programme: B.E. **Semester: IV**
Branch: Information Science and Engineering **Duration: 3 hrs.**
Course Code: 23IS4PCSEG **Max Marks: 100**
Course: Software Engineering

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)		Elucidate the principles from the Software Engineering Code of Ethics and Professional Practice guide for software engineers in maintaining ethical conduct.	CO1		6
	b)		Elaborate the significance of organizing and applying a general process model for reuse-based development and signify the importance for ensuring efficient development and integration of reusable components.	CO1		7
	c)		Interpret the importance of software validation, specifically verification and validation (V&V), in ensuring that a system conforms to its specification and meets the expectations of the system customer and provide various tests used in V&V processes to achieve these goals.	CO1		7
			UNIT – II			
2	a)		"We are uncovering better ways of developing software by doing it and helping others do it. Through this work we have come to value", justify the above statement with respect to Agile Manifesto	CO2	PO1	4
	b)		Summarize the software development practice where two programmers work together on one computer by describing the roles of the driver and the observer/navigator, and interpreting this practice towards the contribution for code quality and team collaboration in Agile Software Development.	CO2	PO1	6
	c)		Discuss key characteristics in Scrum process of Agile Project Management	CO2	PO1	10

			UNIT – III			
	3	a)	Elaborate on the significance of non-functional requirements in developing a real-time application and provide a rationale of their impact on the overall system design and user experience.	***CO1***		**10**
		b)	You are tasked as a requirement engineer for developing a patient management system for a health care sector wherein its branches spread all over the state. Elaborate on Requirements Elicitation and Analysis process for above task to ensure the system meets the needs of diverse stakeholders. Provide specific examples of techniques you would employ to discover requirements	***CO1***		**10**
			OR			
	4	a)	Outline a generic standard based on an IEEE standard that can be adapted to requirements documents in software development.	***CO1***		**10**
		b)	You are leading the requirements validation phase for developing a new E-Commerce platform. Outline the evaluation strategy that you would employ that the requirements documented are accurately reflecting the needs of customer, stakeholder expectations and business objectives by providing various validation techniques and considerations.	***CO1***		**10**
			UNIT - IV			
	5	a)	Develop an abstract model for the architecture of a packing robot control system by describing the key components and their interactions in ensuring efficient control and operation of the robot and describe the symbols used in model.	***CO3***	***PO3***	**6**
		b)	System architects must make several structural choices during the architectural design phase that have a significant impact on the system and its development process. List the key decisions that must be taken into consideration by them based on their knowledge and expertise.	***CO3***	***PO1***	**6**
		c)	Describe the Repository pattern in software architecture. Explain how this pattern facilitates data sharing among interacting components within a system.	***CO3***	***PO1***	**8**
			OR			
	6	a)	List and Elucidate three advantages of explicitly designing and documenting software architecture in the development of complex systems. Provide specific examples or scenarios where each advantage would significantly benefit the project.	***CO3***	***PO1***	**7**
		b)	"The relationship between non-functional requirements (NFRs) and software architecture are aligned". Justify the above statement by elaborating your discussion specific to any three NFRs like performance, security, safety, availability and maintainability	***CO3***	***PO1***	**6**
		c)	Transaction Processing System (TPS) facilitates the processing of customer requests by using an ATM for bank transactions.	***CO3***	***PO1***	**7**

			Highlight the key components and processes involved in handling transactions efficiently			
			UNIT – V			
	7	a)	Discuss three related categories of risk that project managers must manage effectively during the lifecycle of a software development project and outline the process of risk management that involves in various stages	*CO1*		**9**
		b)	List and elaborate on four critical factors in people management	*CO1*		**4**
		c)	The following table illustrates the Tasks, durations, and dependencies among tasks. Create Activity Bar Chart for the above table of project schedule	*CO1*		**7**

Task	Effort (person-days)	Duration (days)	Dependencies
T1	15	10	
T2	8	15	
T3	20	15	T1 (M1)
T4	5	10	
T5	5	10	T2, T4 (M3)
T6	10	5	T1, T2 (M4)
T7	25	20	T1 (M1)
T8	75	25	T4 (M2)
T9	10	15	T3, T6 (M5)
T10	20	15	T7, T8 (M6)
T11	10	10	T9 (M7)
T12	20	10	T10, T11 (M8)

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