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

Autonomous Institute Affiliated to VTU

January / February 2025 Semester End Main Examinations

Programme: B.E. **Semester: III**

Branch: Computer Science and Engineering **Duration: 3 hrs.**

Course Code: 20CS5PCSEG **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)	Discuss the responsibilities that the software engineers should have towards professional and society. State ACM/IEEE principles that software engineers should adhere to the code of Ethics and professional practice.	*1*	*1*	**10**
	b)	Illustrate the problems of using natural language for defining user and system requirements, Using the example for Insulin Pump Control Software explain how structuring natural into forms can help avoid some of these difficulties.	*2*	*2*	**10**
		OR			
2	a)	I)What are the four important attributes which all software products should have? Suggest four other attributes that may sometimes be significant. II)Giving reasons for your answer based on the type of the system being developed, suggest the most appropriate generic software process model thet might be used as a basis for managing the development of the following systems. i)A system to control anti-lock braking in a car. ii)A virtual reality system to support software maintainance iii)A university accounting system that replaces an existing system iv)An interactive system that allows railway passengers to find train times from terminals installed in stations.	*2*	*2*	**10**
	b)	Design the general model of software design process with neat diagram.	*3*	*3*	**10**
		UNIT - II			
3	a)	A software system is to be developed to manage the records of Library who enters a library for service.	*2*	*2*	**10**

			Identify the principal viewpoints which might be taken into account in the specification of this system and organize these using a view point hierarchy diagram and explain.			
		b)	Explain the requirement engineering process with a neat diagram.	*1*	*1*	**10**
			OR			
	4	a)	Write the scenario for article downloading in LIBSYS.	*1*	*1*	**10**
		b)	Design the data flow diagram for Equipment procurement process.	*3*	*3*	**10**
			UNIT - III			
	5	a)	Explain the Object oriented decomposition and Function oriented pipelining for an invoice processing system with a neat diagram. Discuss their advantages and disadvantages.	*2*	*2*	**10**
		b)	i) Consider the loan system in Global Commerce Bank. The bank provides different kinds of loan some of the attributes are common to all loans, using Generalization hierarchy design the class diagram for Loan system. ii) Analyze the system and suggest an appropriate control model for the following. Give reasons for your answers i) An automated ticket-issuing system used by passengers at the railway station. ii) A television controller that responds to signals from a remote control unit iii) A computer-controlled video conferencing system that allows video, audio and computer data to be visible to several participants at the same time. iv) A batch processing system that takes information about hours worked and pay rates and also prints salary slips, bank credit transfer information.	*2*	*2*	**10E**
			OR			
	6	a)	Define System organization. Explain three organizational styles that are widely used in architectural design.	*1*	*1*	**10**
		b)	Explain Centralized control and Event-driven systems with neat diagrams	*1*	*1*	**10**
			UNIT - IV			
	7	a)	Describe the basic principles that guide software project scheduling.	*1*	*1*	**10**
		b)	I) Describe W^5HH principle of project plan. II) An organization's average productivity is 550 LOC/pm. The average labour rate is $9750 per month. Calculate i) Cost per line of code ii) Overall project cost if the proposed project has 282000 LOC iii) Estimated effort in person-months			

			OR			
	8	a)	Explain the risk management process with a neat diagram. Identify with Examples the common project, product, and business risks.	*1*	*1*	**10**
		b)	Explain The project scheduling process with neat diagram. Illustrate the relation between Tasks, durations, and dependencies and draw the activity bar chart by considering an example.	*2*	*2*	**10**
			UNIT - V			
	9	a)	Explain Clean Room Software development with a neat diagram.	*1*	*1*	**10**
		b)	Consider that an organization has 20 legacy systems. Analyze how the quality and the business value of each of these systems is assessed and compared with others by plotting it on a chart showing relative business value and system quality. Discuss what are the different clusters that could be formed and explain your answer.	*2*	*2*	**10**
			OR			
	10	a)	Consider the "Binary Search routine" Write the specification of a search routine. Analyze the equivalence partitions for search routine with suitable test cases. Draw the corresponding flow graph for a binary search routine find the number of independent paths to be tested.	*2*	*2*	**10**
		b)	i) Consider the task "Online Payment collection" where payment may be made in 3 different ways. The user selects which way they wish to pay. If the user has organization subscription, then they can input the subscriber key which would be checked by the system. Alternatively, they can input organizational account number. If this is valid, a debit of the cost of the article is posted to this account. Finally, they may input the 16 digit credit card number and expiry date. This should be checked for validity and, if valid a debit is posted to that credit card account. Write the Test case description for credit card validity using a template. ii) Explain the structure of a software test plan	*2*	*2*	**10**

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