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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: V**
Branch: Information Science and Engineering **Duration: 3 hrs.**
Course Code: 22IS5PCSEO **Max Marks: 100**
Course: Software Engineering and Object-Oriented Modelling 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)		A small restaurant owner wants to create a mobile app for their business to facilitate online ordering and table reservations. Outline the key work products, activities, tasks, and participant roles and responsibilities involved in developing this mobile app.	*CO2*	*PO1*	**10**
	b)		You have been tasked with creating a social media platform tailored specifically for pet lovers. Detail the five functional requirements and five non-functional requirements that should be considered during the development of this platform	*CO2*	*PO1*	**10**
			OR			
2	a)		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*	**10**
	b)		Elucidate the roles and responsibilities for designing a project for managing a travel agency.	*CO2*	*PO2*	**10**
			UNIT - II			
3	a)		Design a sequence diagram for the checkout process in an online shopping platform, elaborating on the steps involved from adding items to the shopping cart to placing the order	*CO3*	*PO3*	**10**
	b)		Design a use case diagram for the online banking system, where customers can perform various transactions such as checking account balances, transferring funds between accounts, paying bills, and updating personal information. Administrators manage user accounts and system settings. Identify suitable primary actors, secondary actors and use cases	*CO3*	*PO3*	**10**
			OR			
4	a)		Design a state machine diagram that captures possible states of a hotel room reservation, considering scenarios such as room availability, booking confirmation, room cleaning, and guest	*CO3*	*PO3*	**10**

			check-in/check-out. Include states for **room availability, reserved, cleaning, occupied, and vacated.**			
		b)	Design a class diagram to represent the entities and relationships for online learning platform by considering below scenarios 1. Courses and Lessons Management: • Courses are offered on various subjects, each consisting of multiple lessons. • Each lesson covers a specific topic and may include multimedia content such as videos, presentations, or text. • Lessons are organized within courses and may have prerequisites. 2.Assignments and Quizzes: • Courses include assignments and quizzes to assess students' understanding of the material. • Assignments are tasks or projects that students complete and submit for evaluation. • Quizzes are short assessments with multiple-choice or short-answer questions. 3.Student Enrollment and Progress Tracking: • Students can enroll in courses and track their progress through the course material. • Progress is measured by completion of lessons, assignments, and quizzes. • Students may receive badges or certificates upon completing a course. 4.Instructor Feedback and Evaluation: • Instructors provide feedback on assignments and quizzes submitted by students. • Feedback may include comments, grades, or scores. • Instructors evaluate students' performance and provide guidance for improvement. 5.User Roles: • Users of the platform include students and instructors, each with different permissions and access levels. • Students can enroll in courses, access course materials, submit assignments, and view feedback. • Instructors can create courses, manage course content, evaluate student submissions, and provide feedback.	***CO3***		**10**
			UNIT - III			
	5	a)	Describe Green field, Re-engineering and Interface engineering with suitable examples.	***CO1***		**06**
		b)	Illustrate the key aspects of Completeness, Consistency, Clarity, and Correctness in the design and operation of a smartphone application, using specific functionalities or features of the app as examples.	***CO2***	***PO2***	**07**
		c)	Explain the FURPS+ model and its significance in software engineering.	***CO1***		**07**

			OR			
	6	a)	Identify the Functional and Non Functional requirements of an Automated Petrol Pump System.	*CO3*	*PO1*	**06**
		b)	Analyze the classifications of requirements elicitation activities based on the source of the requirements and explain each of them in detail	*CO3*	*PO2*	**07**
		c)	Analyze the different properties checked during Requirement validation and explain each of them with an example.	*CO3*	*PO2*	**07**
			UNIT - IV			
	7	a)	Consider a Ride-Sharing Application. Define Fault, Error, Failure, and Erroneous State, and write five test cases considering considering all the attributes.	*CO3*	*PO3*	**10**
		b)	Demonstrate the various black box test cases using Equivalence class partitioning and boundary values analysis to test a module for a payroll System	*CO3*	*PO3*	**10**
			OR			
	8	a)	Identify the Equivalence classes and selected valid inputs for testing the method computing the number of days in a given month.	*CO4*	*PO2*	**10**
		b)	Illustrate Completeness, Consistency, Clarity, and Correctness for a User friendly Mobile application system.	*CO3*	*PO2*	**10**
			UNIT - V			
	9	a)	Describe the Model-View-Controller (MVC) architecture with a neat diagram by representing its components and their interactions .Illustrate advantages and disadvantages of employing MVC in software development.	*CO2*	*PO2*	**10**
		b)	Compare and contrast the Scrum approach to Project management with conventional plan- based approaches	*CO1*		**05**
		c)	Imagine you are leading a software development team tasked with creating a new mobile application for a client. The client has provided a basic set of requirements but expects frequent updates and improvements based on user feedback. How would you apply the principles of Agile methodology to manage this project effectively? Provide a detailed plan outlining how you would prioritize tasks, conduct regular feedback sessions, and adapt to changing requirements throughout the development process	*CO2*	*PO2*	**05**
			OR			
	10	a)	As a software architect responsible for building an online shopping platform, Outline the implementation of the client-server model to facilitate communication between the website interface (client) and the backend database system (server). With a neat diagram subsequently, assess the merits and demerits of adopting this architecture.	*CO2*	*PO2*	**10**
		b)	Discuss the Extreme programming release cycle.	*CO1*		**05**
		c)	Agile methodologies are used to build a new web application. However, you encounter practical challenges during the	*CO2*	*PO2*	**05**

			development process. For instance, the team struggles with maintaining consistent communication due to remote work arrangements and there are frequent changes in project scope from stakeholders. How would you address these practical problems while still adhering to Agile principles? Provide a comprehensive strategy to overcome these challenges and ensure the successful completion of the project.			

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