U.S.N.										

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

Autonomous Institute Affiliated to VTU

October 2024 Supplementary Examinations

Programme: B.E. **Semester: VI**
Branch: Information Science and Engineering **Duration: 3 hrs.**
Course Code: 22IS6PESOA **Max Marks: 100**
Course: Service Oriented Architecture

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)	Government agencies often adopt Service-Oriented Architecture (SOA) to modernize their IT infrastructure and improve the delivery of citizen services. Consider a government agency responsible for citizen services, identify the Challenges Faced in the implementation of SOA and address the solutions to overcome the challenges.	CO1	PO	06
	b)	Summarize the key characteristics of Contemporary Trends of SOA with real-time examples.	CO1	PO	10
	c)	Define Services in SOA with its key characteristics.	CO1	PO	04
		UNIT - II			
2	a)	Explore how load balancing in the NGINX web server addresses the issue of the incapability of managing 10K concurrent clients /connections.	CO2	PO1	06
	b)	Provide a simplified SOA service contract design for an online payment service.	CO3	PO2	07
	c)	How should an e-commerce application be designed to maintain coupling and cohesion across its microservices?	CO2	PO1	07
		UNIT - III			
3	a)	How have web service standards evolved from SOAP to REST to GraphQL, and how has each standard addressed the limitations of its predecessors? Provide examples to illustrate the progression.	CO2	PO1	10
	b)	Explore the significance of containerisation and orchestration in contemporary application deployment. Analyse how Docker and Kubernetes collaborate to improve scalability and reliability, with illustrative instances.	CO3	PO2	10
		OR			

	4	a)	Analyse how decentralised data management and independent deployment can lead to improved resilience and agility in service-oriented architectures. Illustrate with real-world examples.	*CO3*	*PO2*	**10**
		b)	Describe the role of infrastructure automation in microservices. What tools and practices are commonly used to achieve it?	*CO2*	*PO1*	**05**
		c)	Examine the significance of event-driven messaging systems in SOA. Illustrate with examples how these systems enhance real-time data processing and responsiveness.	*CO2*	*PO1*	**05**
			UNIT - IV			
	5	a)	Outline the best practices for securing RESTful APIs.	*CO1*		**10**
		b)	Summarize the measures required to ensure confidentiality, integrity, and availability in SOA.	*CO2*	*PO1*	**10**
			OR			
	6	a)	How is XML signature used to secure data in SOA? Provide an example.	*CO2*	*PO1*	**05**
		b)	Outline the various techniques used to implement SHA algorithm in SOA for ensuring data integrity and security.	*CO3*	*PO2*	**05**
		c)	Identify common security vulnerabilities in SOA and methods to address them.	*CO2*	*PO1*	**10**
			UNIT - V			
	7	a)	Define serverless computing and how it is transforming SOA?	*CO2*	*PO1*	**07**
		b)	Identify the different types of edge architectures and illustrate any one type of architecture with an example.	*CO2*	*PO1*	**08**
		c)	Provide the key techniques of predictive analytics to optimize the services by anticipating needs and preventing issues with a use case.	*CO3*	*PO2*	**05**

****