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

Autonomous Institute Affiliated to VTU

June 2025 Semester End Main 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)	Provide the Benefits and Challenges of SOA with real use cases.	CO1		08
	b)	Suppose we have a web service called "StockPriceService" that provides current stock price information for a given company. The service exposes a method called "getStockPrice" that takes the company's ticker symbol as input and returns the current stock price. Illustrate how a client can interact with this web service using SOAP and WSDL.	CO1		07
	c)	Explain the importance of service interoperability in SOA and provide a real-world scenario where this characteristic is beneficial.	CO1		05
		OR			
2	a)	Provide any four key characteristics of it. Also, illustrate how Airbnb leverages Cloud Computing services to enhance its platform and handle real-world demands.	CO2	PO1	10
	b)	Explain how loose coupling and the use of standardized interfaces contribute to the flexibility and scalability of Expedia's services.	CO2	PO1	10
		UNIT - II			
3	a)	How do the principles of service design, such as cohesion and granularity, contribute to building scalable and maintainable services? Illustrate your explanation with real-world examples.	CO2	PO1	10
	b)	How does JioCinema ensure effective load balancing within its application?	CO3	PO2	05
	c)	How should an e-commerce application be designed to maintain coupling and cohesion across its microservices?	CO2	PO1	05
		OR			
4	a)	How do versioning and evolution impact service contracts? Illustrate with an example where versioning is crucial.	CO2	PO1	5
	b)	Provide a simplified SOA service contract design for an online payment service	CO2	PO1	10
	c)	Explain how deploying functions across multiple cloud providers ensures fault tolerance and high availability, and discuss the role	CO1		05

			of tools like Netflix's Eureka and Chaos Monkey in pre-deployment testing environments			
			UNIT - III			
	5	a)	Explain the importance of independent deployment in microservices. How does this principle contribute to the scalability and maintainability of services?	***CO2***	***PO1***	**05**
		b)	An e-commerce application requires a payment gateway integration. Describe an approach with code snippet for the integration ensuring reliable communication between the web services?	***CO3***	***PO2***	**05**
		c)	Compare and contrast SOAP and REST in terms of their protocols, data formats, and typical use cases with the advantages and disadvantages of each.	***CO3***	***PO2***	**10**
			OR			
	6	a)	Define decentralized data management in the context of microservices architecture. How does it differ from the data management approach in traditional SOA?	***CO2***	***PO1***	**05**
		b)	What is GraphQL and how does it differ from traditional REST APIs? Provide an example use case for GraphQL.	***CO3***	***PO2***	**07**
		c)	Analyse how event sourcing and CQRS can be integrated into a service-oriented architecture to enhance performance and scalability. Provide examples to support your discussion.	***CO3***	***PO2***	**08**
			UNIT - IV			
	7	a)	How do Secure Hash Algorithms (SHA) ensure data integrity in SOA?	***CO3***	***PO2***	**05**
		b)	List the various security design patterns that address common security concerns and reduce threats in software architecture.	***CO2***	***PO1***	**05**
		c)	Identify common security vulnerabilities in SOA and methods to address them.	***CO2***	***PO1***	**10**
			OR			
	8	a)	Identify the key security risks specific to healthcare apps and methods to mitigate them.	***CO2***	***PO1***	**10**
		b)	Discuss the measures required to ensure confidentiality, integrity, and availability in SOA.	***CO2***	***PO1***	**10**
			UNIT - V			
	9	a)	How does edge computing enhances SOA to meet modern demands and supports the growth of innovative applications in various domains.	***CO3***	***PO2***	**10**
		b)	How is the use of AI and ML within SOA frameworks enhancing service performance and efficiency?	***CO3***	***PO2***	**10**
			OR			
	10	a)	Identify the different types of edge architectures and illustrate any one type of architecture with an example.	***CO3***	***PO2***	**10**
		b)	Outline the Key Features and Operational Characteristics of serverless computing with examples	***CO2***	***PO1***	**10**

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