PAPER ID-310949

Roll No: | | | | | | | | | | | | | |

BTECH
(SEM VII) THEORY EXAMINATION 2023-24
SERVICE ORIENTED ARCHITECTURE

TIME: 3 HRS **M.MARKS: 100**

Note: Attempt all Sections. If you require any missing data, then choose suitably.

SECTION A

1. Attempt *all* questions in brief. **2*10 = 20**

Qno	Questions
(a)	Explain the foundational principles underlying the roots of Service-Oriented Architecture (SOA) and its relevance in modern software development practices.
(b)	Discuss the essential components that constitute Service-Oriented Architecture (SOA) and their roles in enabling a service-based approach to system design and development.
(c)	Define and elucidate the concept of atomic transactions within the context of Service-Oriented Architecture (SOA), emphasizing their significance in ensuring data integrity and reliability.
(d)	What is meant by service layer abstraction in the context of SOA? Explain how this abstraction facilitates the decoupling of services and enhances system flexibility.
(e)	What is service-oriented design in software architecture
(f)	Explain the concept of Task-centric business service design
(g)	Discuss the support provided by the .NET framework for Service-Oriented Architecture (SOA)
(h)	What is meant by WSE (Web Services Enhancements)
(i)	Define the concept of Web Services Policy (WS policy)
(j)	describe ASP.NET web services

SECTION B

2. Attempt any *three* of the following: **10*3 = 30**

(a)	i. Explain the key concepts and core functionalities of WS-BPEL (Web Services Business Process Execution Language). ii. b. Discuss two real-world applications where WS-BPEL is extensively used. How does WS-BPEL facilitate the orchestration of web services in these applications?
(b)	Define and explain the four fundamental principles of service orientation. Provide an example for each principle to illustrate its significance in Service-Oriented Architecture (SOA)
(c)	i. a. Define and elaborate on the concept of Business-Centric Service-Oriented Architecture. Discuss its advantages in modern enterprise systems. ii. Provide a case study highlighting the successful implementation of Business-Centric SOA in enhancing business processes and efficiencies within an organization.
(d)	i. a.Explain the SOAP (Simple Object Access Protocol) messaging protocol in detail, focusing on its structure, elements, and how it facilitates communication between web services. ii. b.How does SOAP handle message exchange patterns and various communication styles between distributed applications? Discuss with examples.
(e)	i. a.Provide an overview of JAX-WS (Java API for XML-based Web Services) and its role in developing web services using Java. ii. b. Explain the step-by-step working process of creating and deploying a basic web service using JAX-WS. Include necessary code snippets or diagrams to illustrate the process.

SECTION C

3. Attempt any *one* part of the following: **10*1 = 10**

(a)	Explain how Java Architecture for XML Binding (JAXB) functions within Service-Oriented Architecture (SOA) to facilitate data binding and XML representation of services. Highlight its significance in service interoperability.

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(b)	Describe various Web Services Interoperability Technologies and their roles in enabling seamless communication between heterogeneous systems. Provide brief explanations of at least three interoperability technologies.

4. Attempt any *one* part of the following: 10 *1 = 10

(a)	Provide an in-depth description of WS-Choreography, explaining its role in orchestrating interactions and choreographing web services in a collaborative manner. (10 marks)
(b)	Define WS Security in the context of web services. Elaborate on its components and mechanisms employed for ensuring security in SOA.

5. Attempt any *one* part of the following: 10*1 = 10

(a)	Differentiate between the basics of Web Services Description Language (WSDL) and Simple Object Access Protocol (SOAP) within Service-Oriented Architecture (SOA). Highlight their respective functionalities and roles in service communication.
(b)	Discuss the principles and concepts behind Entity-Centric Business Service Design within SOA. Explain how it aids in modeling business entities and processes, enhancing business agility and adaptability.

6. Attempt any *one* part of the following: 10*1 = 10

(a)	Illustrate and explain the architecture of the Application Service Layer within Service-Oriented Architecture. Highlight its components and functionalities in service provisioning
(b)	Discuss various Message Exchange Patterns (MEPs) in SOA, elucidating their significance in defining communication styles between services and clients

7. Attempt any *one* part of the following: 10*1 = 10

(a)	Compare and contrast Service-Oriented Architecture (SOA) with traditional client-server architecture and distributed internet architectures. Highlight the key differences, advantages, and limitations of each
(b)	Explain the anatomy of SOA, detailing its fundamental characteristics that distinguish it from other architectural paradigms. Discuss the key characteristics that define the essence of SOA