

**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY GURAJADA VIZIANAGARAM**  
**IV B. Tech I Semester Advanced Supplementary Examinations March 2025**  
**API AND MICROSERVICES**

(AI&DS, AI&ML, CSE, CSE(AI&ML), CSE(AI), CSE(DS) and CSE(CS))

Time: 3 hours

Max. Marks: 70

Answer any **FIVE** Questions **ONE** Question from **Each unit**  
All Questions Carry Equal Marks

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**UNIT-I**

1. a) What is the Spring Framework, and how does it help in enterprise application development? [7M]  
b) What are the benefits of using Dependency Injection in a Spring application? [7M]  
(OR)
2. a) What is the difference between Component, Service, Repository, and Controller annotations in Spring? [7M]  
b) What are the core modules of the Spring Framework, and what are their functions? [7M]

**UNIT-II**

3. a) How do you create a Spring Boot application from scratch? [7M]  
b) How does `@SpringBootApplication` enable component scanning and auto-configuration? [7M]  
(OR)
4. a) What is the difference between `@Autowired` and `@Qualifier` in Spring Boot? [7M]  
b) How can AOP be used to implement logging and security in Spring Boot applications? [7M]

**UNIT-III**

5. a) What is the role of `JpaRepository` in Spring Data JPA? [7M]  
b) How do you implement pagination and sorting in Spring Data JPA? [7M]  
(OR)
6. a) What is the difference between JPQL and Native Queries? [7M]  
b) What are the best practices for optimizing performance in Spring Data JPA? [7M]

**UNIT-IV**

7. a) What is Service-Oriented Architecture (SOA), and how does it relate to Web Services? [7M]  
b) What are the key differences between SOAP-based Web Services and RESTful Web Services? [7M]  
(OR)
8. a) What is WSDL and how does it work? [7M]  
b) What are the key annotations used to create RESTful Web Services in Spring Boot? [7M]

**UNIT-V**

9. a) What is the difference between `@PathVariable`, `@RequestParam`, and `@MatrixVariable` in Spring REST? [7M]  
b) What are the commonly used validation annotations in Spring Boot? [7M]  
(OR)
10. a) What is CORS and why is it important in REST APIs? [7M]  
b) How can you implement JWT authentication in a Spring Boot REST API? [7M]

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