M.Tech. / B.E. / B.Tech. - DEGREE EXAMINATIONS, NOV / DEC 2025

Fifth Semester

M.Tech. - Computer Science and Engineering (5 Years Integrated)

20CJPW501 - JEE FRAMEWORK WITH LABORATORY

Regulations - 2020

Duration: 3 Hours   Max. Marks: 100

PART - A (MCQ) (10 × 1 = 10 Marks)
Answer ALL Questions

		Marks	K – Level	CO
1.	Choose the component in Java EE responsible for rendering dynamic content based on business logic and data from the server. a) Servlets b) JSPs c) Static resources d) Configuration files	1	K1	CO1
2.	In a Java EE application, which type of dependency is typically used for packaging and deploying web applications? a) JAR b) WAR c) EAR d) RAR	1	K1	CO1
3.	Suppose you need to route user requests to the appropriate business logic without affecting the user interface. Which MVC component should handle this routing? a) View b) Controller c) Model d) Frontend Layer	1	K1	CO2
4.	What is the primary purpose of Maven in a Java project? a) To write unit tests b) To manage dependencies and build the project c) To generate documentation d) To deploy the application to a server	1	K1	CO2
5.	_____ component creates the connection between the Java classes and database tables. a) Database b) hibernate.properties c) Class Mapping Setup d) hibernate.cfg.xml	1	K1	CO3
6.	The ORM tool internally uses the _____ to interact with the database. a) Object-Relational API b) JDBC API c) JDBC-ORM API d) Hibernate API	1	K1	CO3
7.	Which Hibernate annotation is used to specify the table name for an entity? a) @Table b) @Column c) @Entity d) @Id	1	K1	CO4
8.	In Spring Data JPA, what is the main advantage of using derived query methods? a) They allow for complex joins between multiple tables b) They automatically generate SQL based on method names c) They provide better performance than native queries c) They support non-relational databases	1	K1	CO4
9.	What is the primary purpose of an Authorization Constraint in web security? a) To encrypt data b) To validate user credentials c) To restrict access to resources based on user roles or permissions d) To generate secure tokens	1	K1	CO5
10.	Which part of a JWT contains the claims and other information about the token? a) Header b) Payload c) Signature d) Envelope	1	K1	CO6

PART - B (12 × 2 = 24 Marks)
Answer ALL Questions

		Marks	K – Level	CO
11.	Differentiate between Web Component and Business component in Enterprise application.	2	K2	CO1
12.	How does a message-driven bean lifecycle differ from a session bean lifecycle?	2	K2	CO1
13.	What is the purpose of Maven dependencies?	2	K1	CO2
14.	List the three GAV coordinates of the artifact in pom.xml.	2	K1	CO2

K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate; K6 – Create   **14020**

15.	Compare Hibernate's connection pooling mechanism with a typical JDBC connection pool.	*2*	*K2*	*CO3*
16.	Identify the advantages and limitations of using JNDI in enterprise applications.	*2*	*K2*	*CO3*
17.	Write a JPA annotation for a @OneToMany relationship between Department and Employee.	*2*	*K2*	*CO4*
18.	Show how to define a Domain Model class with @Entity and @Id.	*2*	*K2*	*CO4*
19.	What is the purpose of the JWT signature. How does it contribute to the security of the token?	*2*	*K1*	*CO5*
20.	List two common authentication mechanisms used in web applications.	*2*	*K1*	*CO5*
21.	Identify the four main roles defined in the OAuth2 framework.	*2*	*K1*	*CO6*
22.	Name two HTTP status codes that might be returned during an OAuth2 authorization flow and explain their meanings.	*2*	*K1*	*CO6*

PART - C (6 × 11 = 66 Marks)
Answer ALL Questions

23.	a)	Describe in detail about standard Architecture of J2EE with a neat diagram.	*11*	*K2*	*CO1*
		OR			
	b)	Illustrate the different services provided by Java EE containers with suitable examples.	*11*	*K2*	*CO1*
24.	a)	What are the various types of Maven repositories and explore their differences?	*11*	*K1*	*CO2*
		OR			
	b)	Explain the Model View Controller architecture in detail with a neat diagram.	*11*	*K1*	*CO2*
25.	a)	Outline the steps to build a simple CRUD application with Hibernate.	*11*	*K2*	*CO3*
		OR			
	b)	Illustrate the concept of Data Source object creation in detail.	*11*	*K2*	*CO3*
26.	a)	Implement the different types of entity relationships in JPA using the School Management System as an example.	*11*	*K3*	*CO4*
		OR			
	b)	Model the use of at least 3 JPA annotations in an entity class. Provide code examples and explain the purpose of each annotation	*11*	*K3*	*CO4*
27.	a)	Explain the structure of a JSON Web Token (JWT). Provide a breakdown of its three components and describe the information typically contained in each.	*11*	*K2*	*CO5*
		OR			
	b)	Describe how to configure JWT in a Spring application. What are the essential properties to set up, and how do they affect token generation and validation?	*11*	*K2*	*CO5*
28.	a)	Explain the role of an OAuth registry and the function of authorization end points.	*11*	*K1*	*CO6*
		OR			
	b)	Explain about the architecture of OAuth2. Create a diagram illustrating the roles involved (resource owner, client, authorization server, resource server) and describe their interactions.	*11*	*K1*	*CO6*

K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate; K6 – Create