MASTER OF COMPUTER

APPLICATIONS

(MCA)

Term-End Examination

June, 2025

MCS-220 : WEB TECHNOLOGIES

Time : 3 Hours   *Maximum Marks : 100*

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*Note : Question No. 1 is compulsory. Attempt any **three** questions from the rest.*

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1. Answer the following questions :   5×8=40

   (a) Explain J2EE, with the help of a diagram.

(b) Discuss the significance of servlets in J2EE architecture. How do they facilitate the development of web applications ?

(c) What is "Session" in web development ? Explain its importance. Differentiate between httpsession and cookie.

(d) Write a JSP program that allows users to convert temperature between Celsius and Fahrenheit. Indude user input validation and display the results.

(e) Explain the role of interceptors in a struts-2 framework. How do they intercept and manipulate requests in the request processing lifecycle ?

(f) What is the primary goal of Spring Boot ? Compare and contrast with spring MVC.

(g) Explain the principle of Inversion of Control (IoC). How does IoC differ from traditional procedural programming in web development ?

(h) What is custom CSS ? Describe the process of defining custom CSS rules with in a JSP file.

2. (a) Explain the concept of a 'design pattern' in your own words. How does it relate to software development ? How do design patterns promote code reusability and maintainability ? 10

(b) Explain Hibernate configuration using annotations and their benefits over XML configuration. How does Hibernate simplify the process of database configuration ?   10

3. (a) What is a message digest ? Explain the purpose of using message digests in cryptographic protocols and applications and give the properties of a secure message digest algorithm.   10

(b) What are the key features of Hibernate that make it suitable for web development ? Discuss the benefits of using Hibernate for Object Relational Mapping (ORM) in web applications.   10

4. (a) Discuss the advantages of using Spring-Boot for building microservices architecture. How does Spring Boot simplify web development ? Explain a real-world scenario where Spring Boot would be beneficial in developing a web application. 10

   (b) What is lazy loading in Hibernate and how does it optimize database performance ? How does Hibernate support transaction management in Java applications ? 10

5. (a) Discuss the following security vulnerabilities in web application : 10

   (i) SQL Injection

(ii) Session   Management
     Vulnerabilities

(iii) Cross Site Request Forgery (CSRF)

(iv) Cross Site Scripting (XSS)

(b) Explain the difference between role-based authentication and permission-based authentication. Describe the advantages of using role-based authentication over other authentication methods. How does role-based login contribute in industry ?   10

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