

**MASTER OF COMPUTER
APPLICATIONS
(MCA-NEW)**

**Term-End Examination
December, 2024**

MCS-220 : WEB TECHNOLOGIES

Time : 3 Hours

Maximum Marks : 100

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

1. (a) What is J2EE ? Discuss the basic parts of the J2EE application model. 5
- (b) Differentiate between Structural design patterns and Behavioral design patterns. 5
- (c) What is Spring Boot ? Discuss the essential components of Spring Boot. 5
- (d) Differentiate between save() and persist() method. 5

- (e) Discuss the term Dependency Injection with a suitable example. 5
 - (f) What are Annotations in Java ? Discuss the applications of Java Annotations. 5
 - (g) How does Crud Repository differ from JPA Repository ? Under what conditions it's better to choose JPA Repository over Crud Repository ? 5
 - (h) Explain the encryption of data in-transit and at-rest. Give utility of each. 5
2. (a) What are design patterns in Java ? Explain the repository design pattern with suitable diagram. 7
- (b) What is WAR packaging ? How does it differ from JAR packaging ? Describe the creation, deployment and extraction of WAR file. 8
- (c) Discuss the architecture of servlet with a suitable block diagram. 5

3. (a) Discuss spring framework. Explain the role of Dependency Injection (DI), Inversion of control (IoC) and Aspect Oriented Programming (AOP) in spring framework.

8

- (b) What is Object Relational Mapping (ORM) ? Give its utility and also, explain the various types of ORM.

7

- (c) What is Maven ? Draw the block diagram to exhibit the execution flow of Maven.

5

4. (a) What is Bootstrap ? Briefly discuss the different ways to configure Bootstrap into JSP or HTML.

8

- (b) Differentiate between the following :

 $3 \times 4 = 12$

- (i) Model-I (MVC) and Model-2 (MVC) Architecture of web application development.

- (ii) Struts and Spring architecture

- (iii) Spring Boot and Spring MVC

- (iv) Spring and Hibernate

5. Write short notes on the following : $4 \times 5 = 20$

- (i) Java Cryptography Architecture (JCA)
- (ii) Servlet filters
- (iii) Role Based Login
- (iv) Spring Boot Actuator and its advantages
- (v) Hibernate Entity life cycle

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