

MASTER OF COMPUTER APPLICATIONS (MCA_NEW)

**ASSIGNMENTS
OF MCA_NEW (2Yrs) PROGRAMME
SEMESTER-II**

(July - 2025 & January - 2026)

MCS-218, MCS-219, MCS-220, MCS-221

MCSL-222, MCSL-223



**SCHOOL OF COMPUTER AND INFORMATION SCIENCES
INDIRA GANDHI NATIONAL OPEN UNIVERSITY
MAIDAN GARHI, NEW DELHI – 110 068**

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Important Notes

1. Submit your assignments to the Coordinator of your Study Centre on or before the due date.
2. Assignment submission before due dates is compulsory to become eligible for appearing in corresponding Term End Examinations. For further details, please refer to Programme Guide of MCA (2Yrs).
3. To become eligible for appearing the Term End Practical Examination for the lab courses, it is essential to fulfill the minimum attendance requirements as well as submission of assignments (on or before the due date). For further details, please refer to the Programme Guide of MCA (2yrs).
4. The viva voce is compulsory for the assignments. For any course, if a student submitted the assignment and not attended the viva-voce, then the assignment is treated as not successfully completed and would be marked as ZERO.

Course Code	:	MCS-220
Course Title	:	Web Technologies
Assignment Number	:	MCA_NEW(II)/220/Assign/2025-26
Maximum Marks	:	100
Weightage	:	30%
Last date of Submission	:	31st October, 2025 (For July, 2025 Session) 15th April, 2026 (For January, 2026 Session)

This assignment has nine questions of 80 Marks. Answer all questions. Rest 20 marks are for viva voce. You may use illustrations and diagrams to enhance the explanations. Please go through the guidelines regarding assignments given in the Programme Guide for the format of presentation.

- Q1:** (a) What is a Singleton Design Pattern? Explain a scenario where it is useful in a web application and provide a Java code example for its implementation. **(5 Marks)**
- (b) Differentiate between a Web Server and a Web Container. Explain the core components of the Model-View-Controller (MVC) architecture with a suitable diagram. **(5 Marks)**
- Q2:** (a) Explain the two primary mechanisms for servlet communication: RequestDispatcher and sendRedirect. Highlight the key differences between them with an example. **(5 Marks)**
- (b) What is Session Management in a web application? Briefly explain the different techniques used to manage sessions in Servlets. **(5 Marks)**
- Q3:** (a) What are JSP Implicit Objects? Explain the purpose and use of the request, response, session, and out implicit objects with code snippets. **(5 Marks)**
- (b) Explain the function of the following JSP Action Tags with suitable code examples: **(5 Marks)**
- i. `<jsp:include>`
 - ii. `<jsp:forward>`
 - iii. `<jsp:useBean>`
- Q4:** What do you mean by Maven? Explain the structure and purpose of a pom.xml file. Also, describe the key phases of the default Maven build lifecycle. **(5 Marks)**
- Q5:** Explain the concept of Inversion of Control (IoC) and Dependency Injection (DI) in the Spring Framework. Provide a simple example demonstrating DI using annotations. **(5 Marks)**
- Q6:** (a) Explain how to perform Update and Delete operations in a web application using Spring Boot and Hibernate. Provide relevant code snippets for the Repository and Service layers. **(5 Marks)**
- (b) Explain how form validation is handled in Spring MVC. Provide an example of a model class with validation annotations and the corresponding Controller method to process it. **(5 Marks)**
- Q7:** Explain the request processing workflow in a Spring MVC application. Describe the roles of the DispatcherServlet, Controller, and ViewResolver with the help of a diagram. **(5 Marks)**

- Q8:** (a) Describe the steps to configure Spring Security in a Spring Boot application using Java-based configuration. Show a basic security configuration class that secures all endpoints. **(5 Marks)**
- (b) Write a complete Servlet program that retrieves user data (e.g., name, email) from an HTML form and inserts it into a database table using JDBC. **(5 Marks)**
- Q9:** Write short notes on the following: **(15 Marks)**
- (a) Hibernate ORM Framework
 - (b) JSP Directives (page, include, taglib)
 - (c) Spring Boot Actuator