Faculty of Engineering / Science
End Semester Examination May 2025
CS3CO37 / BC3CO63 Advanced Java Programming

Programme	:	B.Tech./B.Sc.	Branch/Specialisation	:	CSE All / CS
Duration	:	3 hours	Maximum Marks	:	60

Note: *All questions are compulsory. Internal choices, if any, are indicated. Assume suitable data if necessary. Notations and symbols have their usual meaning.*

		Marks	CO	BL

Section 1 (Answer all question(s))

Q1. Which among the following allow duplicate elements? **1 1 2**
- ◉ ArrayList
- ○ HashSet
- ○ LinkedHashSet
- ○ TreeSet

Q2. Which of the following represents a Lambda expression in Java? **1 1 2**
- ◉ (int a, int b) -> a + b
- ○ public int add(int a, int b) { return a + b; }
- ○ (a, b) => a + b
- ○ int sum = (x, y) -> x + y;

Q3. What is the difference between servlets and applets? **1 2 3**
i. Servlets execute on Server; Applets execute on browser
ii. Servlets have no GUI; Applet has GUI
iii. Servlets creates static web pages; Applets creates dynamic web pages
iv. Servlets can handle only a single request; Applet can handle multiple requests
- ○ i, ii, iii are correct
- ◉ i, ii are correct
- ○ i, iii are correct
- ○ i, ii, iii, iv are correct

Q4. Which of the following code is used to get an attribute in an HTTP session object in servlets? **1 2 2**
- ◉ session.getAttribute(String name)
- ○ session.alterAttribute(String name)
- ○ session.updateAttribute(String name)
- ○ session.setAttribute(String name)

Q5. Which interface prevents SQL injection? **1 3 2**
- ○ Statement
- ◉ Prepared statement
- ○ Callable statement
- ○ All of these

Q6. By convention, page directives are coded at _____ of the JSP page. **1 3 2**
- ◉ Top
- ○ Bottom
- ○ Scriplet
- ○ Declaration

Q7. What is the primary function of the spring IOC container? **1 4 3**
- ○ To handle the application flow
- ○ To provide security management
- ◉ To manage the lifecycle and configuration of beans
- ○ To connect to the database

Q8. Which of the following is a form of dependency injection in spring? **1 4 2**
- ○ Getter Injection
- ○ Setter Injection
- ○ Method Injection
- ◉ All of the above

Q9. What is the main advantage of spring boot over traditional spring applications?   1   5   3

○ Spring boot requires manual configuration of each component

◉ Spring boot eliminates the need for XML configuration

○ Spring boot only supports web applications.

○ Spring boot does not support database integration.

Q10. How does spring boot simplify working with databases?   1   5   2

○ By using Hibernate for database operations only

◉ By automatically configuring the database connection

○ By requiring explicit database configuration for every query

○ By disabling SQL queries

Section 2 (Answer all question(s))

Marks CO BL

Q11. Differentiate between List, Set, and Map in Java with examples.   4   1   4

Rubric	Marks
for each difference 1 mark.	4

Q12. (a) Write a Java program to demonstrate the use of generics with collections?   6   1   3

Rubric	Marks
Program	5
output	1

(OR)

(b) What are Lambda expressions in Java? Explain their types with examples.

Rubric	Marks
Definition	2
Types with example	4

Section 3 (Answer all question(s))

Marks CO BL

Q13. What is a servlet filter?   2   2   2

Rubric	Marks
Definition	2

Q14. Explain the lifecycle of a Java servlet.   3   2   2

Rubric	Marks
explaination	2
Diagram	1

Q15. (a) Explain different HTTP methods used in Servlets?   **5   2   2**

Rubric	Marks
for each method 1 mark	5

(OR)

(b) What is the MVC design pattern? Explain its working with a diagram.

Rubric	Marks
MVC design pattern Definition	2
implementation and diagram	3

Section 4 (Answer all question(s))   Marks CO BL

Q16. What are the different types of session tracking in JSP?   **3   3   3**

Rubric	Marks
for each type 1 mark	3

Q17. (a) Write a JSP program to create a user registration form that takes the user's name, email, and password as input and stores the data in a MySQL database using JDBC.   **7   3   4**

Rubric	Marks
Program	6
output	1

(OR)

(b) What is JDBC? Explain how to establish a database connection in Java using JDBC.

Rubric	Marks
Definition	1
for each step of database connection 1 mark	6

Section 5 (Answer all question(s))   Marks CO BL

Q18. Explain Inversion of Control (IoC) in Spring with an example.   **4   4   2**

Rubric	Marks
Explaination	3
Example	1

Q19. (a) Explain the concept of dependency injection in spring with examples.   **6   4   2**

Rubric	Marks
Explaination	4
Example	2

(OR)

(b) Explain the architecture of the spring framework with key modules.

Rubric	Marks
Explaination	4
Diagram	2

Section 6 (Answer any 2 question(s))

Q20. Describe the steps to develop a spring boot web application.   **5   5   3**

Rubric	Marks
for each step 1 mark	5

Q21. What are the key features of spring boot? How does it differ from spring?   **5   5   3**

Rubric	Marks
key features of Spring Boot	3
Difference from spring	2

Q22. Explain how to create a spring boot application with database connectivity.   **5   5   1**

Rubric	Marks
Explaination	5

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