(T) Roll No. .....

PAPER ID—11184

B. Tech. EXAMINATION, 2025

(Fifth Semester)

COMPUTER SCIENCE AND ENGINEERING

(ARTIFICIAL INTELLIGENCE AND

MACHINE LEARNING)

Advanced JAVA Programming

(Professional Elective Course–I)

Time : 3 Hours *Maximum Marks : 70*

Before answering the question-paper candidates should ensure that they have been supplied to correct and complete question-paper. No complaint, in this regard, will be entertained after the examination.

Note : Attempt *Five* questions in all, selecting *one* question from each Unit. Q. No. **1** is compulsory. All questions carry equal marks.

1. (a) You created a new servlet in Eclipse but its not running on Tomcat. Which deployment descriptor might be missing ?

(b) A developer wants to maintain session data between multiple client requests. Which web component should they use and why ?

(c) You are developing a large enterprise web app.why would you choose Struts over plain Servlets/JSP ?

(d) How does the interceptor stack in Struts2 help in reusable pre- and post-processing of requests ?

(e) What is the advantage of using HQL over native SQL in Hibernate applications ?

(f) Explain one real-world use of Hibernate-Spring integration in enterprise applications.

(g) Which class is commonly used to parse JSON in Android ? 7×2=14

Unit I

2. (a) Design a GenericServlet that displays student details fetched from initialization parameters. Explain the working and importance of init(), service() and getInitParameter() methods. 7

(b) Write a JSP program that uses implicit objects (request, session, application). Demonstrate how data can be shared between multiple JSP pages. 7

3. (a) Design a JSP page using scripting elements to accept two numbers and display their sum. 7

(b) Differentiate between ServletConfig and ServletContext objects. 7

Unit II

4. (a) You are developing an employee management system. Explain how Struts helps separate the presentation and business logic layers effectively. 7

   (b) Create a small Struts2 application that accepts user registration details and stores them temporarily in session. Explain the flow of request and response through the framework. 7

5. (a) Build a Struts2 + Hibernate application to store and display product details. Explain the integration steps and flow from Action class to database. 7

   (b) You are designing an internal helpdesk tool. Explain how JavaMail can be used to retrieve new requests from a mailbox and process them automatically. 7

Unit III

6. (a) Design a simple Hibernate application for storing student details into a MySQL database. Explain the configuration files and object mapping steps involved. 7

   (b) In an e-commerce application, multiple records must update atomically. Explain, how Hibernate handles transaction management and rollback when an exception occurs. 7

7. (a) How can Hibernate and Struts be integrated for a web-based data management system ? 7

   (b) Your team is developing a layered enterprise app. Explain, how Spring's modular architecture helps you design scalable applications. 7

Unit IV

8. (a) Explain, how the four building blocks work together in a news app that fetches articles, stores them locally and sends notifications. 7

   (b) How can you simulate incoming calls, location, or network speed in the Android emulator for testing ? 7

9. (a) Design a navigation menu with options like Home, Settings and Logout. Explain, how you define it in XML and handle menu item clicks in Java. 7

   (b) How would you show multiple marker locations on a map for a delivery-tracking application ? 7

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