(T) Roll No. .....

PAPER ID—11442

B. Tech. (Computer Science and Engineering) EXAMINATION, 2025

(Sixth Semester)

ADVANCE JAVA PROGRAMMING

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) What is the purpose of the init() method in a servlet ? 2

(b) What is a JSP scriptlet ? 2

(c) What are tiles in the Struts application ? 2

(d) What is the use of Log4j in a Hibernate application ? 2

(e) What is the purpose of Spring Boot ? 2

(f) What is Spring AOP used for ? 2

(g) Name any *four* major Android versions and their code names. 2

Unit I

2. What is a Servlet ? Explain the difference between Servlets and CGI programs. Describe the core interfaces that are provided in *javax.servlet.http* package. 14

3. (a) Explain the architecture of JSP. How does a JSP page get converted into a servlet and what is the role of the JSP engine in this process ? 10

(b) What is the difference between a Servlet and a JSP ? 4

Unit II

4. (a) What is Struts and how does it support the MVC architecture ? 7

(b) Explain the core features of Struts 2. How do these features enhance the development of scalable and maintainable web applications ? 7

5. What is JavaMail API ? Explain its architecture and the key classes and interfaces used for sending and receiving e-Mail in Java. 14

Unit III

6. Explain the architecture of Hibernate. How do its core components like SessionFactory, Session, Transaction, and Configuration interact in a typical Hibernate-based application ? 14

7. Explain the different types of dependency injection (DI) in Spring. Compare constructor-based and setter-based injection with examples, and discuss how Spring manages object creation. 14

Unit IV

8. What are the core building blocks of an Android application ? Explain the role of Activities, Services, Broadcast Receivers and Content Providers with examples. 14

9. Describe J2EE design patterns. How do Presentation Layer patterns such as MVC, Front Controller and Intercepting Filter help in building scalable enterprise applications ? 14

