

(2½ Hours)

[Total Marks: 75]

- N. B.: (1) **All** questions are **compulsory**.
(2) Make **suitable assumptions** wherever necessary and **state the assumptions** made.
(3) Answers to the **same question** must be **written together**.
(4) Numbers to the **right** indicate **marks**.
(5) Draw **neat labeled diagrams** wherever **necessary**.
(6) Use of **Non-programmable** calculators is **allowed**.

1. **Attempt any three of the following:** 15
a. What is an enterprise application? What is the enterprise edition of Java?
b. Define Java EE containers with the various Java Container types.
c. Explain the life cycle of a servlet application.
d. Write a short note on javax.Servlet.Servlet package.
e. What is a JDBC Statement object? Explain its 3 types.
f. List and explain each of the four JDBC driver types.
2. **Attempt any three of the following:** 15
a. Explain two methods of RequestDispatcher interface.
b. Where are cookies used? Describe any four important methods of cookie class.
c. What is a session? Explain Session Management Rules.
d. What is Non-Blocking I/O? How it works?
e. Write a servlet code to download a file.
f. Which things needs to be carefully checked and understood while writing file uploading code in servlet?
3. **Attempt any three of the following:** 15
a. What is the use of Java Server Pages? Give the difference between JSP and Servlets.
b. Explain Life Cycle of a JSP Page.
c. What are directives in JSP? Explain its types.
d. Give an explanation of the jsp:useBean action tag's attributes and usage.
e. Write a short note on <JSP:plugin> Action.
f. What exactly is JSTL? Describe XPath in detail.
4. **Attempt any three of the following:** 15
a. What is EJB? Explain its advantages.
b. Write a detailed note on the type of Session beans.
c. Write a short note on Remote and Local Interfaces.
d. Describe message-driven beans characteristics.
e. What is a naming service?
f. Write a note on DataSource Resource Definition in Java EE 7.
5. **Attempt any three of the following:** 15
a. Explain following:
i) JOIN condition Using ON ii) Entity Listeners Using CDI
b. Where Does Java Persistence API Fit In?
c. Why is there a need for Object Relational Mapping (ORM)?
d. Write a short note on Functions in JPQL and Downcasting in JPQL.
e. What is Hibernate? Explain the features of Hibernate.
f. Explain the components of Hibernate configuration.