(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.

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