(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:**
a. Explain the architecture of Java Enterprise Application.
b. Classify the EE Containers. Explain.
c. Write a short note on javax.servlet package.
d. Explain the life cycle of a servlet application.
e. Explain the architecture of JDBC.
f. Explain the architecture of Java Enterprise Application.

2. **Attempt _any three_ of the following:** 15
a. Explain the importance of RequestDispatcher Interface in javax.servlet. Add suitable example to explain the methods of the interface.
b. Explain how java handles session management of a servlet application through HTTPSession.
c. What is cookie? Explain the need of the creation of the same. Explain the methods of cookie class that facilitative the creation, manipulation and deletion of the cookies.
d. What is Non-Blocking I/O? Explain WriteListener and ReadListener performing in Non-Blocking I/O?
e. Explain the working of Non-Blocking I/O.
f. Explain about the file uploading feature of a servlet.

3. **Attempt _any three_ of the following:** 15
a. What are directives in JSP? Explain page directive in detail. (With all its attributes)
b. What is EL? Explain immediate EL, deferred EL, LValue and RValue in detail.
c. Explain the advantages of JSTL over JSP.
d. Explain JSTL core Tag Library.
e. Explain the implicit objects of JSP.
f. Explain the various scope of JSP application.

4. **Attempt _any three_ of the following:** 15
a. Explain about enterprise bean container.
b. What are the different types of beans? Explain.
c. Explain the working behind message driven bean.
d. Explain the concept of naming service. Add suitable illustration to it.
e. Explain basic look up in JNDI. Also explain resource injection in JNDI.
f. Explain the life cycle of an interceptor.

5. **Attempt _any three_ of the following:** 15
a. Explain the persistent standards available in java.
b. Draw and explain the architecture of hibernate framework.
c. Explain JPA Architecture with the help of a neat diagram.
d. What is Impedance Mismatch? How it can be solved?
e. Explain different components of hibernate.
f. Explain the modus operandi behind hibernate application.

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