(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 are different technologies provided by Java EE platform?
b. Explain 2-tier System Architecture, its advantage and disadvantage.
c. Explain the Life cycle of Servlet with diagram.
d. What is JDBC? Explain architecture of JDBC in Detail?
e. Write short notes on JDBC Drivers?
f. Write a program to accept details of a person and using servlet and store those details in database.

2. Attempt *any three* of the following: 15
a. Explain Request Dispatcher Interface with its methods.
b. What is Cookies? Explain setting sending and reading of Cookie in java Servlet.
c. What is session? Explain lifecycle of Http Session?
d. Write a short note on session management using servlet.
e. Explain the working of Non-Blocking I/O.
f. Write a program to create a servlet application to download a file.

3. Attempt *any three* of the following: 15
a. Distinguish between Servlet and JSP.
b. Explain lifecycle of JSP with diagram.
c. Explain different types of JSP tags with example.
d. Explain different core tags in JSTL.
e. List and explain any 4 JSP Implicit objects with their methods.
f. Explain different scopes of JSP objects.

4. Attempt *any three* of the following: 15
a. What are the different types of beans? Explain.
b. Explain lifecycle of stateful session beans.
c. What is an interceptor? How an interceptor is defined and how aroundInvoke() is added to it?
d. Explain the Benefits of Enterprise Java Beans.
e. Explain lifecycle of message driven beans.
f. Explain naming and directory service with example.

5. Attempt *any three* of the following: 15
a. Explain Persistency in Java.
b. Explain JPA Architecture with diagram.
c. Explain hibernate with advantages.
d. Explain architecture of hibernate.
e. What is Impedance Mismatch? How it can be solved?
f. What are different components of Hibernate? Explain.

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