

(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.