

(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. Write a Short note on GlassFish Server.
 b. Explain various Java Enterprise Application Technologies.
 c. What are the alternatives to CGI? Explain in details?
 d. Discuss Type 1 & Type 2 JDBC Driver.
 e. List & Explain Java Container types.
 f. Illustrate the javax.servlet package.
2. **Attempt any three of the following:** 15
 a. Describe the methods of RequestDispatcher interface.
 b. List & explain methods of Cookies Class.
 c. Discuss Hidden Form Field & URL Rewriting.
 d. Explain the working of Non blocking I/O.
 e. Write a short note on Downloading file with java Servlet.
 f. How to implement ReadListener & WriteListener?
3. **Attempt any three of the following:** 15
 a. Explain the phases of JSP life cycle.
 b. Discuss JSP page directive.
 c. What are the advantages of JSP over technologies other than Servlet?
 d. Write short note on Unified Expression Language.
 e. Illustrate any three JSP actions.
 f. Describe the Java Server Pages Standard Tag Libraries (JSTL) Core Tag library.
4. **Attempt any three of the following:** 15
 a. What is EJB? Explain its Architecture?
 b. Explain the following : 1) Resources and JNDI 2) Resource Injection.
 c. How to access Local Business Interface.
 d. Describe the type of Enterprise Bean.
 e. Write a short on Lifecycle of Message Driven Bean.
 f. How to define Interceptor? What is the role of AroundInvoke Method?
5. **Attempt any three of the following:** 15
 a. What is persistence? How it can be achieved in java?
 b. How Java Persistence API (JPA) Work?
 c. Why there is need of **Object-Relational Mapping(ORM)**?
 d. Explain architecture of Java Persistence API.
 e. What are the component of Hibernate?
 f. Illustrate the architecture of Hibernate.