**(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 Java Enterprise Application? Explain the architecture of Java Enterprise Application.
b.  Write a note on Multi Tire architecture.
c.  Write a short note on CGI. Explain alternatives to CGI.
d.  Explain the life cycle of servlet.
e.  What are steps to create Web Application using NetBeans?
f.  Write short note on JDBC Driver. Explain its types.

2.  **Attempt _any three_ of the following:**                                  15
a.  Write a program for implementing a ReadListener.
b.  What is RequestDispatcher interface? Explain its methods.
c.  How to create cookies using Servlet?
d.  What is Session Tracking? Explain its methods.
e.  Write a short note on Uploading file with Java Servlet.
f.  Explain Non-Blocking I/O. How it works?

3.  **Attempt _any three_ of the following:**                                  15
a.  Explain the Life Cycle of A JSP Page.
b.  Explain page directive with its attributes.
c.  How to Forward and Pass parameter to other action in JSP?
d.  Explain methods of request implicit objects of JSP.
e.  Write a short note on operators of EL.
f.  What is wrong in using JSP scriptlet tag? How JSTL fixes JSP scriptlet shortcomings?

4.  **Attempt _any three_ of the following:**                                  15
a.  Explain Enterprise Bean Containers in brief.
b.  What is EJB? Explain its Architecture.
c.  Write a note on different types of session beans.
d.  Explain life cycle of a message driven Bean using suitable diagram.
e.  Explain the concept of naming service & Directory Interface. Explain basic lookup in JNDI.
f.  What is an interceptor? How an interceptor is defined and how aroundInvoke () is added to it?

5.   **Attempt _any three_ of the following:**                                    15
a.   Explain the persistent standards available in java.
b.   Explain Java Persistence API with their specification.
c.   How JPA Works?
d.   Write Short note on-
         a.   JOIN Condition using ON       b. Entity Listeners using CDI

e.   Draw and explain the architecture of hibernate.
f.   Explain the Structure of hibernate.cfg.xml

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