(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 Edition (Java EE)? Explain.
b. Write a note on Multi Tire EE application architecture.
c. List and explain the tasks that Servlet can do.
d. Explain the life cycle of servlet.
e. Write a servlet code to display Square and Square root of numbers between 25 and 365 in tabular form.
f. List and explain four types of JDBC drivers.

2. **Attempt _any three_ of the following:**      15
a. Explain Cookie class with its constructor and any five methods.
b. Write a servlet program to create a session and display the following:
    i)     Session ID   ii)   New or Old    iii)     Creation Time
c. Write a servlet program **GradeServlet.java** that accepts Grade through radio buttons from **index.html** page, if the string is "A", "B", "C" OR "D", the program should dispatch the direct to the **Success.html** page containing message _"Congratulations !!!, You Passed SEM V exam"_, else display _"Try Again"_ and load index.html page in current servlet. (Make suitable assumptions, Only Write the Servlet Code)
d. Explain the following w. r. t. working with files in Servlet.
    i)   @MultipartConfigure
    ii)   fileSizeThreshold
    iii)  location
    iv)  maxFileSize
    v)   maxRequestSize
e. Explain using a code snippet the onDataAvailable() and onAllDataRead() methods of ReadListener interface.
f. What is RequestDispatcher? Explain the two methods of RequestDispatcher.

3. **Attempt _any three_ of the following:**      15
a. Explain the reasons to use JSP.
b. What are directives? Explain page directive with any of its four attributes.
c. Develop a simple JSP application to accept values from html page and display on next page. (Name-txt, age-txt, hobbies-checkbox, email-txt, gender-radio button).
d. Explain the <jsp:useBean > tag with its attribute. Support your answer with suitable code snippet.
e. List the name of JSP implicit objects. Explain any Two in details.
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 benefits of EJB.
b    Write a note on different types of session beans.
c    Explain life cycle of a message driven bean using suitable diagram.
d    Write a stateless session bean code to represent BookInformation.
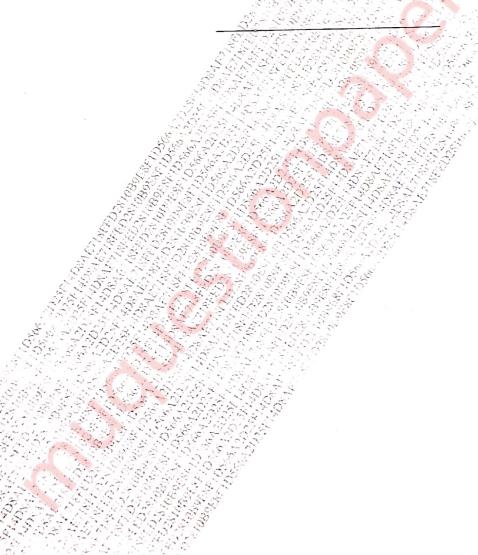      (BookId integer, BookName String, Pages integer, Price double)
e    What is an interceptor? How an interceptor is defined and how aroundInvoke () is added
      to it?
f    What is Java Naming and Directory Interface? Explain.

**5.    Attempt _any three_ of the following:**                                          **15**
a.    What is Persistence? Explain.
b.    Explain with suitable diagram architecture of Java Persistence API.
c.    Write a JSP code to add guest feedback using JPA in GuestBook table in database. (Make
      suitable assumptions)
d.    What is Hibernate? Explain Object Relational Mapping.
e.    Explain the architecture of Hibernate with suitable diagram.
f.    Write a JSP code to add visitor's feedback using Hibernate in FeedBack table in
      database. (Make suitable assumptions)

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