| Program/Sem: | T.Y.B.Sc IT – Sem - V | Course: | Advanced Java Technologies |
| Program Code: | 1S00255 | Course Code: | USIT506 |

Duration: 2 ½ Hour   0 8 NOV 2025   Max. Marks: 75

Instructions:

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**.

Q. 1   Attempt ANY THREE from the following: [15]

a) Define an Enterprise Application. List its key characteristics with suitable examples.

b) Explain the Java EE architecture with a neat diagram.

c) What is a Java EE Container? Explain the different types of containers provided in a Java EE server.

d) Why do we need dynamic content? How do Java Servlets help in creating dynamic web applications?

e) Explain the Servlet Life Cycle with a labelled diagram.

f) What is a Servlet? Why are Servlets preferred over CGI?

Q. 2   Attempt ANY THREE from the following: [15]

a) What is the RequestDispatcher interface? Explain its role in servlets.

b) Explain Non-Blocking I/O. How it works?

c) Where are cookies used? Give real-world examples.

d) Define a Session. Explain the lifecycle of HttpSession with a diagram.

e) What is Session Tracking? Explain its methods.

f) Write a short note on Uploading file with Java servlets?

Q. 3   Attempt ANY THREE from the following: [15]

a) Why are Java Server Pages (JSP) used? List their advantages.

b) Differentiate between JSP and Servlets.

c) Explain the life cycle of a JSP page with a neat diagram.

d) How to Forward and Pass parameter to other action in JSP?

e) What are implicit objects in JSP? List and explain their scopes.

f) What are JSP Standard Tag Libraries (JSTL)? How do they overcome the drawbacks of using scriptlets?

Q. 4   Attempt ANY THREE from the following: [15]

a) Explain the Enterprise Bean architecture and its components.

b) What are the types of Enterprise Beans? Give examples.

c) Explain the steps involved in creating an Enterprise Bean application.

d) Explain Enterprise Bean Containers in brief.

e)   Explain the remote and local interfaces of session beans.

f)   Explain the concept of naming service & Directory Interface. Explain basic lookup in JNDI.

Q. 5   Attempt <u>ANY THREE</u> from the following: [15]

a)   What is Persistence? Explain the importance of persistence in Java applications.

b)   Define Object/Relational Mapping (ORM). What problem does it solve?

c)   List and explain the main JPA specifications.

d)   Explain the structure of a JPA application with example components.

e)   What is Hibernate? Why is it used in enterprise applications?

f)   Differentiate between JPA and Hibernate in terms of features, usage, and advantages.

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