GUJARAT TECHNOLOGICAL UNIVERSITY

BE 6 SEMESTER – OLD PAPER – S22 TO S26 – QUESTION BANK

Subject Name & Code: Advanced Java Programming - 3160707

Chapter 1: Java Networking

Repeated Questions:

1. URL:

- **Q.** What are the components of URL? Describe the use of URL class with an example. **(WINTER 2025, 3 Marks; SUMMER 2026, 3 Marks)**

2. TCP Client-Server Programs:

- **Q.** Write a client server program using TCP where client sends a string and server responds with the received message converted to capital/upper-case letters. **(SUMMER 2024, 7 Marks OR; SUMMER 2026, 7 Marks)**

3. Socket and ServerSocket:

- **Q.** Compare Socket with ServerSocket / Compare ServerSocket with Socket. **(SUMMER 2022, 3 Marks; SUMMER 2023, 3 Marks)**

Other Important Questions:

1. TCP Client-Server Programs:

- **Q.** Write a client server program using TCP where client sends two numbers and server responds with the sum of them. **(WINTER 2025, 7 Marks)**
- **Q.** Write a client server program using TCP where client sends a number and server responds with the reverse of the given number. **(WINTER 2025, 7 Marks OR)**
- **Q.** Write a program in which client sends string from its standard input to the server. The server reads the string, finds number of words, characters and digits of received string and sends result back to client. Use connection-oriented communication. **(WINTER 2023, 7 Marks)**
- **Q.** Write a Java program where client sends a string as a message and server counts the characters in the received message from client. Server sends this value back to the client. Server should be able to serve multiple clients simultaneously. **(SUMMER 2022, 7 Marks OR)**

2. UDP and Echo Programs:

- **Q.** Implement the client server program using UDP Sockets. Client will request to download the file from server and server will send it to client. **(SUMMER 2023, 4 Marks)**
- **Q.** Write a client-server program using TCP/UDP sockets to echo the message sent by the client. **(SUMMER 2024, 7 Marks)**

3. URL, IP Address and Socket Concepts:

- **Q.** Explain URL and URLConnection class with example. **(SUMMER 2024, 3 Marks)**
- **Q.** How do you get the IP address of a machine from its hostname? **(WINTER 2022, 3 Marks - combined question)**
- **Q.** What are the differences between a TCP socket and UDP socket? How are they created in Java? **(WINTER 2022, 3 Marks)**
- **Q.** Explain the usage of Socket class with example. **(WINTER 2023, 3 Marks)**

Chapter 2: JDBC Programming

Repeated Questions:

1. JDBC Drivers:

- **Q.** List the different types of JDBC drivers and explain/compare them; explain the role of JDBC drivers and type-3 driver with advantages and disadvantages. **(SUMMER 2022, 4 Marks; WINTER 2022, 7 Marks OR; SUMMER 2024, 4 Marks; WINTER 2025, 7 Marks)**

2. PreparedStatement:

- **Q.** Write a code snippet / explain the use of PreparedStatement with example. **(SUMMER 2022, 7 Marks; WINTER 2022, 3 Marks; SUMMER 2023, 3 Marks; SUMMER 2026, 4 Marks)**

3. CallableStatement:

- **Q.** Explain CallableStatement / demonstrate its use with example / call a stored procedure. **(WINTER 2022, 3 Marks OR; SUMMER 2023, 4 Marks OR; WINTER 2023, 3 Marks; SUMMER 2024, 7 Marks; WINTER 2025, 4 Marks)**

Other Important Questions:

1. JDBC Basics:

- **Q.** Describe the concept of JDBC. **(WINTER 2025, 3 Marks)**
- **Q.** Demonstrate the use of ResultSetMetaData. **(SUMMER 2023, 3 Marks)**
- **Q.** What is connection URL? How do you make a database connection? Explain various ways to make the database connection using JDBC code snippets. **(WINTER 2022, 7 Marks)**

2. Statement and PreparedStatement:

- **Q.** Explain Statement and PreparedStatement with example. **(SUMMER 2024, 4 Marks)**
- **Q.** Differentiate Statement and PreparedStatement. **(WINTER 2023, 4 Marks)**

3. JDBC Program:

- **Q.** Write a JDBC Program for Employee Management application in which consider Employee table with attributes Emp_ID, EmpName, Phone and Address, and perform: i) Insert multiple records using prepared statement. ii) Display all the records in reverse order. **(WINTER 2023, 7 Marks OR)**

Chapter 3: Servlet API and Overview

Repeated Questions:

1. Session Tracking and Cookies:

- **Q.** What is session / session tracking? List and explain different session tracking techniques / ways to manage session. **(SUMMER 2022, 3 Marks; WINTER 2022, 7 Marks; SUMMER 2023, 7 Marks; SUMMER 2024, 7 Marks; WINTER 2025, 3 Marks; SUMMER 2026, 7 Marks)**
- **Q.** What are cookies? Demonstrate the use of cookies in servlet / session management in servlet using cookie. **(SUMMER 2022, 7 Marks; WINTER 2023, 7 Marks OR)**

2. Servlet Life Cycle:

- **Q.** Explain servlet life cycle methods / Servlet Life Cycle with example and demonstrate every state in detail. **(SUMMER 2022, 4 Marks; SUMMER 2024, 4 Marks OR; WINTER 2025, 4 Marks)**

3. ServletConfig and ServletContext:

- **Q.** Differentiate / explain ServletConfig and ServletContext object with example. **(WINTER 2022, 4 Marks; SUMMER 2023, 4 Marks; SUMMER 2024, 3 Marks; WINTER 2025, 7 Marks; SUMMER 2026, 3 Marks)**

4. Filters:

- **Q.** What is filter? How will you configure filter using deployment descriptor? **(SUMMER 2022, 4 Marks OR; WINTER 2022, 4 Marks; SUMMER 2023, 4 Marks; SUMMER 2026, 4 Marks OR)**
- **Q.** What is FilterConfig? How will you use it? **(WINTER 2022, 4 Marks OR; SUMMER 2023, 3 Marks OR)**

5. RequestDispatcher:

- **Q.** Explain the purpose / demonstrate the use of RequestDispatcher using methods forward() and include() with Servlet. **(SUMMER 2022, 4 Marks; SUMMER 2023, 7 Marks; SUMMER 2024, 7 Marks; SUMMER 2026, 7 Marks OR)**

Other Important Questions:

1. Servlet Basics:

- **Q.** Define the init() method of a servlet. **(WINTER 2025, 3 Marks)**
- **Q.** How is the GET method different from the POST method? **(WINTER 2025, 3 Marks OR)**
- **Q.** What is Deployment descriptor (web.xml) in servlet? Explain with code. **(SUMMER 2024, 3 Marks)**
- **Q.** List out the important methods of HttpServletResponse. **(WINTER 2022, 3 Marks - combined question)**
- **Q.** What is HTTP? Explain any two HTTP request methods in detail. **(WINTER 2023, 3 Marks)**
- **Q.** Differentiate attributes and parameters of servlet. **(WINTER 2023, 4 Marks)**

2. Filters:

- **Q.** What is filter? List out the application of the filter. **(WINTER 2025, 4 Marks OR)**
- **Q.** What is Filter? Explain Filter API. **(SUMMER 2024, 4 Marks)**
- **Q.** Explain the lifecycle of filter. **(WINTER 2023, 3 Marks OR)**

3. Servlet Programs:

- **Q.** Write a Web application using servlet to find whether entered number is Prime or not. **(WINTER 2025, 4 Marks)**
- **Q.** Write a Web application using servlet to find the sum of all the digits of an input integer. **(WINTER 2025, 7 Marks OR)**

- **Q.** Write a servlet to display the name and age of a person received as parameters. **(WINTER 2025, 4 Marks)**
- **Q.** Write a Login servlet. Take input username and password from HTML file login.html and authenticate the user. Write the web.xml. **(SUMMER 2024, 7 Marks OR)**
- **Q.** Write a servlet code for login application using database connectivity. **(WINTER 2023, 7 Marks)**

Chapter 4: Java Server Pages

Repeated Questions:

1. JSP Basics, Life Cycle and MVC:

- **Q.** What is JSP? Explain the stages / phases of JSP life cycle. **(SUMMER 2022, 7 Marks; SUMMER 2024, 4 Marks; WINTER 2025, 4 Marks OR; SUMMER 2026, 4 Marks)**
- **Q.** Compare JSP and Servlet / Compare JSP with Servlet. **(WINTER 2023, 4 Marks OR; SUMMER 2024, 3 Marks OR)**
- **Q.** What do you mean by MVC architecture? Explain its role in modern applications with advantages / How MVC architecture is better than conventional approach? **(SUMMER 2022, 3 Marks; WINTER 2025, 3 Marks OR)**

2. JSP Directives and Action Tags:

- **Q.** List out / explain JSP Action Tags with example / use of different JSP action tags. **(SUMMER 2023, 7 Marks OR; WINTER 2023, 7 Marks; WINTER 2025, 7 Marks; SUMMER 2026, 4 Marks)**
- **Q.** What is the difference between include directive tag and jsp:include action tag? **(SUMMER 2024, 3 Marks OR; SUMMER 2026, 3 Marks)**
- **Q.** What are the directive tags in JSP? Explain any two / write a JSP page to demonstrate their use. **(WINTER 2022, 7 Marks; SUMMER 2026, 4 Marks OR)**

3. Implicit Objects:

- **Q.** What are the implicit objects of JSP? Write a JSP page to demonstrate their use / explain any three implicit objects. **(SUMMER 2022, 7 Marks; WINTER 2022, 7 Marks OR; SUMMER 2026, 3 Marks OR)**

4. JavaBeans and Expression Language:

- **Q.** Demonstrate the use of JavaBeans in JSP / <jsp:useBean> to set and display properties. **(WINTER 2022, 7 Marks; SUMMER 2023, 7 Marks; SUMMER 2026, 7 Marks)**
- **Q.** What is EL? Write a code snippet to show the use of method expressions in JSP page. **(SUMMER 2022, 4 Marks OR; SUMMER 2023, 3 Marks; SUMMER 2026, 3 Marks OR)**

5. JSTL:

- **Q.** What is JSTL? Explain the core tags of the SQL tag library / discuss tags of JSTL SQL tag library. **(SUMMER 2022, 4 Marks; WINTER 2022, 7 Marks OR; SUMMER 2023, 7 Marks OR; SUMMER 2026, 7 Marks)**
- **Q.** Explain any three JSTL Core tags / write code snippet to show use of flow control tags. **(WINTER 2022, 3 Marks OR; SUMMER 2024, 3 Marks)**

6. JSP Database Application (Program):

- **Q.** Develop a JSP application for user/student registration using database connectivity (insert and display list of registered users). **(SUMMER 2023, 7 Marks OR; WINTER 2023, 7 Marks OR)**

Other Important Questions:

1. JSP Concepts:

- **Q.** Discuss JSP Exception Handling. **(WINTER 2025, 3 Marks)**
- **Q.** What are the attributes for the JSP page directive? **(WINTER 2022, 3 Marks - combined question)**
- **Q.** Explain scripting elements of JSP. **(WINTER 2023, 4 Marks)**
- **Q.** Which action tags are used to access the JavaBeans from a JSP page? **(SUMMER 2022, 3 Marks OR)**
- **Q.** What is session? Demonstrate the use of Session in JSP. **(SUMMER 2022, 7 Marks OR)**

2. Custom Tags:

- **Q.** Create a custom tag to print current date and time in JSP page. **(SUMMER 2023, 4 Marks)**
- **Q.** What is a custom tag? Explain the life cycle of tag handler. **(SUMMER 2022, 3 Marks OR)**

3. JSTL:

- **Q.** What is the difference between JSTL tag <c:import> and <jsp:include> action tag? **(WINTER 2023, 3 Marks)**
- **Q.** Explain any four JSTL function tags with example. **(WINTER 2023, 4 Marks)**

4. JSP Programs:

- **Q.** Write a Web Application using JSP to get an integer N (where N>0) and display all the prime numbers up to N. **(WINTER 2025, 7 Marks OR)**

Chapter 5: Java Server Faces 2.0

Repeated Questions:

1. JSF Request Processing Life Cycle:

- **Q.** Explain / discuss / draw the JSF request processing life cycle and the function of each phase. [Diagram required – refer to the original question paper] **(SUMMER 2022, 7 Marks OR; SUMMER 2023, 7 Marks; WINTER 2023, 7 Marks; SUMMER 2024, 7 Marks OR; SUMMER 2026, 7 Marks OR)**

2. JSF Validation Tags:

- **Q.** List the JSF validation tags / standard validator tags and explain any two/three in detail; apply JSF input validation using input validators. **(WINTER 2022, 4 Marks - combined question; WINTER 2023, 4 Marks OR; SUMMER 2024, 4 Marks OR; SUMMER 2026, 4 Marks)**

3. JSF Tags and Events:

- **Q.** How will you use <h:commandButton> and <h:dataTable>? **(WINTER 2022, 4 Marks; SUMMER 2026, 3 Marks)**
- **Q.** Write a code snippet to show the use of JSF action event. **(WINTER 2022, 4 Marks OR; SUMMER 2023, 3 Marks OR)**

4. JSF Features:

- **Q.** What is JSF? List and explain its features. **(SUMMER 2022, 3 Marks; WINTER 2025, 4 Marks OR)**

Other Important Questions:

1. JSF Tags and Facelets:

- **Q.** List out JSF HTML tags and explain any two. **(WINTER 2025, 4 Marks)**
- **Q.** What is the JSF facelets? Explain any two facelets tags. **(SUMMER 2024, 4 Marks)**

2. Converters, EL and Configuration:

- **Q.** Create a JSF custom converter and use it in JSP page. **(SUMMER 2023, 4 Marks OR)**
- **Q.** What is EL? Write a code snippet to show the use of method expressions in JSF page. **(WINTER 2022, 3 Marks)**
- **Q.** What is faces-config.xml? Explain it with code. **(WINTER 2023, 3 Marks OR)**

Chapter 6: Hibernate 4.0

Repeated Questions:

1. Hibernate Architecture:

- **Q.** Draw / discuss / explain Hibernate Architecture in detail. [Diagram required – refer to the original question paper] **(SUMMER 2023, 7 Marks; WINTER 2023, 7 Marks OR; SUMMER 2024, 7 Marks OR; WINTER 2025, 7 Marks; SUMMER 2026, 7 Marks OR)**

2. Hibernate Web Application Steps:

- **Q.** List out and explain the steps to develop the Hibernate web application. **(WINTER 2025, 7 Marks OR; SUMMER 2026, 7 Marks)**

3. HQL:

- **Q.** What is HQL? How does it differ from SQL? List its advantages. **(SUMMER 2022, 4 Marks; SUMMER 2024, 4 Marks OR; SUMMER 2026, 3 Marks OR)**

4. ORM and Mapping:

- **Q.** What is OR mapping / ORM? Explain object/relational mappings in Hibernate / configure Hibernate mapping file / components of hibernate.cfg.xml. **(SUMMER 2022, 7 Marks OR; WINTER 2022, 4 Marks OR; SUMMER 2023, 4 Marks OR; WINTER 2023, 4 Marks; SUMMER 2024, 3 Marks; SUMMER 2026, 4 Marks OR)**

5. Hibernate Features:

- **Q.** What is Hibernate? What are the features / benefits of using it? **(SUMMER 2022, 3 Marks; WINTER 2022, 3 Marks OR; SUMMER 2023, 3 Marks OR)**

Other Important Questions:

1. Hibernate Concepts:

- **Q.** List the Hibernate annotations and explain any two Hibernate annotations in detail. **(WINTER 2023, 3 Marks)**
- **Q.** What is the function of a SessionFactory object? How will you obtain such an object? **(WINTER 2022, 4 Marks - combined question)**
- **Q.** What are the different Hibernate interfaces? Explain their role in brief. **(WINTER 2022, 7 Marks)**
- **Q.** Compare Hibernate and JDBC. **(WINTER 2023, 3 Marks OR)**

Chapter 7: Java Web Frameworks: Spring MVC

Repeated Questions:

1. Dependency Injection and IoC:

- **Q.** What is Dependency Injection? Explain the role of IoC container in Spring framework. **(WINTER 2022, 4 Marks; SUMMER 2023, 3 Marks; SUMMER 2024, 3 Marks OR; SUMMER 2026, 4 Marks)**

2. Spring MVC Architecture:

- **Q.** Explain the architecture / flow of Spring Web MVC / Spring MVC Framework. **(WINTER 2022, 7 Marks OR; WINTER 2023, 7 Marks; SUMMER 2024, 7 Marks)**

3. Spring AOP:

- **Q.** Explain AOP concepts of Spring / What is Spring AOP? What are Join points and Point cuts? **(WINTER 2022, 3 Marks; SUMMER 2023, 4 Marks)**

4. Spring Framework Architecture:

- **Q.** Explain the architecture of Spring Framework. **(SUMMER 2023, 7 Marks OR; SUMMER 2026, 7 Marks OR)**

Other Important Questions:

1. Spring Framework:

- **Q.** What are the features of Spring Framework? **(SUMMER 2026, 3 Marks)**
- **Q.** Explain Spring bean life cycle. **(WINTER 2023, 4 Marks OR)**
- **Q.** What are the different bean scopes in Spring? **(SUMMER 2022, 3 Marks OR)**
- **Q.** What is Spring Bean? How can you create bean in Spring Boot? **(SUMMER 2022, 4 Marks OR)**

2. Spring MVC:

- **Q.** Explain any three Spring form tags with example. **(WINTER 2025, 3 Marks OR)**
- **Q.** Explain the Spring Web MVC framework controllers. **(SUMMER 2022, 7 Marks)**

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