

- N.B: (1) All questions are compulsory.
(2) Figures to the right indicate marks.
(3) Illustrations, in-depth answers and diagrams will be appreciated.
(4) Mixing of sub-questions is not allowed.

- Q1. **Write short notes on (any FOUR):** (20)
- (A) JToolBar.
 - (B) JDBC Exception classes.
 - (C) Importance of URLConnection and URL class.
 - (D) HttpServlet class.
 - (E) Error handling in JSP.
 - (F) Differentiate between Session bean and Message Driven bean.
- Q2. **Attempt the following (any FOUR):** (20)
- (A) What is the use of JRadioButton and JTable? How to create object of these classes?
 - (B) Write a note on JDesktopPane class.
 - (C) Write a program that accepts two numbers from two textfields and on click of the submit button, interchanges the values of those numbers and displays the changed values in the textfields.
 - (D) List and explain any four methods of ResultSet interface.
 - (E) Write the role of PreparedStatement in JDBC.
 - (F) Write a JDBC program that displays the count of records of Employee table.
- Q3. **Attempt the following (any FOUR):** (20)
- (A) Define thread. Provide the code snippet for creating a thread.
 - (B) Explain lifecycle of thread.
 - (C) Give the significance of Socket Direct protocol.
 - (D) State the importance of following methods:
 - i. send()
 - ii. receive()
 - (E) Explain Socket class.
 - (F) Write a RMI server program which accepts a number from client and sends square root of that number to the client.
- Q4. **Attempt the following (any FOUR):** (20)
- (A) What is a Session? Explain HttpSession class.
 - (B) Explain the methods used for invoking different web resources in a servlet.
 - (C) What is Servlet. Give its advantages.
 - (D) Explain useBean tag with example.
 - (E) Write a JSP program that prints sum of even numbers up to n.
 - (F) List and Explain various page directives of JSP.
- Q5. **Attempt the following (any FOUR):** (20)
- (A) Write a note on Stateful session bean.
 - (B) Explain the lifecycle of Stateless session Bean.
 - (C) Define EJB. Explain its significance.
 - (D) State the contents of an Enterprise Beans? Also state their naming conventions.
 - (E) What factors should be considered before giving local or remote access to beans.
 - (F) State and explain any three annotations used for developing a web service.