

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 neatly labeled diagrams wherever necessary.
- 6) Use of Non-programmable calculators is allowed.

1. Attempt any two of the following.

- a. What is JFrame? Explain its constructors and methods
- b. What are adapter classes in java? Why are they used?
- c. Explain the java event delegation model.
- d. What are the different types of layout in java? Explain

2. Attempt any two of the following.

- a. How is a progress bar created and used in java?
- b. Write a java program to demonstrate the use of Tabbed Panes.
- c. What are trees in java swings? Explain how nodes are created in a tree
- d. Explain DefaultMutableTreeNode and write a program to demonstrate node creation in trees.

3. Attempt any two of the following.

- a. Explain the component ' JFileChooser'
- b. Explain the ServletConfig Interface in java.
- c. Explain the life cycle of a servlet.
- d. Write a note on- HttpServlet and HttpSession Explain the classes along with 4 methods each

4. Attempt any two of the following.

- a. What is directive in Java Server Pages? Explain page directives.
- b. Explain the steps for Database connection and data retrieval in java with an example.
- c. Describe the drivers used in Java Database Connectivity.
- d. Explain the Scrollable Result Sets with an example.

5. Attempt any two of the following.

- a. What are the different types of beans in java? Explain.
- b. Explain the process flow of Java Server Faces.
- c. Explain the Enterprise Java Bean architecture. Explain in detail.
- d. Give an example of a configuration file used in Java Server Faces. Explain its components.

6. Attempt any two of the following.

- a. Explain the hibernate architecture in detail.
- b. Explain FilterDispatcher and any two roles of action components used in struts.
- c. What is the importance of hibernate mapping file? Explain with examples.
- d. What are interceptors?How are interceptors used in Struts?

7. Attempt *any three* of the following.

- a. Explain the concept on inner classes and anonymous inner classes used in event handling.
- b. Write a java swing program to create menus.
- c. Why do we need the ServletContext Interface in java?
- d. Write a note on- Updateable ResultSet used in Java DataBase Connectivity
- e. Explain the concept of MVC architecture with respect to Java Server Faces and Struts.
- f. Explain any 5 implicit objects used in JSP.

