4. **Attempt *any two* of the following:** 10
   a. Explain the components of JDBC.
   b. What is the use of JSP? List the advantages and disadvantages of JSP.
   c. Distinguish between JSP and Servlets.
   d. What is a Statement in JDBC? Explain the various kinds of statements that can be created in JDBC

5. **Attempt *any two* of the following:** 10
   a. Write a program using JSF to find square root of a number.
   b. Explain the need of JSF along with its features.
   c. What are EJBs? Explain its benefits.
   d. Enlist and explain the lifecycle phases of JSF.

6. **Attempt *any two* of the following:** 10
   a. Explain any 3 core components of struts framework.
   b. What is Hibernate? Explain the features of Hibernate.
   c. Explain the components of Hibernate.
   d. What is value-stack? What are the different types of objects that it can hold off? Explain their accessing strategy.

7. **Attempt *any three* of the following:** 15
   a. Write a short note on JDBC transactions.
   b. Write a java AWT program that creates the following GUI.(Consider the window closing event)

Login Screen

User ID: [   ]

Password: (5 Chars only) [   ]

[Login] [Cancel]

   c. Explain the steps to create a hibernate application.
   d. Explain with suitable example <navigation-rule> element of faces-config.xml.
   e. Distinguish between AWT and Swing components.
   f. Explain CGI and its working. Also write disadvantages of CGI.
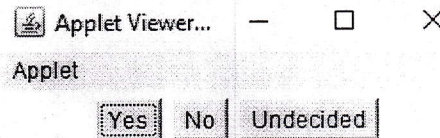
_____

(2½ hours)   **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 two* of the following:**   10
a. What are the different layout manager classes in Java? Explain BorderLayout with example.
b. Write a Java code to create the following GUI:


```
Applet Viewer...   —   □   ×
Applet

   Yes   No   Undecided



   You pressed Yes.



Applet started.
```

c. List and explain any 5 event listener interfaces.
d. Write a short note on "Event Listeners". Explain the working with code specification.

2. **Attempt *any two* of the following:**   10
a. Write a program to demonstrate usage of JTable in java swings.
b. Write a short note on Swings.
c. Explain JFileChooser class with an example.
d. How can a tree structure be created in Swing? Explain

3. **Attempt *any two* of the following:**   10
a. Develop servlet application of basic calculator (+, -, *, /) using HttpServletRequest and HttpServletResponse.
b. Explain the need of servlet.
c. Write a servlet code to print sum of squares of odd digits in a number.
d. Explain the steps involved in a servlet's lifecycle with the help of a diagram.