

- 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.

[15]

Q.1. Attempt All (Each of 5 Marks)

(a) Multiple Choice Questions:

- (i) _____ is not a correct component of Swing.
 (A) JViewport (B) JDialog
 (C) JToggleButton (D) JMenuItems
- (ii) OGNL stands for _____.
 (A) Object Graph Navigation Language (B) Output Graph Navigation Language
 (C) ORM Graph Navigation Language (D) Online Graph Navigation Language
- (iii) JSP page implementation class is defined in _____ package.
 (A) javax.servlet (B) javax.jsp
 (C) javax.servlet.http (D) javax.servlet.jsp
- (iv) 'page' implicit object is instance of which class?
 (A) java.io.Page (B) java.util.Object
 (C) java.lang.Object (D) javax.servlet.Page
- (v) Which of the following is not correct scope value for <jsp:usebean> tag?
 (A) application (B) pagecontext
 (C) page (D) session

(b) Fill in the blanks:

(JspPage, page, name, cookies, <jsp:include>, HttpJspPage, pagecontext, id, hidden form fields, <jsp:import>)

- (i) _____ is a directive.
 (ii) _____ interface includes jspInit() and jspDestroy() methods.
 (iii) _____ attribute uniquely identification element.
 (iv) _____ action element is used to include a file in JSP.
 (v) _____ is stored at client side.

(c) Answer in 1 – 2 sentences

- (i) What is the use of session object?
 (ii) What is the purpose of DriverManager class in JDBC?
 (iii) Enlist the classes and interfaces included in http package.
 (iv) What is JSP declaration element used for?
 (v) Write a java code spec to add cookies to the response.

[15]

Q.2. Attempt the following (Any THREE)

- a) Explain JDBC architecture.
 b) Explain constructors and methods of JList class.
 c) Differentiate between AWT and swing.
 d) Write a swing program to show the use of TextField and PasswordField using event handling.
 e) Explain different types of statement.
 f) Explain different types of JDBC drivers.

Q. 3. Attempt the following (Any THREE)**[15]**

- a) Explain interfaces in brief: 1. ServletConfig 2. ServletContext
- b) Explain life cycle of servlet.
- c) Write a jsp program to accept name and age of a person from index.html and if age ≥ 18 then determine whether the person is eligible for driving or not.
- d) Explain different session tracking techniques.
- e) Explain any five implicit objects with its methods.
- f) Write a short note on scripting elements in JSP.

Q. 4. Attempt the following (Any THREE)**[15]**

- a) Write a note on Struts2 interceptors.
- b) Illustrate how to create and use a java bean with an example.
- c) Explain `<jsp:forward>` and `<jsp:include>` action tags.
- d) Illustrate how to use JSON schema with an example.
- e) Write a short note on Value Stack.
- f) Explain basic MVC architecture.

Q. 5. Attempt the following (Any THREE)**[15]**

- a) Write steps for JDBC connectivity.
- b) Write a short note on servlet API.
- c) Explain various Result Types available in Struts2..
- d) Write a swing program to create a list and a label. The list contains colleges in Mumbai. When a college is selected, its country is displayed in a label.
- e) Write a short note on JSP directives.
