

(2½ Hours)

[Total Marks: 75]

- 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.

Q. 1 Attempt All (Each of 5Marks)**(15)****(a) Multiple Choice Questions:**

- (i) Which of these events is generated when a button is pressed?
 (A) WindowEvent (B) ActionEvent
 (C) ButtonEvent (D) KeyEvent
- (ii) Which of the following is a method of JDBC batch process?
 (A) setBatch() (B) deleteBatch()
 (C) addBatch() (D) removeBatch()
- (iii) _____ code retrieves name and version of the protocol.
 (A) config.getProtocol() (B) request.getProtocol()
 (C) out.getProtocol() (D) response.getProtocol()
- (iv) _____ tag is used to execute Java code inside the JSP
 (A) <# ... #> (B) <\$... \$>
 (C) <% %> (D) <* ... *>
- (v) JSON stands for _____
 (A) Javascript Object Notation (B) JSP Object Notation
 (C) Java Object Notation (D) None of these

(b) Fill in the blanks:

(java.awt.event, SQLException, parameterized, java.event, ClassNotFoundException, no argument, struts2, JSON, XML, ServletConfig, ServletContext)

- (i) _____ package contains all the classes and methods required for event handling in Java.
- (ii) _____ exception is raised when JDBC driver fails to load.
- (iii) An object of _____ is created for each servlet, to get configuration information from web.xml file.
- (iv) A java bean class should have a _____ constructor.
- (v) _____ framework is used to develop MVC based web application

(c) Answer in 1 – 2 sentences:

- (i) What is JTextArea used for?
- (ii) Write Java code to get ResultSetMetaData object.
- (iii) Write JSP code, to display today's date and time using expression tag.
- (iv) What is ValueStack in struts2?
- (v) Describe how to create an object in JSON.

Q. 2 Attempt the following (Any THREE) (15)

- (a) Explain how to use ButtonGroup class.
- (b) What is a combobox? Explain various constructors and methods of JComboBox class.
- (c) Explain JDBC architecture.
- (d) Explain Statement interface and its methods.
- (e) Write a swing program to accept temperature of the day in a textfield. Using radio buttons choose conversion: Fahrenheit to Celsius or vice versa. On click of a button, display the converted temperature in a label. [Formula: $C = (F - 32) * 5/9$]
- (f) Write a JDBC program to create an Employee table. Insert two records in the table using PreparedStatement.

Q. 3 Attempt the following (Any THREE) (15)

- (a) Differentiate between GenericServlet and HttpServlet.
- (b) Write a note on Servlet life cycle.
- (c) Explain page directive in JSP.
- (d) Explain the following:
 - (i) expression tag
 - (ii) declaration tag
- (e) Write a servlet program to accept name and aggregate marks from index.html. if the aggregate marks is larger than 55, then print "You are selected", else print "You are not selected".
- (f) Write JSP program to accept a number from the user and find its factorial. If the number is negative, show error message and accept the number again.

Q. 4 Attempt the following (Any THREE) (15)

- (a) Explain <jsp:setProperty> and <jsp:getProperty> action tags.
- (b) Explain the significance and structure of struts.xml file used in struts2.
- (c) Write a note on Struts2 interceptors.
- (d) Write the similarities and differences between JSON and XML.
- (e) What is JSON schema? Give example and illustrate.
- (f) Explain various Result Types available in Struts2.

Q. 5 Attempt the following (Any THREE) (15)

- (a) Describe various constructors and methods of JCheckBox class.
- (b) Explain various methods of Connection interface.
- (c) Write a note on JSP application implicit object.
- (d) Explain session tracking mechanism in servlets.
- (e) Write a note on Struts2 Action class.