

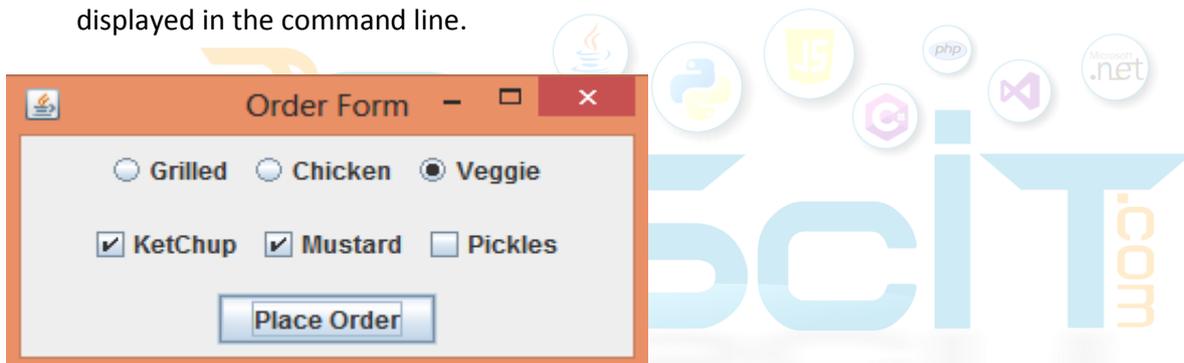
- N. B.: (1) **All** questions are **compulsory**.
 (2) Make **suitable assumptions** wherever necessary and **state the assumptions** made.
 (3) Answers to the **same question** must be **written together**.
 (4) Numbers to the **right** indicate **marks**.
 (5) Draw **neat labeled diagrams** wherever **necessary**.
 (6) Use of **Non-programmable** calculators is **allowed**.

1. Attempt any two of the following **10**

- a. Explain the border layout used in java with the help of program.
- b. Explain the delegation event model in event handling.
- c. What are adapter classes? Why are they used?
- d. Write a java program to handle the mouse related events.

2. Attempt any two of the following **10**

- a. Write a java program using JCheckBox and JRadioButton to get the following output. Once the items are chosen and place order button is clicked, the items selected should be displayed in the command line.



- b. Write a program to demonstrate usage of JTree in java swing.
- c. What are swings in java? Differentiate between swings and awt.
- d. Write a java program to create different tabs using JTabbedPane.

3. Attempt any two of the following **10**

- a. Explain the steps involved in Servlet's lifecycle with the help of a diagram.
- b. Why do we need the ServletContext interface in java?
- c. Explain web application directory structure.
- d. What are HttpServletRequest and HttpServletResponse?

4. Attempt any two of the following **10**

- a. What is statement in JDBC? Explain the various kinds of statements that can be created in JDBC.
- b. What is difference between a traditional JSP page and a JSP document? Quote an example.
- c. Explain any 5 implicit object used in JSP.
- d. Explain the <jsp:include> element used in JSP

5. Attempt any two of the following

10

- a. What are EJB? Explain its benefits.
- b. What is Java Server Faces? State its components.
- c. What is the concept of MVC architecture?
- d. Explain the JSF process flow.

6. Attempt any two of the following

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- a. what are actions in struts? Explain with example.
- b. What is hibernate? Explain its architecture.
- c. Explain interceptors in struts.
- d. Explain the application flow in MVC with respect to struts.

7. Attempt any three of the following

15

- a. Explain the concept of inner classes and anonymous inner classes used in event handling.
- b. Explain the use of Editor Panes in java swings.
- c. Explain the ServletConfig interface in java.
- d. How can you add a bean to a JSP page?
- e. Give an example of configuration file in JSF.

