✍ *Answer any FIVE full questions. Answer neatly and to the point.*

1A. Explain the term access specifier/access modifier. Also list the access specifiers present in Java and explain them.

1B. List OOP principles and in general explain how Java incorporates them.

(10+10 = 20 marks)

2A. With suitable examples explain how parameters to parent class constructors can be provided from sub class constructors. Assume that the hierarchy is of 3 levels and the 3rd level subclass has constructors with and without parameters.

2B. Explain the significance of package statement. If no package statement is used in a program, will the program belong to any package?

2C. What is meant by a CLASSPATH variable? Should you explicitly set it all the time? If so, how do you do it? If not what is the reason for it?

(10+6+4 = 20 marks)

3A. What is meant by an exception? How is it different from writing an error routine? Should users always handle exceptions? Explain your answer. Also give a good example to illustrate your reasons.

3B. Define a thread. When should you make use of threads in your program? What are the two different ways by which thread features can be incorporated to a class? When do you make use of each of these techniques?

(10+10 = 20 marks)

4A. Write a java program which displays a menu with the following options:
   i)   input   ii)   sort   iii)   display   iv)   exit
   The "input" option reads "n" faculty records where every record contains fields namely, name, age designation and salary. "Sort" option should sort the records in ascending order of faculty records. "display" should display the records on the screen. "exit" option is used to exit from the program.

4B. Create an applet which scrolls a message "java moves the web", from left to right on the window. Provide this message as an argument to your applet. Set the foreground and background of the applet to your favourite colors.

(10+10 = 20 marks)

5A. What is an event? How were they handled in the original versions of Java as well as in the modern versions? Which is better and why?

5B. Demonstrate mouse event handlers by writing an applet which does the following:-
   i)   If a button is clicked, the message "clicked" is displayed in the upper left corner of the applet display area.
   ii) When dragging the mouse a "→" symbol is displayed.

5C. What is meant by a Java bean? Why is it important?

(6+8+6 = 20 marks)

6A. What is meant by a servlet? When should you use them? Explain their advantages over CGI.

6B. Create an applet which creates 3 radio buttons namely C, C++ and Java. On clicking a radio button, the associated label should be displayed in a text field along with a concatenated message called "language" which is provided as a parameter to your applet. See to it that the radio buttons are vertically aligned.

(10+10 = 20 marks)

7A. Draw the class hierarchy of panel and frame classes. Explain them bringing out the significance of all classes.

7B. Explain JcheckBox class, highlighting its constructors and commonly used methods.

(15+5 = 20 marks)