(Time: 2½ hours)

Total 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 three* **of the following:**   15
a.   What is Java Virtual Machine (JVM)? Explain JVM components.
b.   Explain the following.
        (i)   Autoboxing
        (ii)   Conditional operator

c.   Define Identifier. Explain rules for identifiers in Java.
d.   List of and explain any five features of Java.
e.   Explain the following methods of String.
    (i) length()   (ii) equals()   (iii) charAt()   (iv) compareTo()   (v) substring()
f.   How is main() method of Java written? Explain it in detail.

2.   **Attempt** *any three* **of the following:**   15
a.   When do we use switch-case statement? Explain it with example.
b.   List and explain the types of classes in Java.
c.   What is a constructor? Explain characteristics of constructor.
d.   Write a program to illustrate the concept of method overloading.
e.   What do you mean by variable arguments? Explain it with example.
f.   When do we use 'foreach' loop? Explain it with example.

3.   **Attempt** *any three* **of the following:**   15
a.   Differentiate between classes and interfaces.
b.   What is a package? Write steps to create a package in Java.

c.   What is an interface? How can we implement interface in a class?
d.   Explain the following with example.
        (i)   this   (ii)   super

e.   Write a program to illustrate the concept of abstract method and abstract class.
f.   Write a program to implement multilevel inheritance with default constructor in each
    class.

4.   **Attempt** *any three* **of the following:**   15
a.   Write a short note on exception handling in Java.
b.   Explain life cycle of a Thread.
c.   How is a Vector different from an array? How can you create a Vector in Java?
d.   Explain the use of enumeration datatype in Java.
e.   Define Stream. Explain how we can write binary data to a file.
f.   What are the different ways of creating a new Thread in Java?

[TURN OVER]

5. **Attempt *any three* of the following:** 15

a. Create an applet to display "Java World", Change the text color to Red.

b. Create an AWT application to create a frame with a Button named "Square", a Label and a TextField. Enter a number in the TextField .Click of the Button should display square of that number in the Label.

c. What is the use of LayoutManager? Explain GridLayout and BorderLayout.

d. Explain the following Listener interfaces
    (i)   KeyListener   (ii)   MouseListener

e. Explain checkbox class along with its constructors in detail.

f. What is the use of adapter classes? Explain any one Adapter class in detail.

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