

(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
- What is Java Virtual Machine (JVM)? Explain JVM components.
  - Explain the following.
    - Autoboxing
    - Conditional operator
  - Define Identifier. Explain rules for identifiers in Java.
  - List of and explain any five features of Java.
  - Explain the following methods of String.  
(i) length() (ii) equals() (iii) charAt() (iv) compareTo() (v) substring()
  - How is main() method of Java written? Explain it in detail.
2. **Attempt any three of the following:** 15
- When do we use switch-case statement? Explain it with example.
  - List and explain the types of classes in Java.
  - What is a constructor? Explain characteristics of constructor.
  - Write a program to illustrate the concept of method overloading.
  - What do you mean by variable arguments? Explain it with example.
  - When do we use 'foreach' loop? Explain it with example.
3. **Attempt any three of the following:** 15
- Differentiate between classes and interfaces.
  - What is a package? Write steps to create a package in Java.
  - What is an interface? How can we implement interface in a class?
  - Explain the following with example.
    - this
    - super
  - Write a program to illustrate the concept of abstract method and abstract class.
  - Write a program to implement multilevel inheritance with default constructor in each class.
4. **Attempt any three of the following:** 15
- Write a short note on exception handling in Java.
  - Explain life cycle of a Thread.
  - How is a Vector different from an array? How can you create a Vector in Java?
  - Explain the use of enumeration datatype in Java.
  - Define Stream. Explain how we can write binary data to a file.
  - 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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