A–1304

Total Pages : 4 **Roll No. .....**

MCS-508

(MCA/MSCIT)

Programming in Java

Examination February, 2026

Time : 2:00 Hrs. Max. Marks : 70

Note* :–** This paper is of Seventy (70) marks divided into Two (02) Sections 'A' and 'B'. Attempt the questions contained in these Sections according to the detailed instructions given therein. ***Candidates should limit their answers to the questions on the given answer sheet. No additional (B) answer sheet will be issued.

Section–A

(Long Answer Type Questions) (2×19=38)

***Note* :–** Section 'A' contains Five (05) Long-answer type questions of Nineteen (19) marks each. Learners are required to answer any *two* (02) questions only.

1. Describe the basic concepts of Object-Oriented Programming such as object, class, abstraction, encapsulation, inheritance, and polymorphism. Provide definitions and simple illustrations for each concept.

2. Explain Java's selection statements, iterative statements, and jump statements, clearly differentiating their purpose. Provide flowcharts and real-world use cases.

3. Write a program to create a class Electric Bill with fields for consumer number, consumer name, units consumed, bill amount.

   Bill calculation rules :

   (i) First 100 units ₹ 5 per unit

   (ii) Next 200 units ₹ 7 per unit

   (iii) Above 300 units ₹10 per unit

   Compute the bill using a method and print a detailed bill for multiple customers, showing the slab-wise calculation.

4. Define Multithreading in Java. Explain the concept of threads, life-cycle of a thread, states of a thread, and the difference between process and thread in detail with diagrams.

5. Describe the complete Applet Architecture and the interaction between browser, JVM, and applet. Explain how the applet's code is loaded, verified, executed, and sandboxed.

Section–B

(Short Answer Type Questions) (4×8=32)

***Note* :–** Section 'B' contains Eight (08) Short-answer type questions of Eight (08) marks each. Learners are required to answer any *four* (04) questions only.

1. Explain the significance of classes and objects in the OO approach. How do they support modular and reusable code ?

2. Write a Java Program to find the largest of three numbers using If-else and Switch.

3. Illustrate how objects can be used as parameters in Java methods.

4. Explain the use of the final keyword in Inheritance. Discuss how final keyword affects classes, methods, and variables.

5. Write a program that reads a file name from the user and attempts to open it. If the file does not exist, throw the custom exception FileMissingException.

6. Explain the fundamental differences between characters and strings in Java. Write programs that show the declaration, initialization, and manipulation of both char and string data types.

7. Explain the concept of URL in Java. Describe each part-protocol, host, port, file, path, and query along with diagrams.

8. Write short notes on the following :

   (a) Java Operators

   (b) Dynamic Binding

   (c) Array

   (d) Serialization

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