

2025

MCA 3rd Semester Examination

MCA

Paper : MCA - 306

(Java Lab)

(Practical)

Full Marks : 100

Time : Three Hours

Answer any *two* questions on lottery basis.

35×2=70

- 1. Write a program to illustrate the concept of constructor overloading and the use of the 'this' keyword.**

- 2. Implement single and multilevel inheritance in Java. Show how constructors are called in inheritance.**

- 3. Show how static variables and methods work in Java by counting the number of objects created for a class.**

4. Write a program to demonstrate method overriding and dynamic method dispatch.

5. Display these statistics from a String given to a Java program : no. of letters, no. of digits, no. of blank spaces, and no. of special characters.

6. Demonstrate the use of abstract class and interface by creating a simple example of a shape hierarchy e.g., Circle, Rectangle, Triangle etc.

7. Write a program that shows how anonymous inner classes work in Java.

8. Write a Java program to show how objects are passed as parameters and methods can return objects.

(3)

9. Create a program to find all prime numbers between 1 and the number N given by the user.

10. Define a Fibonacci class with a next() function. The next() function returns the next Fibonacci number. Write a Java program to test the class.

11. Write a Java program that evaluates a simple arithmetic expression given as command line argument.

12. Show how a Java program handles exception by writing a program using try, catch, throw, throws, and finally.

13. Create a user-defined exception and demonstrate its use in a Java program.

(4)

14. Write a program to read data from a text file and count the number of words and lines using `BufferedReader`.
15. Create two threads in Java-one to print numbers from 1 to 50 and another to print 51 to 100 simultaneously.
16. Demonstrate thread synchronization when accessing a shared resource using a Java program.
17. Write a Java program to perform matrix operations addition and multiplication using 2D arrays.
18. Implement a producer-consumer problem using multithreading concepts and inter-thread communication in Java.

(5)

19. Write a Java applet to display your name, roll number, and current date. Demonstrate parameter passing through HTML <applet> tag.

20. Develop a simple web application using Servlet to accept student details using a form and display them.

(Viva-voce - 20)

(Practical Notebook - 10)
