Roll No. : ……

Bharati Vidyapeeth's
Institute of Computer Applications and Management (BVICAM)
A-4, Paschim Vihar, New Delhi-63
FIRST SEMESTER [MCA] Internal Examination, October 2024

Paper Code: MCA 109 **Subject: Object Oriented Programming with Java**

Time: 2 Hours **Maximum Marks: 45**

Note: Attempt THREE questions in all. Question No. 1 is compulsory, and attempt one question from each unit.

1. Answer all the following questions briefly: - 1.5 × 10 = 15

(a) Justify whether Java is an Object-Oriented Programming language or a platform. CO1

(b) Create a program to accept two numbers from the user and swap them. Through comments explain how does this program support abstraction and encapsulation. CO2

(c) Through a suitable example differentiate between a local and instance variable in java. CO1

(d) Create an array of chars named symbols and an int variable i. If i represents the index of the array, print out the value of the element at that index. Otherwise print "Invalid Index" CO1

(e) List the situations in which a finally block shall not execute. CO1

(f) Contrast between sleep() and wait(). CO2

(g) Create a user-defined thread to demonstrate the various stages of the Thread life cycle. CO2

(h) Declare a user-defined method called displayTable(int n) that returns an array containing 10 multiples of n. CO2

(i) Describe the meaning of a platform wrt Java. CO2

(j) Contrast between Set and List interface of the Collection framework in Java. CO2

UNIT - I

2. (a) Illustrate the JVM architecture suitably and briefly discuss which parts of a program use what kind of memory. 5 CO1

(b) Write a program to create a jagged array where the 0^{th} row has 1 element, 1^{st} row has 2 elements and so on such that the nth row has n+1 elements. 5 CO1

(c) Through appropriate example contrast between encapsulation and abstraction in java. 5 CO1

3 (a) Discuss the various parts of an internal detailed .class file format. 5 CO1

(b) Define a class Animal which tells the sound of the Animal. Use this class as the base class for multilevel inheritance. 5 CO1

(c) Elaborate the major functions of the class loader subsystem. List the major components this system is divided into. 5 CO1

UNIT II

4 (a) Through a suitable example demonstrate how a try statement can be allocated 1 or more resources. List the advantages of this automatic resource management. 5 CO2

(b) A SharedCounter has 10 threads each increment a shared int counter variable 10 times. When all the threads have finished, print the final value of the counter. If the initial value is zero, do you always get 100? Arrange for your code to sometimes print the wrong answer. 5 CO2

	(c)	Define a class ExceptionHandling with a static method called methodtoThrow(). This method should initialize a String. Check the length of the string and incase it is null throw a NullPointerException. However the catch block of the methodtoThrow() should rethrow this NullPointerException to the main () catch.	5	CO2
5	(a)	Elaborate the concept of catching multiple exceptions in a single try block with the help of a suitable example. Also list the advantages of this concept.	5	CO2
	(b)	Contrast between checked and unchecked exceptions in Java.	5	CO2
	(c)	Design a suitable solution to change the name and priority of the main thread of a program and display the same.	5	CO2