UPES
End Semester Examination, December 2023

Course: Java Programming   **Semester: III**
Program: BCA – AI/CS   **Time   : 03 hrs.**
Course Code: CSBC2024   **Max. Marks: 100**

Instructions:

SECTION A
(5Qx4M=20Marks)

S. No.		Marks	CO
Q 1	Apply the concept of iteration in JAVA todisplay the following pattern: 5 5 5 5 5 4 4 4 4 3 3 3 2 2 1	4	CO1
Q 2	Create the flowchart to print the series 3, 5, 7, 11, 13, 17, 19…..47.	4	CO1
Q 3	"Multiple inheritance is supported using interface while it is not supported in case of class in JAVA". Justify	4	CO4
Q 4	Analyze the given scenario for a shopping cart that applies discounts based on the total purchase amount. Define two discount rules: one for a 10% discount on purchases of $50 or more and another for a 15% discount on purchases of $100 or more. Write the program to calculate the final bill.	4	CO1
Q 5	Discuss immutability of String in JAVA.	4	CO2

SECTION B
(4Qx10M= 40 Marks)

Q 6	Define & list types of access specifiers in Java. Explain the scope of a variable declared with an access specifier.	10	CO4
Q 7	Apply the concept of array and write a program to identify the greatest element in a 1D array without using predefined package and methods.	10	CO2
Q 8	Develop a school management system in JAVA with a base class Person and a subclasses Student. The Person class will have attributes like name, age, and address, along with a method displayInfo() to print the person's information. Student class will inherits the attributes and methods of the Person class and adds its own attributes, studentID and avgMarks. Overrides the displayInfo() method to include student-specific information.	10	CO3

Q 9	What are the different ways to handle exceptions in JAVA? OR WAP to handle ArithmeticException that may occur due to division by zero.	**10**	**CO4**
	SECTION-C **(2Qx20M=40 Marks)**		
Q 10	Define abstraction. Explain all possible ways to achieve abstraction in JAVA with example programs. OR Compare compile time polymorphism with run time. Define a class Shape with constructor to initialize the type of shape. Define overloaded methods to calculate area of rectangle, triangle and circle. Calculate the area of different shapes by taking input from the user.	**(5+15=20)**	**CO3**
Q 11	Apply the concept of object oriented programming and array to write a program in JAVA which will take input for two 2D matrices and can calculate their sum.	**20**	**CO2**