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K. J. Somaiya Institute of Technology, Sion, Mumbai-22
(Autonomous College Affiliated to University of Mumbai)

Nov – Dec 2024
(B. Tech.) Program: Artificial Intelligence and Data Science   Scheme: III
Regular Examination SY   Semester: III
Course Code: AIC304 and Course Name: Object Oriented Programming with Java
Date of Exam: 26/12/24   Duration: 02.5 Hours   Max. Marks: 60

Instructions:
(1) All questions are compulsory.
(2) Draw neat diagrams wherever applicable.
(3) Assume suitable data, if necessary.

Q. No.	Question	Max. Marks	CO	BT level
Q 1	Solve any **two** questions out of three: (05 marks each)	10		
a)	Explain any five core features of the Java programming language.		CO1	U
b)	Differentiate Static Initialization Block (SIB) and Instance Initialization Block(IIB).		CO2	U
c)	Explain components of event handling.		CO5	U
Q 2	Solve any **two** questions out of three: (05 marks each)	10		
a)	Write a java program to accept random integer numbers in an single dimension array from user and display in ascending order.		CO2	AP
b)	Write a Java program for the following output using Java Swing by Association inside constructor.		CO5	AP
c)	List and explain commonly used controls while the GUI is designed using JavaFX.		CO6	U
Q.3	Solve any **two** questions out of three. (10 marks each)	20		
a)	1. Write a java program to find the sum of the first N natural numbers using for loop. (5M) 2. Write a java program to find the GCD of two numbers using while loop (5M)		CO1	AP
b)	Define following terms with example. 1. Passing parameters to Methods (5M) 2. Returning parameters from the methods(5M)		CO2	U
c)	Write a Java program that demonstrates method overriding. Create an Animal class with a method sound(). Then, create Dog and Cat classes that extend Animal and override the sound() method to give specific sounds for each animal.		CO3	AP

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Q.4	Solve any **two** questions out of three. (10 marks each)	20		
a)	Explain all components of the thread life cycle with a proper diagram.		CO4	U
b)	Write a Java program to create a method that reads a file and throws an exception if the file is not found.		CO4	AP
c)	Write a Java Swing program that provides a basic calculator. The GUI should have: 1. Two input fields where users can enter numbers. 2. Four buttons for the operations: Add, Subtract, Multiply, and Divide. 3. A label to display the result of the calculation.		CO5	AP

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