Graphic Era HILL UNIVERSITY
Established by an Act of the State Legislature of Uttarakhand (Adhiniyam Sankhya 12 of 2011)
University under section 2(f) of UGC Act, 1956

End Term (Odd) Semester Examination November 2025

Roll no.....

Name of the Program and semester: BCA V
Name of the Course: Introduction to Java Programming
Course Code: TBC 501

Time: 3 hour Maximum Marks: 100

Note:

(i) All the questions are compulsory.
(ii) Answer any two sub questions from a, b and c in each main question.
(iii) Total marks for each question is 20 (twenty).
(iv) Each sub-question carries 10 marks.

Q1. (2X10=20 Marks)

a. Analyze the different ways to declare and initialize an array in Java? Can one array be assigned t another? Show with example. CO3

b. Explain the principles of Object-Oriented Programming. How do encapsulation, inheritance, an abstraction contribute to software reusability and maintainability? CO2

c. Design a class hierarchy in Java for a vehicle management system that demonstrates inheritance an polymorphism. CO3

Q2. (2X10=20 Marks)

a. Evaluate the effectiveness of using abstract classes versus interfaces for extensible software design. CO3

b. Implement a client-server communication system using TCP sockets where the client sends a messag and the server replies. CO5

c. Differentiate between a process and a thread with example. What happens when a thread is started twice Explain with example. CO4

Q3. (2X10=20 Marks)

a. Why exception handling is important? How we can handle exception? Explain how exception handlin manages errors in code execution.CO5

b. Explain the event delegation model in AWT with examples. CO6

c. Explain the process of reading and writing files using byte streams in Java. Write a Java program to creat a new text file and write a message into it using FileWriter.CO4

Q4. (2X10=20 Marks)

a. Evaluate the advantages of using Swing over AWT for GUI development. CO6

b. How are threads useful in programming? Write a program that extends Thread class to create three nev threads. Each thread finds the square root of 4 numbers. Thread1 from 1 to 4, Thread2 from 5 to 8, and s on. The results are displayed on the screen. CO4

c. Define upcasting and downcasting in Java. Explain their purpose with syntax. Develop a progran showing how upcasting allows a parent class reference to call overridden methods of a subclass.CO1, CO3

Q5. (2X10=20 Marks)

a. Explain the difference between primitive data types and their wrapper classes. Discuss autoboxing an autounboxing.CO3

b. Differentiate between throw and throws? As a programmer, how you will decide when to use throw o throws? Write java program to show the use of throw and throws. CO5

c. Define the keywords final, finally, and finalize () in Java. Explain their basic purpose and when each i executed. CO2, CO4, CO5