Graphic Era
HILL UNIVERSITY
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University under section 2(f) of UGC Act, 1956

End Term (Odd) Semester Examination November 2025

Roll no. 2492001

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 to another? Show with example. CO3

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

c. Design a class hierarchy in Java for a vehicle management system that demonstrates inheritance and 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 message 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 handling 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 create 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 new threads. Each thread finds the square root of 4 numbers. Thread1 from 1 to 4, Thread2 from 5 to 8, and so on. The results are displayed on the screen. CO4

c. Define upcasting and downcasting in Java. Explain their purpose with syntax. Develop a program 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 and autounboxing. CO3

b. Differentiate between throw and throws? As a programmer, how you will decide when to use throw or 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 is executed. CO2, CO4, CO5