QP Code: S253A041 | Reg. No | | | | | | | | | | | AY 23

Gandhi Institute of Engineering and Technology University, Odisha, Gunupur
(GIET University)

B. Tech (Third Semester – Regular) Examinations, November 2025

23BCSES23001- Object Oriented Programming using JAVA
(Civil, EE, EEE)

Time: 3 hrs | Maximum: 60 Marks

Answer ALL questions
(The figures in the right hand margin indicate marks)

PART – A **(2 x 5 = 10 Marks)**

Q.1. Answer ALL questions		CO #	Blooms Level
a.	Define encapsulation and mention one benefit in software design.	CO1	K2
b.	Distinguish while and do-while with one use case each.	CO2	K2
c.	State the purpose of the this keyword with one usage example.	CO3	K2
d.	Write the syntax to import a class from another package.	CO4	K1
e.	What is the purpose of throw? Give a minimal example.	CO5	K2

PART – B **(10 x 5 = 50 Marks)**

Answer ALL the questions		Marks	CO #	Blooms Level
2. a.	Implement linear search; then binary search for a sorted array; compare time complexities.	5	CO2	K4
b.	Write a program to reverse words in a sentence using StringBuilder.	5	CO2	K3
	(OR)			
c.	Write a program to print a numeric pattern using nested loops; explain the control flow.	5	CO2	K3
d.	Write a program to remove duplicates from a sorted array in-place and return the new length.	5	CO2	K3
3.a.	Differentiate compile-time polymorphism (overloading) and runtime polymorphism (overriding) with code and binding time.	5	CO3	K4
b.	Write a program to define Employee base; Manager and Developer override calculatePay(); show runtime polymorphism using an Employee[].	5	CO3	K3
	(OR)			
c.	Write a program to define an abstract Shape with abstract area(); implement Circle and Rectangle; show usage.	5	CO3	K3
d.	Explain overloading resolution rules and demonstrate an ambiguity case with fixes.	5	CO3	K4
4.a.	Write a program to read two integers, swap without a temporary variable, and print the result.	5	CO1	K3
b.	Summarize Java operator categories with illustrative expressions.	5	CO1	K2
	(OR)			
c.	Contrast var with explicit typing and state two constraints of using var.	5	CO1	K2
d.	Write a program to read name and age and print a greeting using String.format.	5	CO1	K3
5.a.	Write a program to create a user-defined package and access it from another class.	5	CO4	K3
b.	Write a program to create package college.util with a utility class; import and use it from a different package.	5	CO4	K3

	(OR)			
c.	Write a program to search a text file for a keyword and print line numbers where it occurs.	5	CO4	K3
d.	Demonstrate efficient large-file reading with buffering and explain performance benefits.	5	CO4	K4
6.a.	Write a program to define a custom InvalidAgeException and validate voter age; demonstrate use.	5	CO5	K3
b.	Write a program to show how finally is used to close resources in a file-reading example.	5	CO5	K3
	(OR)			
c.	Write a program to use Thread.sleep() in a loop; explain and handle InterruptedException.	5	CO5	K3
d.	Write a program to spawn three worker threads to compute partial sums of an array; aggregate in main.	5	CO5	K3

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