Code No: 183BU **R22**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech II Year I Semester Examinations, December -2024 / January - 2025
OBJECT ORIENTED PROGRAMMING THROUGH JAVA
(Artificial Intelligence and Data Science)

Time: 3 Hours **Max. Marks: 60**

Note: This question paper contains two parts A and B.
i) **Part- A** for 10 marks, ii) **Part - B** for 50 marks.

- Part-A is a compulsory question which consists of ten sub-questions from all units carrying equal marks.
- Part-B consists of **ten questions** (numbered from 2 to 11) **carrying 10 marks each**. From each unit, there are two questions and the student should answer one of them. Hence, the student should answer five questions from Part-B.

PART- A

(10 Marks)

1.a)	What is an Object? How to allocate memory for objects?	[1]
b)	Explain the usage of 'this' keyword.	[1]
c)	List and explain the benefits of inheritance.	[1]
d)	Define a Package. What is its use in java? Explain.	[1]
e)	Outline the purpose of synchronized keyword in Java?	[1]
f)	List the benefits of exception handling.	[1]
g)	How do event listeners interact with event sources in Java?	[1]
h)	What is the purpose of the Action Listener interface?	[1]
i)	Compare Applets with application programs.	[1]
j)	How does Swing overcome the limitations of AWT?	[1]

PART-B

(50 Marks)

2.a)	List and explain the Java buzzwords in detail .	
b)	Write a Java program to find the transpose of a given matrix.	[5+5]
	OR	
3.a)	How is abstraction different from information hiding?	
b)	Develop a Java program that computes the roots of a quadratic equation.	[5+5]
4.a)	Explain the various levels of protection provided to the variables or methods within classes, subclasses, and packages in java with example.	
b)	Does Java support multiple inheritance? Justify your answer.	[5+5]
	OR	
5.a)	Define polymorphism. Explain different types of polymorphisms with examples	
b)	Design an interface Employee with methods calculate Salary() and display Info(). Implement this interface in classes 'Manager' and 'Developer'. Use appropriate getters, setters, and constructors.	[5+5]

6.a) Differentiate Checked and Unchecked exceptions with suitable examples.

b) Write a program to create three threads in your program and context switch among the threads using sleep functions. [5+5]

OR

7.a) Develop a program that includes a try block and a catch clause which processes the arithmetic exception generated by division-by-zero error.

b) Analyze the need of thread synchronization. How it is achieved in Java programming? Explain with a suitable program. [5+5]

8.a) Summarize the need for Layout Manager. List and explain various Layout Managers with illustrative examples.

b) Develop a Java program to demonstrate the handling of keyboard events. [5+5]

OR

9.a) Define an Adapter class. Explain its role in event handling.

b) Write a java program to design a scientific calculator using AWT. [5+5]

10.a) Define an applet. Explain the life cycle of Applet with a neat sketch. Create an applet to display "Welcome" message.

b) Design a user interface to collect data from the student for admission application using swing components. [5+5]

OR

11.a) What are the subclasses of JButton class of swing package?

b) Develop an applet that receives an integer in one text filed, computes the reverse value and returns it in another text filed , when the button named COMPUTE is clicked. [5+5]

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