Reg. No. : | | | | | | | | | | | | |

Question Paper Code: U6E03

B.E./B.Tech. DEGREE EXAMINATION, NOV 2024

Sixth Semester

Artificial Intelligence and Data Science

21UAD603- THINKING IN JAVA

(Regulations 2021)

Duration: Three hours | Maximum: 100 Marks

Answer All Questions

PART A - (10 x 2 = 20 Marks)

1.	Differentiate primitive and non-primitive data types	CO1-U
2.	Write a Java program to print first n natural numbers.	CO2-App
3.	What are the constructors available in Java?	CO1-U
4.	What will be the output of the below code?	CO2-App

```
Class Demo {
publicintvar1=20;publicintvar2=40;
Demo(intv1, intv2)
{ var1=v1;var2=v2; }
}
Public class Tester{
public static void main(String args[])
{Demo demo = new Demo();
System.out.println(demo.var1);
System.out.println(demo.var2);
}
}
```

5.	What are the types of polymorphism?	CO1-U
6.	Write a program to overload a method sum.	CO2-App

7.		What are the advantages of using packages?	CO1-U	
8.		Write a java program for try and catch block implementation.	CO2-App	
9.		Write the syntax for declaring a string in java.	CO1-U	
10.		Write a Java program that reads a sentence from the user, converts it to lowercase using a string constructor, and then displays the result.	CO2-App	

PART – B (5 x 16= 80 Marks)

11.	(a)	Define selection control structure in java with proper syntax and example programs.	CO1-U	(16)
		Or		
	(b)	Define JVM and its key components with neat diagrams.	CO1-U	(16)
12.	(a)	Define Constructors and its types with suitable example programs.	CO1-U	(16)
		Or		
	(b)	Explain access modifiers and the usability of access modifiers in JAVA with suitable example.	CO1-U	(16)
13.	(a)	Write a Java program that demonstrates inheritance by creating a superclass Vehicle and subclass Car. Implement relevant methods and attributes to showcase inheritance.	CO2-App	(16)
		Or		
	(b)	Write a Java program that demonstrates polymorphism by implementing a shape hierarchy with classes Shape, Circle, and Rectangle, showcasing method overriding and dynamic method invocation.	CO2-App	(16)
14.	(a)	Explain the purpose and functionality of the Collection interface in Java. Discuss its hierarchy and key methods. Illustrate scenarios where the Collection interface is used in Java programs.	CO1-U	(16)
		Or		
	(b)	Discuss the import statement in Java, which is used to access classes and interfaces from other packages. Explain the different forms of import statements and their implications.	CO1-U	(16)

15. (a) Write a java program to remove all the duplicate characters and white spaces from the string passed to the method and return the modified string. CO2-App (16)

Test the functionalities using the main()method of the Tester class.

Sample Input	Expected Output
object oriented programming	objectrindpgam
hello world	helowrd

Or

(b) Develop a Java program that extracts characters from a given string using the **charAt()** method and creates substrings using the **substring()** method based on user input. CO2-App (16)