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

Question Paper Code: U4804

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

Fourth Semester

Computer Science and Engineering

21UIT404-JAVA PROGRAMMING

(Regulations 2021)

(Common to Information technology & Computer Science and Design Engineering Branches)

Duration: Three hours Maximum: 100 Marks

PART A - (10 x 2 = 20 Marks)

1.	Outline any 3 benefits and applications of JAVA	CO1-U
2.	What is the purpose of using this keyword in Java? Give an example.	CO1-U
3.	How java programming efficiently handles the memory management and compare it with other languages?	CO1-U
4.	List out the Access Specifier in Java.	CO1-U
5.	Differentiate Method Overloading and Method Overriding.	CO1-U
6	Why do we need super constructors?	CO1-U
7	What is Java package and how is it used?	CO1-U
8	Which statement can be used to access the classes and interface of a different package from the current package?	CO3-Ana
9	Develop a java Program to concatenate two strings"ABC" and "XYZ" using concat() method	CO2-App
10	List and Explain any five character extraction method.	CO1-U

PART – B (5 x 16= 80 Marks)

11.	(a)	Implement a program to find the number of rabbits and chickens in a farm. Given the number of heads and legs of the chickens and rabbits in a farm, identify and display the number of chickens and rabbits in the farm. If the given input cannot make a valid number of rabbits and chickens, then display an appropriate message.	CO2-App	(16)

Sample Input and Output

Sample Input	Expected Output
heads=150, legs=500	Chickens=50 Rabbits=100
heads=3, legs=11	The number of chickens and rabbits cannot be found

Or

(b) Implement a program to find out whether a number is a seed of another number. CO2-App (16)

A number X is said to be a seed of number Y if multiplying X by its every digit equates to Y.

E.g.: 123 is a seed of 738 as 123*1*2*3 = 738

12. (a) Write a Java program to perform Matrix Addition and subtraction CO2-App (16)

Or

(b) A book shop maintains the inventory of books that are being sold at the shop. The list includes the details such as author, title, price, publisher and stock position. Whenever a customer wants a book, the sales person inputs the title and author and the system searches the list and displays whether it is available or not. If it is not, an appropriate message is displayed. If it is, then the system displays the book details, and requests for the number of copies required. If the requested copies are available, the total cost of the requested copies is displayed. Otherwise, the message "Required copies not in stock" is displayed. Design a system using a class called books with suitable methods and constructors. CO2-App (16)

13. (a) Create a class Bike that has data members gear, speed and methods apply Brake() to decrease the speed to the given value and speedup() to increase the speed to the given value. Derive a class Mountain Bike from class Bike that has a data member seat Height and a method set Height() to set the seat Height to new value. Provide constructors to initialize the respective data members. Provide to String() to print the respective data members. From main() method, display the members of all the classes. CO2-App (16)

Or

(b) Write a Java program that has a class Train with data members no of seats first tier, no of seats second tier, no of seats third tier and methods to set and display data. Derive a class Reservation that has data members seats booked first, seats booked second and seats booked third and methods to book and cancel tickets, and display the status. CO2-App (16)

14. (a) Develop a java program with package and interface to calculate the area and perimeter of Circle, Rectangle and Ellipse with the following input : CO2-App (16)

- Create a package with name My Interface
- Interface with name Geo Analyzer with variables pi, area and perimeter
- Create classes Circle, Ellipse and Rectangle

Create a Main class as shape

Or

(b) Write a Java Code with its output as follows: CO2-App (16)
Create an array list and add the strings such as "C++,Java, C, python" and implement the following operations:

- Retrieve the string at index 2
- Change the string at index position 2 as "programming"
- Remove the string at index position 0

15. (a) Complete the moveSpecialCharacters() method given in the Tester class. CO2-App (16)

Method Description

moveSpecialCharacters(String str)

Move all the special characters present in the string passed to the method to the end of the string and return the modified string.

Note: Assume that the input string does not have any space.
Test the functionalities using the main() method of the Tester class.

Sample Input	Expected Output
He@#$llo!*&	Hello@#$!*&
%$Wel*&come!	Welcome%$*&!

```
class Tester
{
```

```
    public static String moveSpecialCharacters(String str)
{
//Implement your code here and change the return value
accordingly
      return null;
     }
     public static void main(String args[])
{
        String str = "He@#$llo!*&";
     System.out.println(moveSpecialCharacters(str));
     }
}
```

Or

(b) CO2-App (16)

Develop the java code for the following method description:

Method description

checkpalindrome(String str)

- Check whether the string passed to the method is palindrome
- Return true if the string is palindrome or not

Test the functionalities using main() method of the tester class

Sample Input and Output

Sample Input	Expected Output
radar	true
apple	false