DO NOT WRITE ANYTHING ON QUESTION PAPER EXCEPT ROLL NO.

CHITKARA UNIVERSITY

2022-2023

Sessional Test I – April, 2023

Roll No: …… [Total No. of Pages: 8]

Programme: B.E. (CSE) **Time: 90 minutes**

Course Title: Core Java

Course Code: CS109 **Max. Marks: 40**

General Instructions:

- Follow the instructions given in each section.

Section – A

(Q 1 to 10: Each question carries 1 mark)

Q1. What will be the output of the following program?

```
public class Main {
   public static void main(String args[]) {
     int arr[] = {10, 20, 30, 40, 50};
     for(int i=0; i < arr.length; i++)
     {
         System.out.print(" " + arr[i]);
     }
   }}
```

a. **10 20 30 40 50**
b. Compile Time Error
c. Runtime Error
d. 10 20 30 40

Q2. What will be the output of the following program?

```
public class Hello
{
      public static void main(String[] args) {
            char ch = 48;
            System.out.println(ch);
      }
}
```

a. 48
b. Compile Time Error
c. **0**
d. Runtime Error

Q3. What is the output of the program?

```
public class CppBuzz {
public static void main(String[] args)
{
int a = 5+5*2+2*2+(2*3);
System.out.println(a); } }
```

a. **25**
b. 110
c. 13
d. 10

Q4. Wrapper class in java is _.

a. **Used to encapsulate primitive data type**
a. Declare new classes called wrapper
b. Create a new instance of the class
c. None of these

Q5. Which of this method is given parameter via command line arguments?

a. **main()**
b. recursive() method
c. any method
d. system defined methods

Q6. Which is not a true statement about an array?

b. **An array expands automatically when it is full.**
c. An array is allowed to contain duplicate values.
d. An array understands the concept of ordered elements
e. An array uses a zero index to reference the first element.

Q7. Which of these is an incorrect Statement?

a. **It is necessary to use new operator to initialize an array**
b. Array can be initialized using comma separated expressions surrounded by curly braces
c. Array can be initialized when they are declared
d. None of the mentioned

Q8. Which keyword is used to refer to the current object in Java?

a. **this**
b. self
c. current
d. Object

Q9. Argument passed to a program at the run time is stored in

a. String array passed to the parameter of main() method.
b. Integer array passed to the parameter of main() method.
c. Object array passed to the parameter of main() method.
d. String array passed to the parameter of public class constructor.

Q10. Two methods are said to be overloaded if they have

a. same name and same number of parameter but different return type.
b. they have same name
c. they have different name but same number of arguments
d. **have same name but different parameters.**

Section - B

(Q 11 to 15 : Each question carries 2 marks)

Q11. Which letters will be printed when the given program is run?

```
class MyClass {

public static void main(String[] args) {

B b = new C();
```

```
A a = b;
if (a instanceof A) System.out.print("A ");
if (a instanceof B) System.out.print("B ");
if (a instanceof C) System.out.print("C ");
if (a instanceof D) System.out.print("D "); }
}
class A {}
class B extends A {}
class C extends B {}
class D extends C {}
```

a. **A B C will be printed.**
b. only A and B will be printed.
c. only B will be printed.
d. only C will be printed.

Q12. What is the output of the below Java program with many constructors?

```
public class Constructor7
{
 Constructor7(int a)
 {
     System.out.println("Book=" + a);
 }
 Constructor7(float a)
 {
     System.out.println("Pen="+ a );
 }
 public static void main(String[] args)
 {
     Constructor7 con = new Constructor7(50.5f);
 }
}
```

a. Book=50
b. **Pen=50.5**
c. Compiler error
d. None of these

Q13. What will be the output of the following code?

```
public class solution
{
public static void main(String args[])
{
int y, x = 3;
y = --x + x++ - --x * --x * x;
System.out.println(y + " " + x);
}
}
```

a. **2 1**

b. 2 2
c. 1 1
d. 1 2

Q14. What will be the output of the following Java program?

```
public class bitwise_operator
    {
       public static void main(String args[])
       {
       int var1 = 42;
       int var2 = ~var1;
       System.out.print(var1 + " " + var2);
       }
    }
```

a. 42 42
b. 43 43
c. **42 -43**
d. 42 43

Q15. What will be out of this program

```
public class Test {
  public static void main(String[] args) {
    int height = 9;
    int Height = 10;
    System.out.println(Height);
  }
}
```

a. 9
b. **10**
c. 19
d. Compile-time error

Section - C

(Q 16 to 17: Each question carries 5 marks)

Q16. Write a program in Java to convert a given decimal number to binary form and print the resultant number.

Input format:
First line of the input contains a single decimal input number entered by the user.
0 <= n <= 10000000

Output format:
On a single line of output print the binary number as a String

Sample Input:
7

Sample Output:
111

Sample Input:
10

Sample Output:
1010

Test Cases:-

Input	Output
33	100001

100000000	10111110101111000010000000
106	1101010
0	0
1	1

Solution:

```
import java.util.*;
public class DecimalToBinary {
   public static void main(String[] args) {
      Scanner sc = new Scanner(System.in);
      int decimalNumber = sc.nextInt();
      String binaryNumber = "";
      if(decimalNumber == 0){
            binaryNumber = "0";
      }
      Else {
         while(decimalNumber > 0){
            binaryNumber = (decimalNumber % 2) + binaryNumber;
            decimalNumber = decimalNumber / 2;
         }
      }
      System.out.println(binaryNumber);
      sc.close();
   }
}
```

Q17. Write a program in java to print Armstrong number between two input numbers. An Armstrong number is a number (with digits n) such that the sum of its digits raised to nth power is equal to the number itself.

Input format:

First line of the input contains two input numbers entered by the user.

Output format:

On a single line of output print the Armstrong numbers separated by space

n1 < n < n2

1 < n < 10000

Sample Input:

5 20

Sample Output:

6 7 8 9

Sample Input:

50 400

Sample Output:

153 370 371

Test Cases:

Input	**Output**
5 7	6
60 160	153
1000 10000	1634 8208 9474

100 500	153 370 371 407
1 10	2 3 4 5 6 7 8 9

Solution:

```
import java.math.*;
import java.util.*;
 class Armstrong {
        static void ArmstrongNum(int l, int h)
        {
        for (int j = l + 1; j < h; ++j) {

        int y = j;
        int N = 0;
        while (y != 0) {
        y /= 10;
        ++N;
        }

        int sum_power = 0;
        y = j;
        while (y != 0) {
        int d = y % 10;
        sum_power += Math.pow(d, N);
        y /= 10;
        }
        if (sum_power == j)
        System.out.print(j + " ");
        }
        }
        public static void main(String args[])
        {
        Scanner sc = new Scanner(System.in);
        int n1 = sc.nextInt();
        int n2 = sc.nextInt();
        ArmstrongNum(n1, n2);
        System.out.println();
        sc.close();
}
}
```

Section - D

(Q 18: Question carries 10 marks)

Q18: In a gaming hub, N number of players were playing the same type of game. All players got stuck at the pillar level in the game, each with a different score. The owner of the gaming hub announced that players can pass that level if they can break two pillars. Both pillars have their own health points. The trick is to break the pillar at a time if a score equal to the pillar's health is obtained by multiplying the player's current score with any number. The same trick is to be used for both pillars. If no number can be multiplied by the player's score to make the score equal to the pillar's health, then that player loses. If the player is not able to break both pillars, then he will not be able to clear the level. Write a Java program to find the total number of players who will clear that level of the game.

Input Format:

The first line of the input consists of an integer -num Players representing the number of players (N).

The second lines consist of N space-separated integers - score1, score2, ..., scoreN, representing the score of each player. The last line of the input consists of two integers - health1, health2 representing the health of both the pillars respectively.

Output Format

Print the count of the players who will clear that level of the game

Sample Input 1

5
15 5 3 7 9
90 30

Sample Output 1

3

Explanation

Scores 15, 5 and 3 can be multiplied by another number to get 90 and 30 which will break the pillar. So, the output is 3.

Sample Input 2

5
15 5 3 7 9
135 90

Sample Output 2

4

Explanation

Scores 15, 5, 3, 9 can be multiplied by another number to get 135 and 90 which will break the pillar. So, the output is 4.

	Test Case 1	Test Case 2	Test Case 3	Test Case 4	Test Case 5
Input	6 15 5 3 7 9 45 135 90	8 15 5 3 7 9 45 10 20 15 90	7 10 20 30 40 50 60 70 20 10	8 11 15 19 27 29 34 19 32 23 25	5 15 5 3 7 9 135 90
Output	5	3	1	0	4

#Solution

```
import java.util.*;
class Main
{
        public static int fun(int n, int arr[], int x, int y)
        {
        int i, count = 0;
        for(i = 0; i < n; i++)
        {
                if(x % arr[i] == 0 && y % arr[i] == 0)
                count++;
        }
        return count;
        }
        public static void main(String args[])
        {
        Scanner sc = new Scanner(System.in);
        int n = sc.nextInt();
        int []arr = new int[n];
        for(int i = 0; i < n; i++)
        {
```

```
            arr[i] = sc.nextInt();
        }
        int x = sc.nextInt();
        int y = sc.nextInt();
        System.out.print(fun(n, arr, x, y));
        }
}
```