Reg. No.															

B.Tech/ M.Tech (Integrated) DEGREE EXAMINATION, MAY 2024

Fourth Semester

21CSE271T – PROGRAMMING IN JAVA

(For the candidates admitted from the academic year 2022-2023 onwards)

Note:

(i) **Part - A** should be answered in OMR sheet within first 40 minutes and OMR sheet should be handed over to hall invigilator at the end of 40th minute.

(ii) **Part - B** and **Part - C** should be answered in answer booklet.

Time: 3 Hours Max. Marks: 75

	Marks	BL	CO	PO

PART – A (20 × 1 = 20Marks)

Answer **ALL** Questions

1. What is the default data type of the literal represented as 48.0? | 1 | 1 | 1 | 1

(A) float (B) double

(C) int (D) byte

2. Which one of the following type conversion is permitted implicitly without using casting? | 1 | 1 | 1 | 1

(A) Long to int (B) Double to long

(C) Float to double (D) Double to float

3. Given the following public class test do while public static void main (string args [ ]). | 1 | 2 | 1 | 2

```
{
  int count = 20;
do
  {
system.out.print ln (count);
} while (count + + < 21);
}
```

What is the output?

(A) 20
21 (B) 20

(C) 21 (D) Nothing is printed

4. Which will legally declare, construct and initialize an array? | 1 | 1 | 1 | 1

(A) int [ ] myList ={"5", "8", "2"}; (B) int [3] myList = (5, 8, 2);

(C) int myList [ ] [ ] = {5,8,2,0}; (D) int [ ] myList ={5, 8, 2};

5. Identify which one of the expressions will evaluate to true if preceded by the following code? | 1 | 2 | 2 | 2

```
String str1 = "unread";
String str2 = new string (str1);
String str3 = str1;
Char [ ] str4 = {'u', 'n', 'r', 'e', 'a', 'd'};
```

(A) (str1 = = "unread") (B) (str1 = = str2)

(C) str1.equals (str2) (D) str1.equals (str4)

6. If Myprog.java were compiled as an application and then run from the command line as java Myprog 1 like myprogram what would be the value of args [1] inside the main ( ) method? 1 2 2 1

(A) Myprog (B) 1
(C) Like (D) 4

7. Examine the following code: 1 1 2 1
string str = "Hot Java",
boolean bvalue = str instance of string;
What is the value placed in bvalue?

(A) True (B) False
(C) "Hot Java" (D) Null

8. Which constructor is used to call the constructor of the superclass in a subclass constructor? 1 1 2 1

(A) Super (B) This
(C) Extends (D) Constructor

9. Given the following: 1 2 3 2

```
class Dog {
 Dog (string name)
      {
        }
}
```

If class Beagle extends Dog, class Beagle has only one constructor, which of the following could be the legal constructor for class beagle?

(A) Beagle ( ) { } (B) Beagle ( ) {super ( ):}
(C) Beagle ( ) {super ("false");} (D) No constructor, allow the default constructor to get generated automatically

10. Which statement is true? 1 2 3 1

(A) Inheritance defines a has a relationship between a superclass and its subclasses (B) Every Java object has a public method named equals
(C) Every java object has a public method named length (D) A final class can be extended by any number of classes

11. Say that class rodent has a child class Rat and another child class called Mouse. Class Mouse has a child class called pocket Mouse. Examine the following 1 2 3 2

```
Rodent rod;
Rat rat = new Rat ( );
Mouse mos = new Mouse ( );
Pocket Mouse pkt = new Pocket Mouse ( );
```

Which one of the following will cause a compilation error?

(A) rod = rat; (B) rod = mos;
(C) pkt = null; (D) pkt = rat;

12. Which statement is true for any concrete class implementing java.long.Runnable interface? 1 2 3 2

(A) The class must contain an empty protected void method named run ( );
(B) The class must contain a public void method named runnable ( );
(C) The mandatory method must be public, with a return type of void, must be called run ( ), and cannot take any arguments
(D) The class definition must include the words implements threads and contain a method called runs ( )

13. What type of exception is thrown by parseInt ( ) if it gets illegal data? 1 1 4 1

(A) Arithmetic exception
(B) Runtime exception
(C) Number format exception
(D) Number error

14. Given 1 2 4 2

```
Object error = new Error ( );
Object runtime Exception = new RuntimeException ( );
System.out.println ((error.instanceof Exception)+ ",");
System.out.println (runtime Exception instance of Exception);
```

What is the result of attempting to compile and run the program?

(A) Prints : false, false
(B) Prints : false, true
(C) Prints : true, false
(D) Prints : true, true

15. Which of the following lists exception types from most specific to least specific? 1 1 4 1

(A) Error, exception
(B) Exception, RunTimeException
(C) Throwable, RunTimeException
(D) ArithmeticException, RunTimeException

16. Find the output. 1 2 4 2

```
public class demo extends Thread {
private static int value = 37;
public void run ( ) {
    value + +;
    System.out.println (value);
}
Public static void
    main (string args [ ] ){
    value + + ;
Demo t10 = new Demo ( );
 t10.start ( );
}
}
```

(A) Prints 37
(B) Prints 38
(C) Prints 39
(D) Compile-time error

17. Which among the following allow duplicate elements? 1 1 5 1

(A) Array List
(B) Hash set
(C) Linked hash set
(D) Trees

18. A vector is created and three strings called string1, string2, string3 are called to it. The method removeElement ("string2") is called. Which of the following methods will retrieve the "string3" string? 1 2 5 2

(A) get (1) (B) get (2)
(C) get (0) (D) get ("string 3")

19. What is the difference between hash map and Linked HashMap? 1 2 5 1

(A) HashMap implements Map and LinkedHashMap implement linked list
(B) Elements of a HashMap are unordered whereas elements of LinkedHashMap are ordered
(C) Elements of a HashMap and LinkedHashMap are unordered
(D) Search is fast in LinkedHashMap whereas it is slow in HashMap

20. How does the set collection deal with duplicate elements? 1 1 5 1

(A) An exception is thrown if you attempt to add and element with a duplicate value
(B) The add method returns false if you attempt to add as a element with a duplicate value
(C) A set may contain that return duplicate values from a call to the equals method
(D) Duplicate values will cause as error at compile time

PART – B (5 × 8 = 40 Marks) Marks BL CO PO

Answer **ALL** Questions

21. a. You are given a two-dimensional array of 3×3 starting from A[0] [0]. You should add the alternate elements of the array and print its sum. It should print two numbers, the first being sum of A_{00}, A_{02}, A_{11}, A_{20}, A_{22} and second one being sum of A_{01}, A_{10}, A_{12}, A_{21}. 8 3 1 2

Sample input: 1 2 3 4 5 6 7 8 9
Sample output
25
20

(OR)

b.i. Write a Java program to find the sum of digits of a given number. 4 2 1 2

ii. Given a string of even length, print the first half. If the given string its "cat dog", it yields "CAT". If the string length is odd number then print "ODD". 4 3 1 2

Sample input 1: RAJARANI
Sample output 1: RAJI
Sample input 2: RAJ
Sample output 2: ODD

22. a. Create a new class called "calculator" which contains the following: 8 3 2 3

(i) A method called
Power Int (int num1, int num2) that accepts two integers and returns num1 to the power of num2.
(ii) A method called
Power Double (double num1, int num2)
(iii) Call your method from another class with instantiating the class

(OR)

b.	What is constructor in Java? Why does the constructor not have return types in Java? Explain it with proper examples.	8	3	2	3
23. a.	Write short notes on collection interfaces with suitable examples.	8	2	5	2
	(OR)				
b.	Explain in detail the collection classes array list and hash list with sample programs.	8	2	5	2
24. a.	Write a program to create an interface method named customer. In this keep the methods called information ( ), show ( ) and also maintain the tax rate. Implement this interface in employee class and calculate the tax of the employed based on their income.	8	3	3	3

Income	Tax male	Percentage female
>=1,90,000	Nil	Nil
>=2,00,000	10%	Nil
>=5,00,000	20%	10%
<5,00,000	25%	20%

	(OR)				
b.	Create a base class fruit which has name, taste and size as its attributes. A method called eat ( ) is created which describes the name of the fruit and its taste. Inherit the same in 2 other class apple and orange and override the eat ( ) method to represent each fruit taste. Create object for apple and orange, invoke eat method.	8	3	3	3
25. a.	What is exception handling in java? Why is it used? Write a Java code to simulate the way a stack mechanism works with exception handling, throwing and dealing with exceptions such as stack is full or stack is empty.	8	2	4	2
	(OR)				
b.	Write short notes on thread class and runnable interface. Elaborate on inter-thread communication using suitable examples.	8	2	4	2

PART – C (1 × 15 = 15 Marks)

Answer **ANY ONE** Question

		Marks	BL	CO	PO
26.	Write a program to find frequency of elements in a number and print the number of elements and its frequency in sorted order. For example, if the number if 1023K23. Frequency of number 1 is 1, frequency of number 0 is 1, frequency of number 2 is 2, frequency of number 3 is 2 and frequency of number 4 is 1. So, print the output as 0:1; 1:1; 4:1; 2:2; 3:2. Input N → number to find frequency Output Elements: Frequency in sorted order	15	3	5	3
27.	Detective Buckshee junior has been approached by the Shanthiniketan kids society for help in finding the password to the James complex. After hearing the scenario, detective Buckshee junior realizes that he will need a	15	3	5	3

programmers support. He contacts you and requests your help. Please help the detective by writing a program to generate the password.

The scenario is below.

Five numbers are available with the kinds. These numbers are either table or unstable.

A number is stable if each of its digits occur the same number of times. ie. The frequency of each digit in the number is the same. For eg. 2277, 4004, 11, 23, 583835, 1010 are example of stable numbers.

Similarly a number is unstable if the frequency of each digit in the number is NOT the same. For eg. 221, 4314, 1010, 233, 58135, 101 are examples of unstable numbers.

The password can be found as below.

ie. Password = (number of unstable numbers) $*10$ + number of stable numbers.

Assuming that the five numbers are passed to a function as input1, input2, input3, input4 and input5. Write a program to find and return the password. For example:

Input: 12, 1313, 122, 678, 898

Result: 23

* * * * *