Maximum Marks: 15   **Date: 10/10/2024**

NAME:---------------------------------- **Roll No.**------------------------- **Section :**_____

Instructions :
1. Write your name, roll no and Section in the space given above
2. Choice of the Answers should be filled **ONLY** in the table given at the end of the questions.
3. Overwritten or illegible answers **will not be considered** for evaluation.

Answer All Questions:

1. Write the output for the following program

```
interface Displayable {
  void display();
}
class Message implements Displayable {
  public void display() {
    System.out.println("Hello, World!");
  }
}
public class Main {
  public static void main(String[] args) {
    Displayable obj = new Message();
    obj.display();
  }
}
```

A) Compilation error
B) Runtime error
C) Prints: Hello, World!
D) No output

2. What will be the output of the following program

```
abstract class Outer {
  abstract void outerMethod();

  static abstract class Inner {
    abstract void innerMethod();
  }
}

class Concrete extends Outer {
  void outerMethod() {
    System.out.println("Outer method implementation");
  }

  static class InnerConcrete extends Outer.Inner {
    void innerMethod() {
```

```
            System.out.println("Inner method implementation");
        }
    }
}
public class Main {
    public static void main(String[] args) {
        Outer outer = new Concrete();
        outer.outerMethod();

        Outer.Inner inner = new Concrete.InnerConcrete();
        inner.innerMethod();
    }
}
```

A) Compilation error
B) Runtime error
C) Prints:

Outer method implementation
Inner method implementation

D) Prints nothing

3. In Java, which of the following statements about inheritance is **FALSE**?

   A) A subclass can override a method from its superclass.
   B) A subclass can inherit both instance methods and static methods from its superclass.
   C) A subclass can call the constructor of its superclass using super().
   D) A subclass cannot inherit private members of its superclass directly.

4. Consider the following code fragment in Java. Which object(s) is/are eligible for garbage collection after the execution of line // Line 4?

```
class Demo {
    Demo obj;
    public static void main(String[] args) {
        Demo d1 = new Demo(); // Line 1
        Demo d2 = new Demo(); // Line 2
        d1.obj = d2;        // Line 3
        d2 = null;          // Line 4
    }
}
```

   A) Only d1 is eligible for garbage collection
   B) Only d2 is eligible for garbage collection
   C) Both d1 and d2 are eligible for garbage collection
   D) Neither d1 nor d2 is eligible for garbage collection
5. Which of the following are TRUE
   a. Interface variables can be modified by the implementing class
   b. Interface cannot have variables

    c.   Both A & B

    d.   None of the above

6. What is the purpose of the "super" keyword in Java?

    a.   To refer to the current object

    b.   To invoke the superclass constructor or methods

    c.   To create multiple instances of a class

    d.   To hide data and methods within a class

7. What is the output of the following code?

```
class Grandparent {
public void print() {
 System.out.println("Grandparent's Print()");
  } }
class Parent extends Grandparent { }
class Child extends Parent { }
class GrandChild extends Child { }
public class Main {
public static void main(String[] args) {
GrandChild child = new GrandChild ();
 child.print();
}
}
```

    a.   "Child's Print()"

    b.   "Parent's Print()"

    c.   "Grandparent's Print()"

    d.   Compilation error

8. Which of the following is allowed to be defined in JAVA.

    a.   An interface within another interface

    b.   A class within an interface

    c.   An interface within a class

    d.   All of the above

9. Which of the following statements is false about the finalize() method?

    a.   It can be overridden in any class to define cleanup actions

    b.   It can be called more than once for an object

    c.   It is having an empty implementation in Object class

    d.   None of the above

10. What is the purpose of a default method in a Java interface?

    a.   To define a method without implementation

    b.   To provide a common implementation that can be inherited by implementing classes

    c.   To make the method static in the interface

    d.   To override methods in the Object class

11. Which of these is not a correct statement?

    a.   Every class containing abstract method must be declared abstract

    b.   Abstract class defines only the structure of the class not its implementation

    c.   Abstract class can be initiated by new operator

    d.   Abstract class can be inherited

12. What is the output of the following code?

```
class A {
   public int i;
   protected int j;
 }
  class B extends A {
```

```
        int j;
        void display() {
            super.j = 3;
            System.out.println(i + " " + j);
        }
    }
    class Output {
        public static void main(String args[]){
            B obj = new B();
            obj.i=1;
            obj.j=2;
            obj.display();
        }
    }
```
a) **1 2**
b) 2 1
c) 1 3
d) 3 1

13. What is the output of the following code?
```
    class A {
                int i;
                void display() {
                        System.out.println(i);
                } }
    class B extends A {
                int j;
                void display() {
                    System.out.println(j);
                }   }
    class method_overriding {
                public static void main(String args[]){
                    B obj = new B();
                    obj.i=1;
                    obj.j=2;
                    obj.display();
        }  }
```
a) 0
b) 1
c) 2
d) Compilation Error

14. Garbage Collection can be controlled by a program?
        a) True b) **False**
15. Which operator is used by Java run time implementations to free the memory of an object when it is no longer needed?
        a) delete
        b) free
        c) new
        d) **none of the mentioned**

Answers:

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.