AIN SHAMS UNIVERSITY
Faculty of Computer &
Information Sciences

Subject: Object Oriented Programming
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Examiner: Mohamed Mabrouk
Examinee: Second Level Students
Number of pages: 5

Answer the following ... questions: (Total points: 100)

1st Question marks: 20

Choose the best answer:

1- Which method is used to return the string representation of an object of a class?
a. hashCode()
b. equals()
c. toString()
d. getClass()

2- If a method in super class is declared as protected, then which of those access modifiers can be used when overriding this method in a subclass _____
a. Protected only
b. Public only
c. Protected or public
d. Private only

3- What does the expression "**float val = 10 / 0;**" return?
a. 0
b. Not a number
c. ArithmeticException
d. Infinity

4- In which process, a local variable has the same name as one of the instance variables?
a. Inheritance
b. Polymorphism
c. Variable shadowing
d. Overloading

5- Which statement is true about the **final** keyword?
a. Final variable has no value
b. Value of a final variable cannot be changed
c. Final variables must be public
d. Final variables cannot be public

6- The types of exceptions in Java are _____
a. Defined and undefined
b. Checked and unchecked
c. Managed and unmanaged
d. Final and nonfinal

7- Given that x = 10, and y = 5, what would be the output of expression "**++x + y - y + x++**"?
a. 20
b. 22
c. 25
d. 23

8- Which statement is true about inheritance?
a. A class can extend more than one class
b. A class can extend only one class but many interfaces
c. A class can extend one class and one interface
d. A class can extend as many classes and interfaces as required

9- Which of the following declares an abstract method in an abstract Java class?
a. public abstract method();
b. public void abstract method();
c. public abstract void method() {}
d. public abstract void method();

10- Which of the following modifiers cannot be used with constructors?

a. private
b. protected
c. public
d. abstract

2nd Question

marks: 20

Choose the best answer:

1- What is the expected output of the following code snippet:

```
class TestApp {
   public static void main(String[] args) {
      float STATIC = 2.5F;
      System.out.println(STATIC);
   }
}
```

a. Throws an exception
b. 2.5
c. Gives a compilation error as **STATIC** is a keyword
d. None of these

2- What is the expected output of the following code snippet:

```
class TestApp {
   public static void main(String[] args) {
      try {
         int x;
         return;
      } catch (Exception e) {
         System.out.print("inCatch");
      } finally {
         System.out.print("inFinally");
      }
   }
}
```

a. inCatch
b. inFinally
c. inCatchinFinally
d. Nothing is printed

3- What is the expected output of the following code snippet:

```
class TestApp {
   public static void main(String[] args) {
      String s1 = new String("Hello");
      String s2 = new String("Hello");

      System.out.print(s1.equals(s2) + " ");
      System.out.print(s1 == s2);
   }
}
```

a. true true
b. true false
c. false true
d. false false

4- What is the expected output of the following code snippet:

```
class Animal {
        public Animal(){
                System.out.println("Animal");
        }
}
class Wild extends Animal {
        public Wild(){
                System.out.println("Wild");
                super();
        }
}
class TestApp {
  public static void main(String[] args) {
    Animal wildAnimal = new Wild();
  }
}
```

a. An exception is thrown
b. Compilation error
c. Wild
d. Animal

5- What is the expected output of the following code snippet:

```
class Person {
        public void talk(){
                System.out.print("I am a Person ");
        }
}
class Student extends Person {
        public void talk(){
                System.out.print("I am a Student ");
        }
}
class TestApp {
   public static void main(String[] args) {
      Person p = new Student();
      p.talk();
   }
}
```

a. I am a Person I am a Student
b. I am a Student I am a Person
c. I am a Student
d. I am a Person

6- What is the expected output of the following code snippet:

```
class TestApp {
   public static void main(String[] args) {
      int[] arr = new int[3];
      System.out.println(arr[0]);
   }
}
```

a. An exception is thrown
b. Compilation error
c. 0
d. null

7- What is the expected output of the following code snippet:

```
class TestApp {
  int value = 10;
  public void method(int value){
     value += 1;
     System.out.print(++value);
  }
  public static void main(String[] args) {
     TestApp t = new TestApp();
     t.method(3);
  }
}
```

a. 11
b. 12
c. 5
d. 4

8- What is the expected output of the following code snippet:

```
interface A { }
class B { }
class C extends B implements A { }

class TestApp {
  public static void main(String[] args) {
     A obj = new C();
     if(obj instanceof A)
        System.out.print("instanceOf A ");
     if(obj instanceof B)
        System.out.print("instanceOf B ");
  }
}
```

a. insanceOf A
b. insanceOf B
c. insanceOf A insanceOf b
d. Nothing

9- What is the expected output of the following code snippet:

```
class TestApp {
  public int add(int n1, int n2){
     return n1 + n2;
  }
  public float add(int n1, int n2){
     return n1 + n2;
  }
  public static void main(String[] args) {
     TestApp t = new TestApp();
     t.add(3, 4);
  }
}
```

a. 7
b. 7.0
c. An exception is thrown
d. Compilation error

10- What is the expected output of the following code snippet:

```
class TestApp {
   int num = 100;
   public void calc(int num)  { this.num = num * 10;  }
   public void printNum()     { System.out.println(num); }
   public static void main(String[] args) {
      Calculator obj = new Calculator();
      obj.calc(2);
      obj.printNum();
   }
}
```

a. 100
b. 1000
c. 2
d. 20

3rd Question — marks: 30

Given the following class representing a point:

```
public class Point {
   public int x;
   public int y;
   public Point (int x, int y){
      this.x = x;
      this.y = y;
   }
}
```

Define a class called "Line" which represents a line with two points, start and end. Further, define required constructor(s), getters, and toString() methods.

4th Question — marks: 30

Given the following class representing a point:

```
public class Book {
   public String isbn;
   public String title;
   public float price;
   public Book (String isbn, String title, float price){
      this.isbn = isbn;
      this.title = title;
      this.price = price;
   }
}
```

We would like to extend this class to support sorting books by price **DESCENDINGLY**.