Quiz-2

Name	
Roll number	

Instructions:

- NO extra sheets will be provided.This is a closed book, closed notes, and closed laptop quiz.
- Only short answers (5-6 words) are expected unless explicitly asked otherwise.

Q1) Will the below code compile successfully? If not, correct the code so that it compiles successfully. (2.5 marks) [Note: You can neither make any changes in the declaration statements of 'a' and 'b' nor introduce more objects]

```
interface Animal { public void run(); }
interface Mammal { public void giveBirth(Mammal M); }
 class Lion implements Animal, Mammal {
    public String name;

    public Lion(String name) { this.name = name; }
    @Override
    public void run(){ System.out.println("Lion is
running"); }

    @Override
    public void giveBirth(Mammal M) {
        System.out.println(name + " gives birth to " +
M.name);
    }
}
```

```
class Main{
public static void main(String[] args){
        Animal a = new Lion("Mufasa");
        Mammal b = new Lion("Simba");
        a.run();
        a.giveBirth(b);
    }
}
```

Answer:

No, it won't compile +0.5

((Lion) M).name +1

((Lion) a).giveBirth(b); +1

OR

((Mammal) a).giveBirth(b);

Q2) Complete the 'compareTo' method of class 'Car' for comparing with other cars in terms of mileage. If the mileages are same, then comparison happens based on the affordability (lower the price, higher the affordability). (3 marks)

```
public class Car implements Comparable<Car>{
    private String name;
    private int mileage;
    private float price;
    @Override
```

Write your answer here:

```
    public int compareTo(Car c) {
            // Write 3-4 lines of code here
    }
}
```

Answer:

```
public int compareTo(Car c)
   {
      if(this.mileage == c.mileage)
         return (int) (this.price - c.price);          // Note: Deduct -0.5 if not type casted to int
      return c.mileage - this.mileage;
   }
```

+1 (if compared according to higher mileage),
+1 (if compared according to lower price in the case where mileage is equal.

Q3) Find the output (2 marks)

```
public class Main {
    public static void main(String[] args){
        try {
            String str = null;
            int len = str.length();
            System.out.println(len);
        }
        catch(NullPointerException e1) {
            System.out.println(1);
            try {
                String str = "";
                int len = str.length();
                System.out.println(len);
            }
            catch(NullPointerException e2) {
                System.out.println(2);
            }
            finally {
                System.out.println(3);
            }
        }
        finally {
            System.out.println(4);
        }
        System.out.println(5);
    }
}
```

Write your answer here:

Answer:
1
0
3
4
5

Q4) Implement a class “Generic” that has 2 type parameters. It has the following contents: a) two fields (each one having different generic types), b) one parameterized constructor to initialize these two fields, c) separate getter methods for each field (3 marks)

Answer:

```
public class Generic <T1, T2> {
        T1 a;
        T2 b;
        public Generic(T1 a, T2 b) {this.a=a;
this.b=b;}
        public T1 getA() { return a; }
        public T2 getB() { return b; }
}
```

Q5) Fill in the blanks to make the code work. If the marks are outside of the range [0, 100], it should result in an IllegalMarksException. (3 marks)

```
class IllegalMarksException extends Exception {
    public IllegalMarksException(String s) {
        super(s);
    }
}
class Grade {
    public boolean isPass(int marks)  ____________________{
        if(_____________________)      // marks cannot be outside the range [0, 100].
            ____________________________________________;
        return marks >= 33;
    }
}
public class Main {
    public static void main(String[] args) throws Exception {
        Grade g = new Grade();
        System.out.println(g.isPass(101));
    }
}
```

Answer:

throws IllegalMarksException +1

(marks < 0 || marks > 100). +1

throw new IllegalMarksException(“Wrong marks”) +1

(Any meaningful string is accepted)

Q6) Find the output. Give reasons. (2 marks)

```
abstract class Engineer {
    public abstract void doProject(String proj);
}
class SDE extends Engineer {
    public void code(String lang){
        System.out.println("I can code in " + lang);
    }
    @Override
    public void doProject(String proj) {
        System.out.println("I am working on Project " + proj);
    }
}
public class Main {
    public static void main(String[] args){
        Engineer a = new SDE();
        a.code("Java");
        a.doProject("Secret X");
    }
}
```

Write your answer here:
Ans:
Compilation error +1
Object ‘a’ cannot call function ‘code’ as it is not declared in class ‘Engineer’ +1

Q7)Answer the following based on the given code::

```
 1 public class Main {
 2    public static void fun1(int[] a, int i) {
 3        a[i] += 5;
 4        fun2(a, i + 2);
 5    }
 6    public static void fun2(int[] a, int i) {
 7        a[i] /= 5;
 8        fun3(a, i + 2);
 9    }
10    public static void fun3(int[] a, int i) {
11       a[i] *= 5;
12    }
13    public static void main(String[] args) throws Exception {
14        int[] a = {5, 4, 3, 2};
15        try {
16            fun1(a, 0);
17        }
18        catch (Exception e){
19            e.printStackTrace();
20        }
21   }
22 }
```

(a) Which exception will be thrown? (1 mark)
Ans: ArrayIndexOutOfBoundsException +1

(b) Which function names and line numbers will be displayed in the output? (2 marks)
Ans: fun3 at line 11, fun2 at line 8, fun1 at line 4, main at line 16. +0.5 * 4

Q8) What all classes can be accepted in ‘ArrayList<? super C>’ according to the given code? (1.5 marks)

class A { int x; A(int x){ this.x = x;} }
class B extends A {
B(int x) { super(x); }
}
class C extends A {
C(int x) { super(x); }
}
class D extends C {
D(int x) { super(x); }
}
	Write your answer here:
	
	Ans: A, C +1.5 (No partial marking)