

**Question 1 (2.5 points)**

The Bubble Sort has a best case run time of

**Question 2 (2.5 points)**

The Quick Sort has a best case run time of

**Question 3 (2.5 points)**

The Merge Sort has a best case run time of

**Question 4 (2.5 points)**

**What is the output of the code below?**

```
ArrayList<Integer> x = new ArrayList<Integer>();  
x.add(10);  
x.add(15);  
Iterator<Integer> it = x.iterator();  
System.out.println(it.next());  
System.out.println(it.next());
```

**Question 5 (2.5 points)**

**What is the output of the code below?**

```
ArrayList<Integer> z;  
z = new ArrayList<Integer>();  
z.add(89);  
z.add(90);  
z.add(89);  
z.add(90);  
z.add(89);  
z.add(new Integer(89));  
System.out.println(z);  
Iterator<Integer> itera = z.iterator();  
while(itera.hasNext()){  
    if(itera.next().compareTo(90)==0)  
        itera.remove();  
}  
System.out.println(z);
```

- A.
- B.
- C.
- D.

**Question 6 (2.5 points)**

**What is the output of the code below?**

```
ArrayList<Integer> w = new ArrayList<Integer>();  
w.add(8);  
w.add(3);  
Iterator<Integer> iter = w.iterator();  
while(iter.hasNext()){  
    System.out.println(iter.next());  
    iter.remove();  
}  
System.out.println(w);
```

\_\_\_ A.

\_\_\_ B.

**Question 7 (2.5 points)**

**What is the output of the code below?**

```
ArrayList<Integer> a = new ArrayList<Integer>();  
a.add(10);  
a.add(15);  
a.add(20);  
a.add(12);  
a.add(7);  
ListIterator<Integer> iterator = a.listIterator();  
iterator.next();  
iterator.set(99);  
iterator.next();  
iterator.previous();  
iterator.set(33);  
System.out.println(a);
```

**Question 8 (2.5 points)**

Is the following code legal or illegal?

```
Collection c = new Collection();
```

**Question 9 (2.5 points)**

Is the following code legal or illegal?

```
Collection c = new List();
```

**Question 10 (2.5 points)**

**Is the following code legal / illegal ?**

```
Collection c = new ArrayList();
```

**Question 11 (2.5 points)**

**What is the output of the code below?**

```
Set<Integer> s = new TreeSet<Integer>();  
s.add(89);  
s.add(89);  
s.add(90);  
out.println(s);
```

**Question 12 (2.5 points)**

**What is the output of the code below?**

```
Set<String> treeSet = new TreeSet<String>();
treeSet.add("890");
treeSet.add("890");
treeSet.add("90");
out.println(treeSet.add("90"));
out.println(treeSet.add("190"));
```

**Question 13 (2.5 points)**

**What is the output of the code below?**

```
Set<String> stringSet = new TreeSet<String>();
stringSet.add("890");
stringSet.add("890");
stringSet.add("90");
stringSet.add("90");
stringSet.add("190");
stringSet.add("34");
out.println(stringSet);
```

**Question 14 (2.5 points)**

Is the following code [ legal / illegal ]?

```
Collection a = new Map();
```

**Question 15 (2.5 points)**

Is the following code [ legal / illegal ]?

```
Map b = new HashMap();
```

**Question 16 (2.5 points)**

Is the following code [ legal / illegal ]?

```
Map c = new TreeMap();
```

**Question 17 (2.5 points)**

**What is the output of the code below?**

```
Map<String,Integer> mOne = new TreeMap<String,Integer>();
mOne.put("1",-5);
mOne.put("2",-6);
mOne.put("3",-7);
out.println(mOne.get("2"));
out.println(mOne.get("5"));
out.println(mOne.get("3"));
```

\_\_\_ A.

**Question 18 (2.5 points)**

**What is the output of the code below?**

```
Map<String,Integer> mTwo = new TreeMap<String,Integer>();
mTwo.put("8",2);
out.println(mTwo.put("8",3));
mTwo.put("8",4);
out.println(mTwo.put("5",8));
mTwo.put("5",9);
out.println(mTwo.put("5",10));
```

\_\_\_ A.

**Question 19 (2.5 points)**

**What is the output of the code below?**

```
Map<String,Integer> map = new TreeMap<String,Integer>();
map.put("8",1);
map.put("8",2);
map.put("8",3);
map.put("5",1);
map.put("6",3);
map.put("2",5);
out.println(map);
```

**Question 20 (2.5 points)**

**What is the output of the code below?**

```
Stack<Integer> b = new Stack<Integer>();
b.push(45);
b.pop();
b.push(11);
out.println(b);
b.pop();
out.println(b);
```

**Question 21 (2.5 points)**

**What is the output of the code below?**

```
Stack<Integer> c = new Stack<Integer>();
c.push(11);
out.println(c.peek());
c.push(12);
out.println(c.pop());
c.push(13);
c.push(9);
out.println(c);
```

\_\_\_ A.

**Question 22 (2.5 points)****What is the output of the code below?**

```
Stack<Double> d = new Stack<Double>();  
d.push(9.5);  
d.pop();  
d.push(3.1);  
d.push(7.8);  
d.pop();  
out.println(d);  
out.println(d.pop());
```

\_\_\_ A.

**Question 23 (2.5 points)****What is the output of the code below?**

```
Stack<String> e = new Stack<String>();  
e.push("12");  
e.push("ab");  
e.pop();  
e.push("ET");  
out.println(e);  
e.push("go");  
out.println(e.pop());  
out.println(e.size());
```

\_\_\_ A.

**Question 24 (2.5 points)****What is the output of the code below?**

```
Stack<String> f = new Stack<String>();  
f.push("it");  
f.push("run");  
f.push("up");  
f.push("why");  
while(!f.isEmpty()){  
    out.println(f.pop());  
}
```

\_\_\_ A.

**Question 25 (2.5 points)****What is the output of the code below?**

```
Queue<Integer> b = new LinkedList<Integer>();  
b.add(5);  
b.remove();  
b.add(9);  
b.add(17);  
out.println(b);  
out.println(b.remove());
```

\_\_\_ A.

**Question 26 (2.5 points)**

**What is the output of the code below?**

```
Queue<Integer> c = new LinkedList<Integer>();
c.add(7);
c.add(3);
out.println(c.peek());
c.add(5);
out.println(c.remove());
c.add(2);
c.remove();
out.println(c);
```

\_\_\_ A.

**Question 27 (2.5 points)**

**What is the output of the code below?**

```
Queue<Double> d = new LinkedList<Double>();
d.add(1.2);
d.add(5.3);
d.add(6.2);
d.add(4.1);
out.println(d.remove());
out.println(d.remove());
```

\_\_\_ A.

**Question 28 (2.5 points)**

**What is the output of the code below?**

```
Queue<String> e = new LinkedList<String>();
e.add("up");
e.add("dog");
e.add("alien");
out.println(e.remove());
e.add("fun");
out.println(e.remove());
e.add("whoot");
out.println(e.size());
out.println(e.remove());
```

\_\_\_ A.

**Question 29 (2.5 points)**

**What is the output of the code below?**

```
Queue<String> f = new LinkedList<String>();
f.add("one");
f.add("two");
f.add("big");
f.add("all");
while(!f.isEmpty()) {
    System.out.println(f.remove());
}
```

\_\_\_ A.

**Question 30 (2.5 points)**

What is the output of the code below:

```
Stack<String> e = new Stack<String>();  
e.push("12");  
e.push("ab");  
e.pop();  
e.push("ET");  
out.println(e);  
e.push("go");  
out.println(e.pop());  
out.println(e.size());
```

\_\_\_ A.

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