QUESTION BANK 6

QUESTION BANK

6

Collections & Generics

CERTIFICATION OBJECTIVES

6.1 Given a design scenario, determine which collection classes and/or interfaces should be used to properly implement that design, including the use of the Comparable interface.

6.2 Distinguish between correct and incorrect overrides of corresponding hashCode and equals methods, and explain the difference between == and the equals method.

6.3 Write code that uses the generic versions of the Collections API, in particular, the Set, List, and Map interfaces and implementation classes. Recognize the limitations of the non-generic Collections API and how to refactor code to use the generic versions. Write code that uses the NavigableSet and NavigableMap interfaces.

6.4 Develop code that makes proper use of type parameters in class/interface declarations, instance variables, method arguments, and return types; and write generic methods or methods that make use of wildcard types and understand the similarities and differences between these two approaches.

6.5 Use capabilities in the java.util package to write code to manipulate a list by sorting, performing a binary search, or converting the list to an array. Use capabilities in the java.util package to write code to manipulate an array by sorting, performing a binary search, or converting the array to a list. Use the java.util.Comparator and java.lang.Comparable interfaces to affect the sorting of lists and arrays. Furthermore, recognize the effect of the "natural ordering" of primitive wrapper classes and java.lang.String on sorting.

QUESTION 6.1

Q 1: Imagine that you are working as a software engineer and you have written the following program:

```
import java.util.*;
class MyClass {
}
public class TestQuestion {
        /* INSERT CODE HERE */                                          //1
        public synchronized void  addCollection(MyClass var1) {
                coll.add(var1);
        }
        public synchronized MyClass  getCollection( ) {
                return coll.poll();
        }
}
```

How should we declare a collection so that program will compile without error?

A. Queue< MyClass> coll = new LinkedList< MyClass>
B. LinkedList coll = new LinkedList();
C. Queue coll = new ProrityQueue();
D. Queue< MyClass> coll = new Queue< MyClass>;

QUESTION 6.2

Q 2: Imagine that Jenifer is working as a senior technical consultant. During one of the review she found the following code written by a junior programmer:

```
import java.util.*;
public class TestQuestion {
        public static void main(String args[]) {
                List mylist = new ArrayList();
                int [] val = {1,2,3,4,5};
                for(int i = 0;i<val.length;i++) {
                        mylist.add(new Integer (val[i]));
                }
                System.out.println ("Before traversal through an iterator:"+mylist);
                Iterator iterator = mylist.iterator( );
                while(iterator.hasNext()) {
                        Integer element = (Integer)iterator.next();
                        int value = element.intValue();
                        if((value>4))
                        iterator.remove();
                }
                System.out.println ("After traversal through an iterator:"+mylist);
        }
}
```

What will be the output when the preceding program is compiled and executed?

A. The program will display the output as:
   Before traversal through an iterator:[1, 2, 3, 4, 5]
   After traversal through an iterator:[1, 2, 3, 4]
B. The program will display the output as:
   Before traversal through an iterator:[1, 2, 3]
   After traversal through an iterator:[1, 2, 3, 4]
C. The program will give compilation error.
D. The program will display the output as:
   Before traversal through an iterator:[1, 2, 3, 4]
   After traversal through an iterator:[1, 2, 3, 4]

QUESTION 6.3

Q 3: Imagine that Joy is working as a senior technical consultant. During one of the review he found the following code written by a junior programmer:

```
import java.util.*;
public class TestQuestion {
        public static void main(String[] args) {
                List xl = new ArrayList();
                xl.add("M");
                xl.add("N");
                xl.add("O");
                xl.add("P");
                xl.add("Q");
                ListIterator  lt = xl.listIterator();
                lt.next();
                lt.next();
                lt.next();
                lt.next();
                lt.remove();
                lt.previous();
                lt.previous();
                lt.remove();
                System.out.println( xl);
        }
}
```

What will be the output when the preceding program is compiled and executed?

A. The program will give compilation error.

B. The program will display the output as:
[M, O, Q]

C. The program will display the output as:
[M, N, O, P, Q]

D. The program will throw a runtime exception.

.

QUESTION 6.4

Q 4: Which of the following declarations will compile and run successfully?

A. LinkedList<Integer> linkedObj = new LinkedList<int>();

B. LinkedList<Integer> linkedObj = new <Integer>LinkedList();

C. List<Number> linkedObj = new LinkedList<Number>();

D. LinkedList<Integer> linkedObj = new LinkedList();

.

QUESTION 6.5

Q 5: Imagine you are a software developer in XYZ Company. During a training session for new hires you have demonstrated the following program:

```
import java.util.*;
public class TestQuestion {
        public static void main(String[] args) {
                NavigableSet <Integer> ns = new TreeSet<Integer>();
                ns.add(10);
                ns.add(15);
                ns.add(7);
                Iterator descendingIterator = ns.descendingIterator();
                if(descendingIterator.hasNext()) {
                        System.out.println(descendingIterator.next());
                }
        }
}
```

What will be the output when the preceding program is compiled and executed?

A. The program will give compilation error.

B. The program will display the output as:
15

C. The program will display the output as:
10
15
7

D. The program will display the output as:
10

A 5: The correct option is B.

Explanation: In the preceding program, a descendingIterator is declared which traverses the set in descending order. Inside the program code the if statement checks whether the set has any elements and prints the first element. As a result 15 is displayed as output.

QUESTION 6.6

Q 6: Imagine you are a software developer in a company. During a training session for new hires you have demonstrated the following program:

```
import java.util.*;
public class TestQuestion {
        public static void main(String[] args) {
                Integer int1 = new Integer(10);
                Integer int2 = new Integer(10);
                System.out.println(int1== int2);
                System.out.println(int1.hashCode()== int2.hashCode());
        }
}
```

What will be the output when the preceding program is compiled and executed?

A. The program will give compilation error.

B. The program will display the output as:
false
true

C. The program will display the output as:
false
false

D. The program will display the output as:
true
true

Therefore, the hashCode produced will also the same. As a result true is returned. The rest of the options are incorrect.

QUESTION 6.7

Q 7: Maria is reading a book on java programming. In one of the chapter she found the following program which is incorrect.

```
public class TestQuestion                                   //1
{                                                           //2
        public static void main(String[] args) {            //3
                Vector v = new Vector();                    //4
                v.add(2);                                   //5
                v.add(3);                                   //6
                System.out.println(v);                      //7
        }
}                                                           //8
```

Which of the following modifications she has to make in order to compile and execute the preceding program successfully?

A. Insert the statement as:

B. Replace the statement given at the line marked as 4 with the statement as:

```
Vector <Integer> v = new    Vector<Integer>();
```

C. Replace the statement given at the line marked as 4 with the statement as:

D. No further modification is required.

.

QUESTION 6.8

Q 8: In one of the study material on java programming a student found the following program:

```
import java.util.*;
public class TestQuestion {
        public static void main(String[] args) {
                List <String> list1 = new ArrayList<String>( );
                List<String> list2 = list1;
                list1.add("a");
                list1.add("b");
                list1.add("c");
                System.out.format("%s", list1);
                System.out.format("%s", list2);
        }
}
```

What will be the output when the preceding program is compiled and executed?

A. The program will display the output as:

[a, b, c][a, b, c]

B. The program will display the output as:

[a, b, c]

C. The program will display the output as:

[a, b, c, d, e]

D. The program will give compilation error.

QUESTION 6.9

Q 9: In one of the study material on java programming a student found the following program:

```
import java.util.*;
public class TestQuestion
{
        public static void main(String[] args)
        {
                List <Integer> list1 = new ArrayList<Integer>( );
                List <Ob ject> list2 = list1;
                list1.add(10);
                list1.add(11);
                System.out.println(list1);
                System.out.println(list2);
        }
}
```

What will be the output when the preceding program is compiled and executed?

A. The program will display the output as:
[10 11]
[10 11]

B. The program will display the output as:
[10]
[11]

C. The program will display the output as:
[10 11]
[11]

D. The program will give compilation error.

QUESTION 6.10

Q 10: In one of the study material on java programming a student found the following program:

```
import java.util.*;

public class TestQuestion
{
        public static void main(String[] args)
        {
                List list1 = new ArrayList ( );
                List <Object> list2 = list1;
                list1.add(10);
                list1.add(11);
                list1.add("mona");
                list1.add(true);
                System.out.println(list1);
                System.out.println(list2);
        }
}
```

What will be the output when the preceding program is compiled and executed?

A. The program will give a warning, but display the output as:
[10, 11, mona, true]
[10, 11, mona, true]

B. The program will display the output as:
[10, 11]
[mona, true]

C. The program will display the output as:
[10, 11, mona, true]
[true]

D. The program will give compilation error.

.

QUESTION 6.11

Q 11: In one of the study material on java programming a student found the following program:

```
import java.util.*;
public class TestQuestion {
        public void addmore(ArrayList l1) {
                l1.add("We");
        }
        public static void main(String[] args) {
                ArrayList <String>als = new ArrayList<String>();
                als.add("I");
                als.add("You");
                TestQuestion obj = new TestQuestion( );
                obj.addmore(als);
                System.out.println(als);
         }
}
```

What will be the output when the preceding program is compiled and executed?

A. The program will give a warning during compilation, but display the output as:
[I, You, We]

B. The program will display the output as:
[I, You]

C. The program will display the output as:
[I]

D. The program will give compilation error.

QUESTION 6.12

Q 12: In one of the study material on java programming a student found the following program:

```
import java.util.*;
public class TestQuestion {
        public static void main(String[] args) {
                NavigableMap amap = new TreeMap();
                amap.put(1,"A");
                amap.put(2,"B");
                amap.put(3,"C");
                System.out.println(amap.pollFirstEntry());
                System.out.println(amap.pollLastEntry());
                System.out.println(amap);
        }
}
```

What will be the output when the preceding program is compiled and executed?

A. The program will display the output as:
1=A
3=C

B. The program will give a warning, but display the output as:
1=A
3=C
{2=B}

C. The program will display the output as:
{2=B}

D. The program will give compilation error.

QUESTION 6.13

Q 13: In one of the study material on Java programming a student found the following program:

```
import java.util.*;
public class Col{
        public static void main(String[] args) {
                NavigableSet<Short> nset = new  TreeSet <Short>();
                nset.add(20);
                nset.add(10);
                System.out.println(nset.headSet(12));
        }
}
```

What will happen if the preceding code is compiled and executed?

A. The program will display the output as:
[20 20]

B. The program will display the output as:
[20 10]

C. The program will display the output as:
[10 10]

D. The program will give compilation error.

.

QUESTION 6.14

Q 14: In one of the study material on java programming a student found the following program:

```
import java.util.*;
public class TestQuestion implements Comparable<Integer> {
        public static void main(String[] args) {
                int [ ] arr = {1, 2, 3, 4};
                PriorityQueue <Integer> pq = new PriorityQueue<Integer>();
                for(int x :arr)
                pq.offer(x);
                System.out.println(pq.peek());
                System.out.println(pq.poll());
                System.out.println(pq.size());
        }
}
```

What will happen if the preceding program is compiled and executed?

A. The program will give compilation error.

B. The program will display the output as:
1

1
3

C. The program will display the output as:
1
3
1

D. The program will display the output as:
1
1
1

.

QUESTION 6.15

Q 15: Richa works as Programmer for MediaTech Inc. She writes the following program:

```
import java.util.*;
class TestQuestion
{
        public static void main(String[] args) {
                NavigableMap <String,String> testmap = new TreeMap<String,String>();
                testmap.put("a","apple");
                testmap.put("b","ball");
                testmap.put("c","cat");
                testmap.put("aa","myapple");
                testmap.put("bb","myball");
                testmap.put("cc","mycat");
                testmap.pollLastEntry();
                testmap.pollFirstEntry();
                NavigableMap <String,String> tailmap = testmap.tailMap("bb",false);
                System.out.println(tailmap.pollFirstEntry());
                System.out.println(testmap.size());
        }
}
```

What will happen if the preceding program is compiled and executed?

A. The program will give compilation error.

B. The program will display the output as:
c=cat
3

C. The program will display the output as:
a=apple
1

D. The program will display the output as:
b=ball
2

QUESTION 6.16

Q 16: Neeraj works as a Programmer in Kogent Solutions Inc. He writes the following program:

```
import java.util.*;
class TestQuestion {
```

```
        public static void main(String[] args) {
                List<String> student = new ArrayList<String>();
                student.add("Vikash");
                student.add("Suchita");
                String name = "Deepak";
                Object stdnt = new String("Shivam");
                student.add(name);
                student.add(stdnt);
        }
}
```

What will happen when he attempts to compile and execute the preceding program?

A. code will compiled successfully but does not show any output during execution.
B. The program will throw a runtime exception.
C. The program will give compilation error.
D. None of these

```
import java.awt.Button;
import java.util.ArrayList;
import java.util.List;
public class test {
        public static void main(String[] args) {
                List<Object> anyObjects = new ArrayList<Object>();
                Button buttonObject = new Button();
                String stringObject = new String();
                anyObjects.add(new Object());
                anyObjects.add(buttonObject);
                anyObjects.add(stringObject);
        }
}
```

QUESTION 6.17

Q 17: Parul is a software developer and writes the following program for her project:

```
import java.util.ArrayList;
import java.util.List;
public class Ques58 {
        public static void main(String[] args) {
                List<String> string1 = new ArrayList<String>();
                Object object = new String();
                string1.add(new String());
                string1.add((String)object);
        }
}
```

What will happen when this program will be compiled and executed?

A. The program compiles successfully but generates runtime exception.
B. The program compiles successfully and executes without displaying anything as output.
C. The program generates compilation error.
D. The program compiles successfully and displays object as output.

.

QUESTION: 6.18

Q 18: Imagine you a software programmer and writes the following program:

```
public class MyEquals
{
        public static void main(String args[]) {
                Car c1 = new Car("Red", "Maruti", 200);
                Car c2 = new Car("Red", "Maruti", 200);
                if (c1.equals(c2)) {
                        System.out.println("The two objects are equal");
                }
        }
}
class Car {
        String color;
        String brandName;
        int speed;
        public Car(String color, String brandName, int speed) {
                this.color = color;
                this.brandName = brandName;
                this.speed = speed;
        }
        String getBrandName() {
                return brandName;
        }
        int getSpeed() {
                return speed;
        }
        String getColor() {
                return color;
        }
        public boolean equals(Object obj) {
                if(this == obj) {
                        return true;
                }
                if (!(obj instanceof Car)) {
                        return false;
                }
                Car Car = (Car)obj;
                return speed == Car.getSpeed() && brandName.equals
                (Car.getBrandName())
               && color.equals(Car.getColor());
        }
}
```

What will happen when you compile and execute the preceding program?

A. The program compiles successfully and displays nothing as output.
B. The program generates compile time error.
C. The program compiles successfully but generates runtime exception.
D. The program compiles successfully and displays The two objects are equal as output.

.

QUESTION: 6.19

Q 19: John is a software developer in a software company. During one of the lab manual he wrote the following program:

```
class TestQuestion {
        private int var1;
        private int var2;
        public void setVar1(int i) {
                this.var1 = i;
        }
        public int getVar1() {
                return this.var1;
        }
        public void setVar2(int i) {
                this.var2 = i;
        }
        public int getVar2() {
                return this.var2;
        }
```

```
        public boolean equals(Object obj) {
                return (obj instanceof TestQuestion && this.var1 == ((TestQuestion)
                 obj).var1);
        }
        public int hashCode( )
        {
                //insert code
        }
}
```

Which of the following options should be inserted at comment line?

A. return var1; B. return 0; C. return var1*var1; D. return var1+var1;

QUESTION: 6.20

Q 20: John is a software developer in a ABC Company and writes the following program:

```
public class z {
        priate int var1;
        private int var2;
        public void setVar1(int i) {
                this.var1 = i;
        }
        public int getVar1() {
                return this.var1;
        }
        public void setVar2(int i) {
                this.var2 = i;
        }
        public int getVar2() {
                return this.var2;
        }
        public bolean equals(Object obj) {
                return (obj instanceof z && this.var1 == ((var1).obj).var1);
        }
        public int hashCode( ) {
                //insert code
        }
}
```

Which of the following options can be used to replace the comment in the preceding program?

A. return var1; B. return 0; C. return var1*var1; D. All of the above

.

QUESTION: 6.21

Q 21: Maya is a student of computer science and she wrote the following code snippet:
Which one is the valid implementation of the equals() methods of a class Test ?

```
A.
public boolean equals(Test t) {
        return this = t;
}
B.
public boolean equals(Test t) {
        return this != t;
}

D.
public boolean equals(Object t) {
        if(t instanceof Test && this.var == ((Test) t).var) {
                if(this != tc) return true;
                else return false;
        }
```

```
        else
        return false;
}
```

.

QUESTION 6.22

Q 22: Hari is a software developer and he has developed a simple code in the lab manual:

```
import java.util.*;
class TestQuestion {
        public static void main(String[] args) {
                List <String> test = new ArrayList<String>();
                test.add("Delhi");
                test.add("Bombay");
                test.add("Agra");
                test.add("Varanasi");
                test.add("Tata");
                Collections.sort(test);
                System.out.println("Sorted:" + test);
        }
}
```

What will happen when the preceding program is compiled and executed?

A. The program compiles successfully and displays Sorted:[Agra, Bombay, Delhi, Tata, Varanasi] as output.
B. The program compiles successfully and displays Sorted:[Delhi, Bombay, Agra, Varanasi, Tata] as output.
C. The program compiles successfully and displays Sorted:[Agra, Bombay, Delhi, Varanasi, Tata] as output.
D. The program generates compilation error.

.

QUESTION: 6.23

Q 23: Shivam works as Programmer for Kogent Solution Inc. He writes the following program:

```
import java.util.*;
public class Ques_79 {
        public static void main(String[] args) {
                boolean bool []  = new boolean[5];
                Set s = new TreeSet();
                bool[0] = s.add(10);
                bool[1] = s.add(new Integer(22));
                bool[2] = s.add("b");
                bool[3] = s.add("a");
                for(int i = 0; i<bool.length;i++)
                System.out.print(bool[i] + " ");
        }
}
```

What will happen when this program will be compiled and executed?

A. The program compiles successfully and displays true true true true true true as output.
B. The program compiles successfully and displays true true true true false false as output.
C. The program compiles successfully and displays false false false false false as output.
D. The program compiles successfully but generates runtime exception.

.

QUESTION: 6.24

Q 24: Ajay works as Programmer for Kogent Solution Inc. He writes the following program:

```
import java.util.*;
public class Test {
        public static void main(String[] args) {
                boolean bool []  = new boolean[5];
                List s = new ArrayList<String>();
                bool[0] = s.add("a");
                bool[1] = s.add(new Integer(22));
                bool[2] = s.add("b");
                bool[3] = s.add("a");
                bool[4] = s.add(new Object());
                for(int i = 0; i<bool.length;i++)
                System.out.print(bool[i] + " ");
        }
}
```

What will happen when this program will be compiled?

A. The program compiles successfully and displays true true true true true as output.
B. The program compiles successfully and displays true false true false true as output.
C. The program compiles successfully but generates runtime exception.
D. The program generates compile time error.

.

QUESTION: 6.25

Q 25: Vikash works as Programmer for Kogent Solution Inc. He writes the following program:

```
import java.util.*;
class Book {
        public String name;
        Book(String bk) {
                name = bk;
        }
}
public class MyIterator {
        public static void main(String args[]) {
                List <Book> b = new ArrayList<Book>();
                Book b1 = new Book("Java Server Programming");
                b.add(b1);
                Iterator<Book> i = b.iterator();
                while(i.hasNext()) {
                        Book b4 = i.next();
                        System.out.print(b4.name + " ");
                }
        }
}
```

What will happen when this program will be compiled and executed?

A. The program compiles successfully and displays Java Server Programming as output.
B. The program compiles successfully and displays nothing as output.
C. The program compiles successfully but generates runtime exception.
D. The program generates compile time error.

QUESTION: 26

Q 26: Imagine you are software developer and writes the following program:

```
import java.util.*;
public class MySort {
        public static void main(String args[]) {
                ArrayList <String> e = new ArrayList<String>();
```

```
                    e.add("Suchita");
                    e.add("Vikash");
                    e.add("Charu");
                    e.add("Deepak");
                    e.add("Mahtab");
                    Collections.sort(e);
                    System.out.println("Sorted List" + e);
            }
    }
```

What will happen when this program will be compiled and executed?

A. The program compiles successfully and displays Sorted List[Charu, Deepak, Mahtab, Suchita, Vikash] as output.
B. The program compiles successfully and displays [Charu, Deepak, Mahtab, Suchita, Vikash]as output.
C. The program compiles successfully but generates runtime exception.
D. The program generates compile time error.

QUESTION: 6.27

Q 27: Jyotsna works as a Programmer for Kogent Solutions Inc. She writes the following program:

```
import java.util.*;
public class qq {
        int addAll(List list) {
                Iterator it = list.iterator();
                int total = 0;
                while(it.hasNext()) {
                        int i = ((Integer)it.next()).intValue();
                        total =+ i;
                }
                return total;
        }
        public static void main(String[] args) {
                // TODO Auto-generated method stub
                List <Integer> mylist = new ArrayList<Integer>();
                mylist.add(2);
                mylist.add(3);
                qq adder = new qq();
                int total = adder.addAll(mylist);
                System.out.println(total);
        }
}
```

What will happen when she tries to compile and execute the preceding program?

A. The program compiles successfully and displays 1 as output.
B. The program compiles successfully and displays 2 as output.
C. The program compiles successfully and displays 3 as output
D. The program generates compile time error.

.

QUESTION: 6.28

Q 28: Imagine you are software developer and write the following program:

```
import java.util.*;
public class Test {
        public static void main(String[] args) {
                List <Integer> mylist = new ArrayList<Integer>();
                Inserter in = new Inserter();
                in.doInsert(mylist);
        }
}
class Inserter {
        void doInsert(List <Object>list) {
```

```
                list.add((1));
        }
}
```

What will happen during compilation and execution of the preceding program?

A. The program generates compile time error due to incompatible types List and ArrayList.
B. The program generates compile time error due to the doInsert() method.
C. The program compiles successfully but generates runtime exception.
D. The program compiles successfully and displays 1 as output.

QUESTION 6.29

Q 29: Imagine that Jenifer is working as a senior technical consultant. During one of the review she found the following program written by a junior programmer:

```
import java.util.*;
public class Test {
        public static void main(String[] args) {
        Collection xl = new ArrayList();
        xl.add("M");
        xl.add("N");
        xl.add("O");
        xl.add("P");
        xl.add("Q");
        Iterator  lt = xl.iterator();
        lt.next();
        lt.next();
        lt.next();
        lt.next();
        lt.remove();
        lt.previous();
        lt.previous();
        lt.remove();
        System.out.println( xl);
        }
}
```

What will be the output when the preceding program is compiled and executed?

A. The program generates compilation error.
B. The program compiles successfully and displays `[M, O, Q]` as output.
C. The program compiles successfully and displays [M, N, O , P, Q] as output.
D. The program compiles successfully but generates runtime exception.

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QUESTION 6.30

Q 30: In one of the study material on java programming a student found the following program:

```
import java.util.*;
public class MyArraySort {
        public static void main(String args[]) {
                String[] book = { "Understanding EJB 3.0", "Java Server Programming"};
                Arrays.sort(book);
                System.out.print("Sorted Arrays" + " ");
                for(String s: book)
                System.out.print(s + " ");
        }
}
```

What will happen during compilation and execution of the preceding program?

A. The program compiles successfully and displays Sorted Arrays Java Server Programming Understanding EJB 3.0 as output.
B. The program compiles successfully and displays nothing as output.
C. The program compiles successfully but throws runtime exception.
D. The program generates compilation error.

QUESTION 6.31

Q 31: In one of the study material on java programming a student found the following program:

```
import java.util.*;
public class Test {
        public static void main(String[] args) {
                Set set = new TreeSet();
                set.add("2");
                set.add(3);
                set.add("4");
                Iterator it = set.iterator();
                while(it.hasNext()) {
                        System.out.print(it.next() + " ");
                }
        }
}
```

What will happen during compilation and execution of the preceding program?

A. The program compiles successfully and displays 2 3 4 as output.
B. The program compiles successfully and displays 2 3 as output.
C. The program compiles successfully and displays 2 as output.
D. The program compiles successfully but generates runtime exception.

.

QUESTION 6.32

Q 32: In one of the study material on java programming a student found the following program:

```
import java.util.*;
public class Test {
        public static void main(String[] args) {
                Set set = new TreeSet();
                set.add("one");
                set.add("two");
                set.add("three");
                set.add("four");
                set.add("one");
                Iterator it = set.iterator();
                while(it.hasNext()) {
                        System.out.print(it.next() + " ");
                }
        }
}
```

What will happen during compilation and execution of the preceding program?

A. The program generates compilation error.
B. The program compiles successfully and displays one two three four as output.
C. The program compiles successfully and displays four three two one as output.
D. The program compiles successfully and displays four one three two as output.

QUESTION: 6.33

Q 33: Maya is a student of computer science and she wrote the following program:

```
public class MyClass {
        private String data = "DATA";
        String getData() {
                return data;
        }
        void setData(String data) {
                this.data = data == null ? "" :data;
        }
        boolean equals(myclass d) {
                return (d!= null && d.getData().equals(this.getData())
        }
}
```

Identify the options that correctly describe the behavior of the class?

A. If two distinct MyClass objects are considered equal then their data field has same values.
B. Two distinct MyClass objects may be consider not equal even their data values are same.
C. new MyClass().equals new Object()) will throw a ClassCastException.
D. None of these

QUESTION: 6.34

Q 34: Vikash works as a Programmer for Kogent Solutions Inc. He writes the following program:

```
import java.util.*;
class Test {
        private static int count = 0;
        private String id = "0";
        private String interest;
        public Test(String interest){ this.interest = interest; this.id = ""
         + ++count;}
        public String getInterest(){return interest;}
        public void setInterest(String interest){this.interest = interest;}
        public String toString(){return id;}
}
public class TestGroup {
        String name = "ANU";
        TreeSet<Test> set = new TreeSet<Test>();
        public void add(Test t) {
                if(name.equals(t.getInterest()))set.add(t); }
        public static void main(String s[]) {
                TestGroup mygroup = new TestGroup();
                mygroup.add(new Test("ANU"));
                System.out.println("A");
                mygroup.add(new Test("ANU"));
                System.out.println("B");
                System.out.println(mygroup.set);
        }
}
```

What will happen during compilation and execution of the program?

A. The program compile successfully displaying A followed by runtime exception.

B. The program compiles successfully but generates only runtime exception.

o co c sf s o

D. The program generates compile time error.

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