Sun Certified Programmer for the Java Platform

Test Exam 310-065 SCJP 1.6

Examen Final

Nombre:

Instrucciones: Indicar en la última página TODAS las respuestas correctas

Section 1: Declarations, Initialization and Scoping

Question 1

Given:

```
 5.  enum Towns1{NY, LA, SF}
 6.
 7.  public class DeclareEnum {
 8.
 9.    enum Towns2{NY, LA, SF};
10.
11.    public static void main(String [] args) {
12.      enum Towns3{NY, LA, SF};
13.    }
14.  }
```

What is the result?

A The code compiles.
B Compilation fails due to an error on line 5.
C Compilation fails due to an error on line 9.
D Compilation fails due to an error on line 12.
E Compilation fails due to errors on lines 5 and 12.
F Compilation fails due to errors on lines 9 and 12.

Question 2

Given three different source files:

```
1.  package com.sun2;
2.  public enum Seasons {SUMMER, FALL, WINTER, SPRING }
```

And:

```
1.  import com.sun2.Seasons;
2.  class Enum3a {
3.    Seasons s = Seasons.FALL;
4.  }
```

And:

```
1.  import com.sun2.*;
2.  class Enum3b {
3.    Seasons s = Seasons.FALL;
4.  }
```

Which is true?

A Only the first file will compile.
B Only the first and second files will compile.
C Only the first and third files will compile.
D Only the second and third files will compile.
E All three files will compile.

Question 3

Given:

```
11. public interface Word { boolean isSpelled(String w); }
12.
13. abstract class Verb1 implements Word { boolean isSpelled() { } }
14.
15. abstract class Verb2 implements Word { boolean isSpelled() { return true;
} }
16.
17. abstract class Verb3 implements Word {
18.   boolean isSpelled(String w) { return true; }
19. }
```

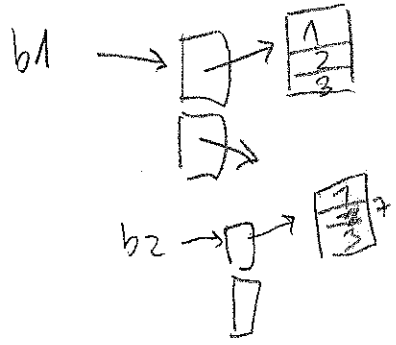
What is the result?

A Compilation succeeds.
B Compilation fails due only to an error on line 13.
C Compilation fails due only to an error on line 15.
D Compilation fails due only to an error on line 18.
E Compilation fails due only to errors on lines 13 and 15.
F Compilation fails due only to errors on lines 13 and 18.
G Compilation fails due only to errors on lines 15 and 18.

Question 4

Given:

```
3. public class Eggs {
4.   public static void main(String[] args) {
5.     int[][] basket1 = new int[2][];
6.     basket1[0] = new int[3];
7.     basket1[0] = {1,2,3};
8.
9.     int[][] basket2 = new int[2][];
10.    basket2[0] = new int[] {1,2,3};
11.    basket2[0][1] = 7;
12.    System.out.println(basket1[0][1] + " " + basket2[0][1]);
13.  }
14. }
```



What is the result?

A 1 1

B 2 2

C 1 7

D 2 7

E Compilation fails

F An exception is thrown at runtime

Question 5

Given:

```
1. class CopyArray {
2.   public static void main(String [] args) {
3.     int[] x = {1, 2 ,3};
4.     // insert code here
5.   }
6. }
```

Which two, inserted independently at line 4, will compile? (Choose two.)

A `int[] y1 = x;`

B `int[] y2; y2 = x;`

C `int[] y3 = x.copy();`

D `int[] y4; for(int z : x) { y4[z] = x[z]; }`

Question 6

Given:

```
1. class Banana {
2.   int x = 1;
3.   public static void main(String [] args) {
4.     int x = 2;
5.     Banana b = new Banana();
6.     b.go();
7.   }
8.   { x += x; }
9.   void go() {
10.    ++x;
11.    System.out.println(x);
12.  }
13. }
```

What is the result?

A 1

B 2

C 3

D 5

E Compilation fails.

Question 7

Given:

```
1. class SuperFoo {
2.   SuperFoo doStuff(int x) {
3.     return new SuperFoo();
4.   }
5. }
6.
7. class Foo extends SuperFoo {
8.   // insert code here
9. }
```

And four declarations:

```
I.   Foo doStuff(int x) { return new Foo(); }
II.  Foo doStuff(int x) { return new SuperFoo(); }
III. SuperFoo doStuff(int x) { return new Foo(); }
IV.  SuperFoo doStuff(int y) { return new SuperFoo(); }
```

Which, inserted independently at line 8, will compile?

A Only I.

B Only IV.

C Only I and III.

D Only I, II, and III.

E Only I, III, and IV.

F All four declarations will compile.

Question 8

Given:

```
1. class FWD {
2.   int doMud(int x) { return 1; }
3. }
4. class Subaru extends FWD {
5.   int doMud(int... y) { return 2; }
6.   int doMud(int z) { return 3; }
7. }
8. class Race {
9.   public static void main(String [] args) {
10.    int s = new Subaru().doMud(7);
11.    System.out.println(s);
12.  }
13. }
```

What is the result?

A 1
B 2
C 3
D 7
E Compilation fails.
F The output is NOT predictable.

Question 9

Given:

```
1. class HorseRadish {
2.   // insert code here
3.   protected HorseRadish(int x) {
4.     System.out.println("bok choy");
5.   }
6. }
7. class Wasabi extends HorseRadish {
8.   public static void main(String [] args) {
9.     Wasabi w = new Wasabi();
10.  }
11. }
```

Which two, inserted independently at line 2, will allow the code to compile and produce the output "bok choy"? (Choose two.)

A `// just a comment`
B `protected HorseRadish() { }`
C `protected HorseRadish() { this(42);}`
D `protected HorseRadish() { new HorseRadish(42);}`

Question 10

Given:

```
1. class Pastry {
2.   public static class Filling {
3.     public void berry() { System.out.println("yum "); }
4.   }
5. }
6. class Bakery {
7.   public static void main(String [] args) {
8.     // insert code here
9.     f.berry();
10.  }
11. }
```

Which, inserted at line 8, creates the output yum ?

A Filling f = new Filling();
B Pastry.Filling f = new Pastry.Filling();
C Pastry p = new Pastry(); Filling f = new p.Filling();
D Pastry p = new Pastry(); Pastry.Filling f = new p.Filling();

Section 2: 2: Flow Control >

Question 11

Given:

```
4. public class FreeRange {
5.   public static void main(String[] args) {
6.     int x = 7, y = 8;
7.     if(x < y)
8.       if(x+2 > y)
9.         if(y < x)
10.          else if(!false)
11.            System.out.print("inner ");
12.        else if(true)
13.          System.out.print("middle ");
14.  }
15. }
```

What is the result?

A `inner`
B `middle`
C `inner middle`
D `middle inner`
E Compilation fails
F An exception is thrown at runtime.

Question 12

Given:
- list is a reference to a valid collection
- getCollection() returns a reference to a valid collection

Which two are valid? (Choose two.)

A. `for(Object o ; list)`

B. `for(Object o : list.iterator())`

C. `for(Object o : getCollection())`

D. `for(Iterator i ; list.iterator() ; i.hasNext() )`

E. `for(Iterator i = list.iterator(); i.hasNext(); )`

Question 13

Given:

```
5. public class Buddy {
6.   public static void main(String[] args) {
7.     def:
8.     for(short s = 1; s < 7; s++) {
9.       if(s == 5) break def;
10.      if(s == 2) continue;
11.      System.out.print(s + ".");
12.    }
13.  }
14. }
```

What is the result?

A. `1.`

B. `1.2.`

C. `1.3.4.`

D. `1.2.3.4.`

E. `1.3.4.5.6.`

F. `1.2.3.4.5.6.`

G. Compilation fails.

Question 14

Given:

```
1. class MoreAsserts {
2.   static int x = 5;
3.   public static void main(String [] args) {
4.     assert(doStuff(42));
5.     if(x < 40) ;
6.     else assert(false);
7.   }
8.   public static boolean doStuff(int arg) {
9.     assert(arg < x++);
10.    return false;
11.  }
12. }
```

Which is true?

A. None of the `assert` statements are appropriate.

B. The `assert` statement on line 4 is appropriate.

C. The `assert` statement on line 6 is appropriate.

D. The `assert` statement on line 9 is appropriate.

E. All three of the `assert` statements are appropriate.

Question 15

Given:

```
7. class Bold {
8.   public static void main(String[] args) {
9.     Boolean boo = true;
10.    assert(!boo): "yee ";
11.    System.out.println("haw ");
12.  }
13. }
```

And the command line invocation: `java Bold` What is the result?

A. `yee` with no errors

B. `haw` with no errors

C. `yee haw` with no errors

D. An Assertion error including `yee` in the output

E. An Assertion error including `haw` in the output

F. An Assertion error with neither `yee` or `haw` in the output

Question 16

Given:

```
1. class Parser extends Utils {
2.   public static void main(String [] args) {
3.     try { System.out.print(new Parser().getInt("42"));
4.     } catch (Exception e) {
5.       System.out.println("Exc"); }
6.   }
7.   int getInt(String arg) throws Exception {
8.     return Integer.parseInt(arg);
9.   }
10. }
11. class Utils {
12.   int getInt(String arg) { return 42; }
13. }
```

What is the result?

A 42
B Exc
C 42Exc
D Compilation fails.
E An exception is thrown at runtime.

Question 17

Given:

```
1. class Propeller2 {
2.   public static void main(String [] args) // add code here?
3.     { new Propeller2().topGo(); }
4.
5.   void topGo() // add code here?
6.     { middleGo(); }
7.
8.   void middleGo() // add code here?
9.     { go();  System.out.println("late middle "); }
10.
11.   void go() // add code here?
12.     { throw new Exception(); }
13. }
```

For the code to compile, on which lines does the declaration `throws Exception` need to be added?

A Only line 11
B Lines 8 and 11
C Lines 5, 8, and 11
D Lines 2, 5, 8, and 11
E No combination of these additions will allow the code to compile.

Question 18

Given:

```
1. class StringTest {
2.   public static void main(String [] args) {
3.     String s = null;
4.     try {
5.       s.trim();
6.     } catch (Exception e) {
7.       System.out.println("exc");
8.     }
9.     s.trim();
10.   }
11. }
```

What is the result?

A Compilation fails.
B The code runs with no output.
C An exception is thrown with no other output.
D exc then an exception is thrown.
E exc then the code completes without exception.

Question 19

Given:

```
1. class Dog { }
2. class BorderCollie extends Dog { }
3. class Kennel {
4.   public static void main(String [] args) {
5.     BorderCollie b = new BorderCollie();
6.     Dog d = (Dog)b;
7.   }
8. }
```

What is the result?

A Compilation fails.
B The code runs with no output.
C A `java.lang.ClassCastException` is thrown.
D A `java.lang.IllegalStateException` is thrown.
E A `java.lang.ExceptionInInitializationError` is thrown.

Section 3: 3: API Contents

Question 20

Given:

```
1. class Mutate {
2.   public static void main(String [] args) {
3.     StringBuilder s = new StringBuilder("012345678 ");
4.     if (s.length() == 10)
5.       s.insert(10, "abcdef");
6.     s.delete(3,8);
7.     System.out.println(s.indexOf("c"));
8.   }
9. }
```

What is the result?

A -1

B 5

C 6

D 7

E Compilation fails.

F An exception is thrown at runtime.

Question 21

Which two statements comparing `java.lang.StringBuilder` to `java.lang.StringBuffer` are true? (Choose two.)

A Both classes have a `lastIndexOf` method.

B Both classes' key methods are synchronized.

C Only `StringBuffer` has a `lastIndexOf` method.

D Only `StringBuilder` has a `lastIndexOf` method.

E Only `StringBuffer`'s key methods are synchronized.

F Only `StringBuilder`'s key methods are synchronized.

Question 22

Given that `c` is a reference to a valid `java.io.Console` object and the following code snippet:

```
12.    char[] pw = c.readPassword("%s", "pw: ");
13.    for(char ch : pw)
14.      System.out.print(ch);
```

And when prompted the user keys "bob" What is displayed on the terminal?

A
```
pw:
```

B
```
pw:
bob
```

C
```
pw: bob
bob
```

D An exception is thrown

Question 23

Which two about the `java.io.File` class are true? (Choose two.)

A This class can be used to create both files AND directories.

B The mkdir() method takes an argument that represents the file.

C Only empty directories can be deleted using the delete() method.

D Only empty directories can be renamed using the renameTo() method.

E The createNewFile() method takes an argument that represents the file.

Question 24

Given:

```
11. class Ford extends Car implements Serializable {
12.   Ford() { System.out.print("new Ford "); }
13. }
14.
15. class Car {
16.   Car() { System.out.print("new Car "); }
17. }
```

If you attempt to deserialize a properly serialized instance of `Ford`, what is the result?

A new Car

B new Ford

C new Car new Ford

D new Ford new Car

E Compilation fails.

F An exception is thrown at runtime.

Question 25

Given:

```
2. import java.io.*;
3. public class Network {
4.   public static void main(String[] args) {
5.     Traveler t = new Traveler();
6.     t.x1 = 7; t.x2 = 7; t.x3 = 7;
7.     // serialize t then deserialize t
8.     System.out.println(t.x1 + " " + t.x2 + " " + t.x3);
9.   }
10. }
11. class Traveler implements Serializable {
12.   static int x1 = 0;
13.   volatile int x2 = 0;
14.   transient int x3 = 0;
15. }
```

If, on line 7, `t` is successfully serialized and then deserialized, what is the result?

A 0 0 0
B 0 7 0
C 0 7 7
D 7 0 0
E 7 7 0
F 7 7 7

Question 26

Given the following valid code fragment from classes in the `java.util` package:

```
11.  Date d = new Date(1700000000000L);
12.  System.out.println(d.toString());     // output line 1
13.  Calendar c1 = Calendar.getInstance();
14.  c1.setTime(d);
15.  Calendar c2 = Calendar.getInstance();
16.  c2.setTime(d);
17.  c1.add(Calendar.MONTH, 10);
18.  c2.roll(Calendar.MONTH, 10);
19.  System.out.println(c1.getTime().toString());
20.  System.out.println(c2.getTime().toString());
```

If the first line of output is `Tue Nov 14 15:13:20 MST 2023`, what is the result?

A
```
Thu Sep 14 15:13:20 MDT 2023
Thu Sep 14 15:13:20 MDT 2023
```

B
```
Thu Sep 14 15:13:20 MDT 2023
Sat Sep 14 15:13:20 MDT 2024
```

C
```
Sat Sep 14 15:13:20 MDT 2024
Thu Sep 14 15:13:20 MDT 2023
```

D
```
Sat Sep 14 15:13:20 MDT 2024
Sat Sep 14 15:13:20 MDT 2024
```

Question 27

Which three are true about the `java.util.Scanner` class compared to the String class's `split()` method? (Choose three.)

A Both are used primarily to tokenize source data.

B Only the `Scanner` class can use a custom delimiter.

C Only the `Scanner` class can use a stream as a source.

D The `Scanner` class allows you to exit before the entire source has been read.

E The `split()` method allows you to exit before the entire source has been read.

Question 28

Given:

```
1. class StringSplit {
2.   public static void main(String [] args) {
3.
4.     String s = "x1234 y56 z7 a";
5.     String [] sa = s.split("\\d");
6.     int count = 0;
7.     for( String x : sa)
8.       count++;
9.     System.out.println("total: " + count);
10.  }
11. }
```

What is the result?

A `total: 3`

B `total: 4`

C `total: 7`

D `total: 8`

E Compilation fails.

F An exception is thrown at runtime.

Section 4: 4: Concurrency

Question 29

Given:

```
4. class Needle implements Runnable {
5.   public static void main(String [] args) {
6.     // insert code here
7.     t.start();
8.   }
9.   public void run() { ; }
10. }
```

And these four fragments of code:

```
I.   Thread t = new Needle();
II.  Needle t = new Needle();
III. Thread t = new Thread(new Thread());
IV.  Thread t = new Thread(new Needle());
```

Which, inserted independently at line 6, will compile?

A Only fragment IV

B Only fragment III

C Only fragments I and II

D Only fragments III and IV

E Only fragments I, III, and IV

F All four fragments will compile

Question 30

A programmer wants to create a class called `MyThread` that instantiates a `Thread` in the `main` method. Given the following three statements:

```
I.  MyThread must extend Thread.
II. MyThread must implement Thread.
III.MyThread must override public void run().
```

Which must occur to achieve the desired result?

A Only statement I.

B Only statement II.

C Only statements I and II.

D Only statements I and III.

E None of the three tasks must occur.

Question 31

Given:

```
3. public class Traffic2 implements Runnable {
4.   static String s = "";
5.   static final int HOW_BUSY = 100;
6.   public void run() {
7.     for(int j = 0; j < HOW_BUSY * 9; j++)
8.       if((j % HOW_BUSY) == 0) s += "2";
9.   }
10.  public static void main(String[] args) {
11.    Thread t = new Thread(new Traffic2());  t.start();
12.    for(int k = 0; k < HOW_BUSY * 9; k++)  if((k % HOW_BUSY) == 0) s +=
"1";
13.    try { t.join(); } catch (Exception e) { }
14.    System.out.println(s);
15. } }
```

If the value of `HOW_BUSY` is changed from `100` to `100000000`, what is the most likely result?

A Compilation fails.
B An exception is thrown at runtime.
C There would be no impact to the output.
D The total number of characters output might change.
E "1" characters would be more evenly distributed throughout the output.
F "1" characters would be clumped near the beginning or end of the output.

Question 32

Given:

```
5. class NoGo implements Runnable {
6.   private int i;
7.   public synchronized void run() {
8.     if (i%10 != 0) { i++; }
9.     for(int x=0; x<10; x++, i++)
10.       { if (x == 4) Thread.yield(); }
11.    System.out.print(i + " ");
12.  }
13.  public static void main(String [] args) {
14.    NoGo n = new NoGo();
15.    for(int x=0; x<101; x++) { new Thread(n).start(); }
16.  }
17. }
```

Which is true?

A The output can never contain the value 10.

B The output can never contain the value 30.

C The output can never contain the value 297.

D The output can never contain the value 820.

E The output can never contain the value 1010.

Question 33

Given:

```
5. public class Ska {
6.   synchronized long fellow;
7.   synchronized void doLockedStuff() {
8.     Ska s = new Ska();
9.     synchronized() { }
10.    synchronized(s) { }
11.    synchronized(this) { }
12.  }
13. }
```

What is the result?

A Compilation succeeds.

B Compilation fails due to errors on lines 6 and 9.

C Compilation fails due only to an error on line 6.

D Compilation fails due only to an error on line 9.

E Compilation fails due only to an error on line 11.

F Compilation fails due to errors on lines 6, 9, and 11.

Question 34

Given the methods from `java.lang.Object` and `java.lang.Thread`
Which two must be invoked from within a synchronized context? (Choose two.)

A `run()`

B `wait()`

C `join()`

D `sleep()`

E `start()`

F `yield()`

G `notifyAll()`

Question 35

Given:

```
3. class Waiter implements Runnable {
4.   int state;
5.   public synchronized void run() {
6.     if (state++ < 3) {
7.       System.out.print(" " + Thread.currentThread().getId());
8.       try { this.wait(); } catch (Exception e) { }
9.       System.out.print(" " + Thread.currentThread().getId());
10.    }
11.    else { notify();   notifyAll(); }
12.  }
13.  public static void main(String [] args) {
14.    Waiter w1 = new Waiter();   Waiter w2 = new Waiter();
15.    new Thread(w1).start();     new Thread(w1).start();
16.    new Thread(w2).start();     new Thread(w2).start();
17. } }
```

Which two are true? (Choose two.)

A The program never completes.

B The program runs to completion.

C The output could be 6 7 9 8.

D The output could be 6 7 9 6.

E The output could be 6 7 8 6 7 10.

F The output could be 6 7 10 7 10 6.

Section 5: OO Concepts

Question 36

Given:

```
21. class Wheels {
22.   private Bike bike;
23.   void setBike(Bike b) { bike = b; }
24. }
25.
26. class Bike {
27.   private Wheels [] wheels = new Wheels[5];
28.   void setWheels(Wheels [] w) {
29.     if( w.length == 2)
30.       wheels = w;
31.   }
32. }
```

Which is true?

A Compilation fails.

B These classes are NOT coupled.

C These classes are loosely coupled.

D These classes are tightly coupled.

E These classes are abstractly coupled.

Question 37

Given:

```
1. class Alpha { void m1() {} }
2. class Beta extends Alpha { void m2() { } }
3. class Gamma extends Beta { }
4.
5. class GreekTest {
6.   public static void main(String [] args) {
7.     Alpha [] a = {new Alpha(), new Beta(), new Gamma() };
8.     for(Alpha a2 : a) {
9.       a2.m1();
10.       if (a2 instanceof Beta || a2 instanceof Gamma)
11.         // insert code here
12.     }
13.   }
14. }
```

Which code, inserted at line 11, will compile, but cause an exception to be thrown at runtime?

A a2.m2();
B ((Beta)a2).m2();
C ((Alpha)a2).m2();
D ((Gamma)a2).m2();

Question 38

Given:

```
7. public class Redwood extends Tree {
8.   public static void main(String[] args) {
9.     Tree t1 = new Tree();
10.    Tree t2 = new Redwood();
11.    Redwood r1 = new Redwood();
12.    // insert code here
13.  }
14. }
15. class Tree { }
```

And the four fragments:

```
I.   Redwood r2 = t2;
II.  Redwood r3 = (Redwood) t2;
III. Tree t3 = t2;
IV.  Tree t4 = (Tree) t2;
```

Which fragments, inserted independently at line 12, will compile?

A Only fragments I and II
B Only fragments III and IV
C Only fragments I, II, and IV
D Only fragments I, II, and III
E Only fragments II, III, and IV
F All four of the fragments will compile.

Question 39

Given:

```
1. class Book {
2.   private final void read() { System.out.print("book "); }
3. }
4. class Page extends Book {
5.   public static void main(String [] args) {
6.     new Page().read();
7.     new Book().read();
8.   }
9.   private final void read() { System.out.print("page "); }
10. }
```

What is the result?

A book book
B book page
C page book
D page page
E Compilation fails
F An exception is thrown at runtime

Question 40

Given:

```
1. class Tree {
2.   private static String tree = "tree ";
3.   String getTree() { return tree; }
4. }
5. class Elm extends Tree {
6.   private static String tree = "elm ";
7.   public static void main(String [] args) {
8.     new Elm().go(new Tree());
9.   }
10.   void go(Tree t) {
11.     String s = t.getTree() + Elm.tree + tree + (new Elm().getTree());
12.     System.out.println(s);
13. } }
```

What is the result?

A elm elm elm elm
B tree elm elm elm
C tree elm tree elm
D tree elm elm tree
E Compilation fails.
F An exception is thrown at runtime.

Question 41

Given:

```
4. class Chemical {
5.   int ph() { return 7; }
6. }
7. public class Acid {
8.   public static void main(String[] args) {
9.     new Acid().go();
10.  }
11.  void go() {
12.    System.out.println(ph() + " " + super.ph() + " " + getPh());
13.  }
14.  int getPh() { return 4; }
15.  int ph() { return 3; }
15. }
```

What is the result?

A 374
B 474
C 774
D Compilation fails
E An exception is thrown at runtime

Question 42

Given:

```
1. class Over {
2.   int doIt(long x) { return 3; }
3. }
4.
5. class Under extends Over {
6.   // insert code here
7. }
```

And the four methods:

```
I.   short doIt(int y) { return 4; }
II.  int doIt(long x, long y) { return 4; }
III. private int doIt(short y) { return 4; }
IV.  protected int doIt(long x) { return 4; }
```

Which methods, inserted independently at line 6, will compile?

A Only methods I and II
B Only methods II and IV
C Only methods I and IV
D Only methods I, III, and IV
E Only methods I, II, and III
F All of the above methods will compile.

Question 43

Given:

```
3. class YaYa { Yum yum; }
4. interface Yum { void yip(); }
5. class Fizz extends YaYa implements Yum {
6.   public void yip() { }
7. }
8. interface Zoom extends Yum { }
```

Which two are true? (Choose two.)

A Class Fizz is-a Yum
B Class YaYa is-a Yum
C Class Fizz has-a Yum
D Class Fizz has-a YaYa
E Interface Yum has-a yip
F Interface Zoom has-a yip

Question 44

Which two are true? (Choose two.)

A Is-a relationships must be cohesive.
B Is-a relationships can use inheritance.
C A class can have an is-a relationship to only one other type.
D A class can have a has-a relationship to only one other type.
E A class that is tightly encapsulated can have a has-a relationship.

Section 6: Collections / Generics

Question 45

Given:

```
1. import java.util.*;
2.
3. class GPS {
4.   public static void main(String [] args) {
5.     // insert code here
6.     c.put("myKey", 42);
7.   }
8. }
```

Which three, inserted independently at line 5, allow the code to compile? (Choose three.)

A Map c = new SortedMap();
B HashMap c = new HashMap();
C SortedMap c = new TreeMap();
D HashMap c = new Hashtable();
E Map c = new LinkedHashMap();
F ArrayList c = new ArrayList();

Question 46

Given:

```
5. import java.util.*;
6. class Counting {
7.   public static void main(String [] args) {
8.     TreeSet<String> t = new TreeSet<String>();
9.     if(t.add("one "))
10.       if(t.add("two "))
11.         if(t.add("three "))
12.           t.add("four ");
13.     for(String s : t)
14.       System.out.print(s);
15.   }
16. }
```

What is the result?

A one
B one three two
C one two three
D one two three four
E four one three two
F Compilation fails.

Question 47

Given:

```
3. class TestEnum {
4.   enum E {N, E, S, W};
5.   public static void main(String [] args) {
6.     E e = E.E;
7.     if(e.equals(E.E)) System.out.print("equals ");
8.     if(e == E.E) System.out.print("== ");
9.   }
10. }
```

What is the result?

A ==
B equals
C equals ==
D Compilation fails.
E No output is produced.
F An exception is thrown at runtime.

Question 48

A programmer is working on a top secret project, and must implement an `equals()` method to appropriately work with the `Sock` class's `hashCode()` method given:

```
42.  public int hashCode() {
43.    return (size.hashCode() + color.hashCode()) * 17;
44.  }
```

Which equals method supports that goal?

A Impossible to determine

B
```
public boolean equals(Object o) {
Sock s = (Sock) o;
return size.equals(s.size);  }
```

C
```
public boolean equals(Object o) {
Sock s = (Sock) o;
return size.equals(s.size) && color.equals(s.color);  }
```

D
```
public boolean equals(Object o) {
Sock s = (Sock) o;
return color.equals(s.color);  }
```

Question 49

Given:

```
4. import java.util.*;
5. public class Quest {
6.   public static void main(String[] args) {
7.     TreeMap<String, Integer> myMap = new TreeMap<String, Integer>();
8.     myMap.put("ak", 50);  myMap.put("co", 60);
9.     myMap.put("ca", 70);  myMap.put("ar", 80);
10.    NavigableMap<String, Integer> myMap2 = myMap.headMap("d", true);
11.    myMap.put("fl", 90);
12.    myMap2.put("hi", 100);
13.    System.out.println(myMap.size() + " " + myMap2.size());
14.  }
15. }
```

What is the result?

A 4 4
B 5 4
C 5 5
D 6 5
E 6 6
F Compilation fails.
G An exception is thrown at runtime.

Question 50

Given:

```
1. import java.util.*;
2. public class Gen2 {
3.   public static void go(Set<Animal> a) { }
4.   public static void main(String [] args) {
5.     // insert code here
6.     go(t);
7.   }
8. }
9. class Animal { }
10. class Dog extends Animal { }
```

And the four statements:

```
s1.   TreeSet t = new TreeSet();
s2.   TreeSet<Dog> t = new TreeSet<Dog>();
s3.   TreeSet<Animal> t = new TreeSet<Dog>();
s4.   TreeSet<Animal> t = new TreeSet<Animal>();
```

Which, inserted independently at line 5, will compile?

A only s1
B only s4
C only s1 and s2
D only s1 and s4
E only s1, s2, and s4
F only s1, s3, and s4
G All of the codes will compile.

Question 51

Given:

```
1. import java.util.*;
2. public class NavMap {
3.   public static void main(String[] args) {
4.     TreeMap<String, Integer> myMap = new TreeMap<String, Integer>();
5.     myMap.put("ak", 50);
6.     myMap.put("co", 60);
7.     myMap.put("ca", 70);
8.     myMap.put("ar", 80);
9.     NavigableMap<String, Integer> myMap2 = myMap.headMap("b", true);
10.    System.out.println(myMap2.get("ak") + " " + myMap2.get("co"));
11.  }
12. }
```

What is the result?

A 50 60
B 50 null
C null 60
D null null
E Compilation fails.
F An exception is thrown at runtime.

Question 52

Given:

```
3. import java.util.*;
4. class Car { }
5. class Honda extends Car { }
6. public class Test {
7.   public static void main (String[] args) {
8.     List<Car> cars = new ArrayList<Car>();
9.     List<Honda> cars2 = new ArrayList<Honda>();
10.    List<Object> cars3 = new ArrayList<Object>();
11.    takeCars(cars);
12.    takeCars(cars2);
13.    takeCars(cars3);
14.  }
15.  //  insert code here
16. }
```

Which two, inserted independently at line 15, allow the file to compile?

A `public static void takeCars(List<?> list) { }`
B `public static void takeCars(List<Object> list) { }`
C `public static void takeCars(List<? extends Car> list) { }`
D `public static void takeCars(List<T extends Object> list) { }`
E `public static void takeCars(List<? extends Object> list) { }`

Question 53

Given:

```
3. import java.util.*;
4. public class ToDo {
5.   public static void main(String[] args) {
6.     String[] dogs = {"fido","clover","gus","aiko",};
7.     List dogList = Arrays.asList(dogs);
8.     dogList.add("spot");
9.     dogs[0] = "fluffy";
10.    System.out.println(dogList);
11.    for(String s: dogs) System.out.print(s + ", ");
12.  }
13. }
```

What is the result?

A [fluffy, clover, gus, aiko]
fluffy, clover, gus, aiko,

B [fluffy, clover, gus, aiko]
fluffy, clover, gus, aiko, spot,

C [fluffy, clover, gus, aiko, spot]
fluffy, clover, gus, aiko,

D [fluffy, clover, gus, aiko, spot]
fluffy, clover, gus, aiko, spot,

E Compilation fails.

F An exception is thrown at runtime.

Question 54

Given:

```
1. import java.util.*;
2. class Stuff implements Comparator {
3.   int x;
4.   Stuff(int x) { this.x = x; }
5.   public int compareTo(Object o) { return this.x - ((Stuff)o).x; }
6. }
7. class AddStuff {
8.   public static void main(String [] args) {
9.     TreeSet<Stuff> ts = new TreeSet<Stuff>();
10.     ts.add(new Stuff(1));
11.     ts.add(new Stuff(2));
12.     System.out.println(ts.size());
13. } }
```

What is the result?

A 0
B 1
C 2
D Compilation fails.
E An exception is thrown at runtime.

Question 55

Given:

```
3. interface MyInterface {
4.   static long boat = 7L;
5.   long myMethod(long x);
6. }
7. public class TestIface implements MyInterface {
8.   public static void main(String[] args) {
9.     new TestIface().myMethod(6L);
10.  }
11.  long myMethod(long x) {
12.    System.out.println( ((++x * boat) - (--x + 1)) );
13.    return 42L;
14.  }
15. }
```

What is the result?

A 40
B 41
C 42
D 43
E Compilation fails.
F An exception is thrown at runtime.

Section 7: Fundamentals

Question 56

Given two files:

```
1. package x;
2. public class X {
3.   public static void doX() { System.out.print("doX "); }
4. }
```

And:

```
1. class Find {
2.   public static void main(String [] args) {
3.     // insert code here
4.   }
5. }
```

Which two, inserted independently at line 3 in class `Find`, will compile and produce the output "doX"? (Choose two.)

A doX();
B X.doX();
C x.X.doX();
D X myX = new X(); myX.doX();
E x.X myX = new x.X(); myX.doX();

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Section 1: Declarations, Initialization and Scoping

QUESTION 1.
Given the two source files:

```
1. package com.sun;
2. public class PkgAccess {
3.   public static int tiger = 1414;
4. }
```

And:

```
1. import static com.sun.PkgAccess.*;
2.
3. public class PkgAccess2 {
4.
5.   int x1 = PkgAccess.tiger;
6.   int x2 = tiger;
7.   int x3 = com.sun.PkgAccess.tiger;
8.   int x4 = sun.PkgAccess.tiger;
9. }
```

Which two are true? (Choose two.)

A The PkgAccess2 class compiles.
B Compilation fails due to an error on line 5.
C Compilation fails due to an error on line 6.
D Compilation fails due to an error on line 7.
E Compilation fails due to an error on line 8.
F The PkgAccess and PkgAccess2 classes both compile.

QUESTION 3.
Given:

```
2. interface Picker { Integer tomato = 57; }
3.
4. interface Grinner {
5.   int doStuff();
6. }
7.
8. interface Sinner extends Picker, Grinner {
9.   int doStuff(boolean maybe);
10.  int doStuff();
11. }
```

implements → 1 interfaces
extends → todas las que quieras
interface → no puede tener métodos implementados.

What is the result?

A All three interfaces will compile.
B Compilation fails due to multiple errors.
C Compilation fails due only to an error on line 2.
D Compilation fails due only to an error on line 8.
E Compilation fails due only to an error on line 9.
F Compilation fails due only to an error on line 10.

clase → implementas interfaces
→ extiende 1 clase

QUESTION 5.
Given:

```
3. public class Buckets {
4.   public static void main(String[] args) {
5.     int[] x = {1,2,3};
6.     int[] y = {4,5,6};
7.     int[] z = {7,8,9};
8.     go(x, y, z);
9.     go(y, z);
10.    go(z);
11. }
12. static void go(int[] a, int[]... b) {
13.   System.out.print(a[1] + " ");
14.  }
15. }
```

What is the result?

A 1 2 3
B 1 4 7
C 2 5 8
D 4 5 6
E Compilation fails.
F An exception is thrown at runtime.

QUESTION 7.
Given:

```
1. class SuperFoo {
2.   SuperFoo doStuff(int x) {
3.     return new SuperFoo();
4.   }
5. }
6.
7. class Foo extends SuperFoo {
8.   // insert code here
9. }
```

Which three, inserted independently at line 8, will compile? (Choose three.)

A int doStuff() { return 42; }
B int doStuff(int x) { return 42; }
C Foo doStuff(int x) { return new Foo(); }
D Object doStuff(int x) { return new Object(); }
E SuperFoo doStuff(int x) { return new Foo(); }

QUESTION 9
Given:

```
6. class Tack {
7.   static short s = 17;
8.   public Tack(short ss) {
9.     new Tack();
10.    s *= ss;
11.  }
12.  public Tack() { ; }
13. }
14. public class Bridle extends Tack {
15.  public Bridle(int s) { System.out.println(s + 1); }
16.  public static void main(String[] args) {
17.    Bridle b = new Bridle(3);
18.  }
19. }
```

What is the result?

A 3
B 4
C 31
D 51
E 52
F Compilation fails.
G The stack overflows at runtime.

Section 2: Flow Control

QUESTION 11
Given:

```
1. enum Days {MONDAY, TUESDAY, WEDNESDAY, THURSDAY}
2.
3. class Test {
4.   public static void main(String [] args) {
5.     int x = 0;
6.     Days d = Days.TUESDAY;
7.     switch(d) {
8.       case MONDAY: x++;
9.       case TUESDAY: x = x + 10;
10.      case WEDNESDAY: x = x + 100;
11.      case THURSDAY: x = x + 1000;
12.    }
13.    System.out.println("x = " + x);
14.  }
15. }
```

What is the result?

A x = 10
B x = 110
C x = 1110
D Compilation fails.
E An exception is thrown at runtime.

QUESTION 13
Given:

```
4. class Breakfast {
5.   public static void main(String[] args) {
6.     free:
7.     for(int j = 3; j > 0; j--) {
8.       for(int k = 0; k < 4; k++) {
9.         if(j == 1) break free;
10.        if(k == 2) break;
11.        System.out.print(" " + j + k);
12.      }
13.    }
14.  }
15. }
```

What is the result?

A 30 31 20 21
B 30 31 32 20 21 22
C 30 31 32 33 20 21 22 23
D 30 31 32 20 21 22 10 11 12
E 30 31 32 33 20 21 22 23 10 11 12 13
F Compilation fails.

QUESTION 15
Given:

```
1. class MoreAsserts {
2.   static int x = 5;
3.   public static void main(String [] args) {
4.     assert(doStuff(42));
5.     if(x < 40) ;
6.     else assert(false);
7.   }
8.   public static boolean doStuff(int arg) {
9.     assert(arg < x++);
10.    return false;
11.  }
12. }
```

And the command-line invocation:

java -ea MoreAsserts

Which is true?

A An assertion error is thrown.
B An assertion exception is thrown.
C The command-line invocation is invalid.
D The code runs with no error and no output.

QUESTION 17
Given:

```
1. class Flow {
2.   public static void main(String [] args) {
3.     try {
4.       System.out.print("before ");
5.       doRiskyThing();
6.       System.out.print("after ");
7.     } catch (Exception fe) {
8.       System.out.print("catch ");
9.     }
10.    System.out.println("done ");
11.  }
12.  public static void doRiskyThing() throws Exception {
13.    // this code returns unless it throws an Exception
14. } }
```

Which two results are possible? (Choose two.)

A before
B before catch
C before after done
D before catch done
E before after catch
F before after catch done

QUESTION 19
Given:

```
1. class Adder {
2.   static Short s1,s2;
3.   public static void main(String [] args) {
4.     int x;
5.     s1 = 4;
6.     x = s1 + s2;
7.     System.out.print(x);
8.   }
9. }
```

What is the result?

A 4
B Compilation fails.
C A java.lang.ClassCastException is thrown.
D A java.lang.NullPointerException is thrown.
E A java.lang.IllegalStateException is thrown.

Section 3: API Contents

QUESTION 21
Given:

```
1. class WideLoad {
2.   public static void main(String [] args) {
3.     float f = 3.14f;
4.     new WideLoad().doIt(f);
5.   }
6.   void doIt(Float f) {
7.     System.out.println("Float");
8.   }
9.   void doIt(double d) {
10.    System.out.println("double");
11.  }
12. }
```

What is the result?

A Float
B double
C Compilation fails.
D The output is not predictable.
E An exception is thrown at runtime.

QUESTION 23
Which two are true about the java.io.Console class? (Choose two.)

A Only a single instance exists for a given JVM.
B All of the methods that read user input return a String.
C All of the methods that read user input return a char[].
D All of the methods that read user input are synchronized.
E All of the methods that read user input require the developer to add code to echo the users keystrokes.

QUESTION 25
Which two about using the java.io.Serializable class are true? (Choose two.)

A If Dog extends Animal, then Animal must implement java.io.Serializable in order to serialize an instance of Dog.
B If Dog has-a Collar, then Collar must implement java.io.Serializable in order to serialize an instance of Dog.
C If Dog extends Animal and Animal implements java.io.Serializable but Dog does NOT implement java.io.Serializable, you can serialize an instance of Dog.
D When an instance of a subclass is deserialized, none of the constructors in it's constructor chain will ever be invoked.
E If you mark a class's instance variable volatile, and then serialize an instance of that class, the state of the volatile variable will be lost during serialization.

QUESTION 27
Given that he is a valid language code And given the following code fragments:

I. Date d = new Date();
II. Calendar c = new Calender();
III. Locale loc = new Locale("he");
IV. DateFormat df = new DateFormat();

What is true?

A Only fragment I will compile.
B All four fragments will compile.
C Only fragments I and II will compile.
D Only fragments I and III will compile.
E Only fragments II and III will compile.
F Only fragments I, II, and III will compile.

QUESTION 29
Given:

```
1. import java.util.*;
2. class ScanStuff {
3.   public static void main(String [] args) {
4.     String s = "x,yy,123";
5.     Scanner sc = new Scanner(s);
6.     while (sc.hasNext())
7.       System.out.print(sc.next() + " ");
8.   }
9. }
```

What is the result?

A x yy
B x,yy
C x yy 123
D x,yy,123
E Compilation fails.
F An exception is thrown at runtime.

Section 4: Concurrency

QUESTION 31
Given:

```
3. public class Traffic implements Runnable {
4.   static String s = "";
5.   public void run() {
6.     for(int j = 0; j < 90000000; j++) {
7.           if((j % 10000000) == 0) Thread.yield(); // optional?
8.           if((j % 10000000) == 0) s += "2";
9.   } }
10.  public static void main(String[] args) {
11.    Thread t = new Thread(new Traffic()); t.start();
12.    for(int k = 0; k < 90000000; k++)  if((k%10000000) == 0) s += "1";
13.    try { t.join(); } catch (Exception e) { }
14.    System.out.println(s);
15. } }
```

What would be the most likely impact to the output if line 7 was removed?

A There would be no impact to the output.
B Compilation would fail if line 7 was removed.
C An exception would be thrown if line 7 was removed.
D The total number of characters output might change.
E The character "2" would appear more frequently near the end of the output.
F The character "2" would appear less frequently near the end of the output.

QUESTION 33
Given:

```
5. public class Lockdown implements Runnable {
6.   public static void main(String[] args) {
7.     new Thread(new Lockdown()).start();
8.     new Thread(new Lockdown()).start();
9.   }
10.  public void run() { locked(Thread.currentThread().getId()); }
11.  synchronized void locked(long id) {
12.    System.out.print(id + "a ");
13.    System.out.print(id + "b ");
14.  }
15. }
```

What is true about possible sets of output from this code?

A Set 6a 7a 7b 8a and set 7a 7b 8a 8b are both possible.
B Set 7a 7b 8a 8b and set 6a 7a 6b 7b are both possible.
C It could be set 7a 7b 8a 8b but set 6a 7a 6b 7b is NOT possible.
D It could be set 7a 8a 7b 8b but set 6a 6b 7a 7b is NOT possible.

QUESTION 35

```
1. class Waiting implements Runnable {
2.   boolean flag = false;
3.   public synchronized void run() {
4.     if (flag) {
5.       flag = false;
6.       System.out.print("1 ");
7.       try { this.wait(); } catch (Exception e) { }
8.       System.out.print("2 ");
9.     }
10.    else {
11.      flag = true;
12.      System.out.print("3 ");
13.      try { Thread.sleep(2000); } catch (Exception e) { }
14.      System.out.print("4 ");
15.      notify();
16.    }
17.  }
18.  public static void main(String [] args) {
19.    Waiting w = new Waiting();
20.    new Thread(w).start();
21.    new Thread(w).start();
22.  }
23. }
```

Which two are true? (Choose two.)

A The code outputs 1 3 4.
B The code outputs 3 4 1.
C The code outputs 1 2 3 4.
D The code outputs 1 3 4 2.
E The code never completes.
F The code runs to completion.

Section 5: OO Concepts

QUESTION 37

Given:

```
12. class Customer {
13.   private String address;
14.   void setAddress(String addr) { address = addr; }
15.   void checkInventory(int sku) { /* check inv. */ }
16. }
```

Which two are true? (Choose two.)

A The checkInventory method demonstrates high cohesiveness.
B The setAddress method demonstrates high cohesiveness.
C The checkInventory method demonstrates low cohesiveness.
D The setAddress method demonstrates low cohesiveness.

QUESTION 39

Given:

```
1. class Animal { Animal getOne() { return new Animal(); } }
2. class Dog extends Animal {
3.   // insert code here
4. }
5.
6. class AnimalTest {
7.   public static void main(String [] args) {
8.     Animal [] animal = { new Animal(), new Dog() } ;
9.     for( Animal a : animal) {
10.      Animal x = a.getOne();
11.    }
12.  }
13. }
```

And the code:

```
3a.  Dog getOne() { return new Dog(); }
3b.  Animal getOne() { return new Dog(); }
```

Which, inserted at line 3, will compile and run with no exceptions?

A Only line 3a
B Only line 3b
C Either line 3a or 3b
D Both line 3a and 3b added together.

→ no puedes sobreescribir el mismo método 2 veces

QUESTION 41

Given:

```
6. class Bird {
7.   protected void talk() { System.out.print("chirp "); }
8. }
9. public class Macaw extends Bird {
10.  public static void main(String [] args) {
11.    Bird [] birds = {new Bird(), new Macaw()};
12.    for( Bird b : birds)
13.      b.talk();
14.  }
15.  void talk() { System.out.print("hello "); }
16. }
```

→ default.

What is the result?

A chirp chirp
B chirp hello
C hello hello
D hello chirp
E Compilation fails
F An exception is thrown at runtime

QUESTION 43
Given:

```
2. class Cat {
3.   Cat(int c) { System.out.print("cat" + c + " "); }
4. }
5. class SubCat extends Cat {
6.   SubCat(int c) { super(5); System.out.print("cable "); }
7.   SubCat() { this(4); }
8.   public static void main(String [] args) {
9.     SubCat s = new SubCat();
10.  }
11. }
```

What is the result?

A cat5
B cable
C cable cat5
D cat5 cable
E Compilation fails.
F An exception is thrown at runtime.

Section 6: Collections / Generics

QUESTION 45
Given:

```
2. import java.util.*;
3. class MyInfo implements Comparable {
4.   MyInfo(String s) { desc = s; }
5.   String desc;
6.   // insert code here
7.   public String toString() { return desc; }
8. }
```

Which method, inserted at line 6, correctly implements java.util.Comparable?

A
```
int compare(MyInfo m) {
return desc.compareTo(m.desc); }
```

B
```
int compareTo(MyInfo m) {
return desc.compareTo(m.desc); }
```

C
```
int compareable(MyInfo m) {
return desc.compareTo(m.desc); }
```

D
```
int compare(Object o) {
return desc.compareTo(o.toString()); }
```

E
```
int compareTo(Object o) {
return desc.compareTo(o.toString()); }
```

F
```
int compareable(Object o) {
return desc.compareTo(o.toString()); }
```

QUESTION 47
Given:

```
3. import java.util.*;
4. public class States {
5.   public static void main(String[] args) {
6.     TreeMap<String, Integer> myMap = new TreeMap<String, Integer>();
7.     myMap.put("ak", 50);
8.     myMap.put("co", 60);
9.     myMap.put("ca", 70);
10.    myMap.put("ar", 80);
11.    // insert code here
12.    System.out.println(myMap2.get("ak") + " " + myMap2.get("co"));
13.  }
14. }
```

Which two, inserted independently at line 11, produce the output 50 60? (Choose two.)

A NavigableMap<String, Integer> myMap2 = myMap.headMap("b", true);
B NavigableMap<String, Integer> myMap2 = myMap.headMap("z", true);
C NavigableMap<String, Integer> myMap2 = myMap.headMap("a", true);
D NavigableMap<String, Integer> myMap2 = myMap.tailMap("z", true);
E NavigableMap<String, Integer> myMap2 = myMap.tailMap("b", true);
F NavigableMap<String, Integer> myMap2 = myMap.tailMap("a", true);

QUESTION 49
Given:

```
5. import java.util.*;
6. public class Cartesian {
7.   public static void main(String[] args) {
8.     TreeMap<String, Integer> myMap = new TreeMap<String, Integer>();
9.     myMap.put("ak", 50);  myMap.put("co", 60);
10.    myMap.put("ca", 70);  myMap.put("ar", 80);
11.    NavigableMap<String, Integer> myMap2 = myMap.headMap("d", true);
12.    myMap.put("fl", 90);
13.    myMap2.put("al", 110);
14.    System.out.println(myMap.size() + " " + myMap2.size());
15.  }
16. }
```

What is the result?

A 5 5
B 5 6
C 6 5
D 6 6
E Compilation fails.
F An exception is thrown at runtime.

QUESTION 51
Given:

```
2. import java.util.*;
3. class Beta extends Alpha {
4.   public static void go(Set<Alpha> set) { }
5.   public static void main(String [] args) {
6.     Set<Alpha> setA = new TreeSet<Alpha>();
7.     Set<Beta> setB = new TreeSet<Beta>();
8.     Set<Object> setO = new TreeSet<Object>();
9.     // insert code here
10.  }
11. }
12. class Alpha { }
```

And the three code fragments:

```
s1.  go(setA);
s2.  go(setB);
s3.  go(setO);
```

Which, inserted independently at line 9, will compile?

(A) only s1
B only s2
C only s3
D only s1 and s2
E only s1 and s3
F All the codes will compile.

QUESTION 53
Given:

```
1. import java.util.*;
2. class DumpMap {
3.   public static void main(String [] args) {
4.     HashMap h = new HashMap();
5.     h.put("a","aa"); h.put("b","bb"); h.put("c","cc");
6.     Set ks = h.keySet();
7.     Object [] ka1 = ks.toArray();
8.     ks = new TreeSet(ks);
9.     Object [] ka2 = ks.toArray();
10.    System.out.println(Arrays.equals(ka1, ka2));
11.  }
12. }
```

What is the result?

A true
B false
C Compilation fails due to an error on line 8.
(D) The output depends on how the hashing function is implemented.

Section 7: Fundamentals

QUESTION 55
Given:

```
1. import java.util.*;
2. class Pow {
3.   static String [] wow = {"Bamm", "Biff"};
4.   public static void main(String [] yikes) {
5.     if(Arrays.equals(yikes,wow))
6.       System.out.print("got a match? ");
7.     if(yikes == wow)
8.       System.out.println("sure chief");
9.   }
10. }
```

And the command line: java Pow Bamm Biff What is the result?

(A) got a match?
B Compilation fails.
C No output is produced.
D got a match? sure chief
E An exception is thrown at runtime.

QUESTION 57
Which two are true? (Choose two.)

(A) Java applications can run out of memory.
B An object that has a valid reference cannot be garbage collected.
C The purpose of garbage collection is to delete objects from the stack.
(D) Objects created within inner classes can become eligible for garbage collection.
E If an object's finalize method runs to completion, the object will always be garbage collected.

QUESTION 59
Given the command line:

```
java -classpath x/MyJar.jar Test.java
```

Which two are true? (Choose two.)

A A CLASSPATH environment variable will override -classpath.
(B) The -classpath overrides the CLASSPATH environment variable.
C If a version of MyJar.jar is located in both the current directory and in the x subdirectory, the current directory version will be used.
(D) If a version of MyJar.jar is located in both the current directory and in the x subdirectory, the x subdirectory version will be used.

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Section 1: Declarations, Initialization and Scoping

QUESTION 2.
Given three different source files:

```
1. package com.sun2;
2. public enum Seasons {SUMMER, FALL, WINTER, SPRING}
```

And:

```
1. import com.sun2.Seasons;
2. import static com.sun2.Seasons.*;
3. class Enum3a {
4.   Seasons s = FALL;
5. }
```

And:

```
1. import com.sun2.*;
2. import static com.sun2.Seasons.FALL;
3. class Enum3b {
4.   Seasons s = FALL;
5. }
```

Which is true?

(A) Both classes, Enum3a and Enum3b, will compile.
B Neither class, Enum3a nor Enum3b, will compile.
C Class Enum3a will compile, class Enum3b will not compile.
D Class Enum3b will compile, class Enum3a will not compile.

QUESTION 4.
Given:

```
3. enum Animals {
4.   DOG,
5.   BIRD { public int getLegs() { return 2; } },
6.   HORSE;
7.   public int getLegs() { return 4; }
8. }
9. public class Zookeeper {
10.  public static void main(String[] args) {
11.    System.out.println(Animals.DOG.getLegs() + " " + Animals.BIRD.getLegs());
12.  }
13. }
```

What is the result?

(A) The output is 4 2
B The output is 4 4
C Compilation fails due to multiple errors.
D Compilation fails due only to error(s) on line 5.
E Compilation fails due only to error(s) on line 6.
F Compilation fails due only to error(s) on line 7.
G Compilation fails due only to error(s) on line 11.

QUESTION 6.
Given:

```
1. class DoStuff {
2.   public static void main(String [] args) {
3.     doIt(1);
4.     doIt(1,2);
5.   }
6.   // insert code here
7. }
```

Which three, inserted independently at line 6, will compile? (Choose three.)

(A) static void doIt(int... x) { }
B static void doIt(int... x, int y) { }
C static void doIt(int... x, int... y) { }
(D) static void doIt(int... x) { } static void doIt(int x) { }
(E) static void doIt(int x) { } static void doIt(int x, int y) { }

QUESTION 8
Given:

```
1. class FWD {
2.   int doMud(int x) { return 1; }
3. }
4. class Subaru extends FWD {
5.   int doMud(int... y) { return 2; }
6.   int doMud(long z) { return 3; }
7. }
8. class Race {
9.   public static void main(String [] args) {
10.    FWD f = new Subaru();
11.    System.out.println(f.doMud(7));
12.  }
13. }
```

What is the result?

(A) 1
B 2
C 3
D 7
E Compilation fails.
F The output is NOT predictable.

Section 2: Flow Control

QUESTION 10
Given:

```
1. class Test4 {
2.   public static void main(String [] args) {
3.     boolean x = true;
4.     boolean y = false;
5.     short z = 42;
6.
7.     if((z++ == 42) && (y = true))  z++;
8.     if((x = false) || (++z == 45)) z++;
9.
10.     System.out.println("z = " + z);
11.   }
12. }
```

What is the result?

A z = 42
B z = 44
C z = 45
D z = 46
E Compilation fails.
F An exception is thrown at runtime.

QUESTION 12
Given:

```
23. int x = 7;
24. switch (x) {
25.   case 8: System.out.print("8");
26.   case 7: System.out.print("7");
27.   case 6: System.out.print("6");
28.   default: System.out.print("def");
29.   case 9: System.out.print("9");
30. }
```

What is the result?

A 7
B 789
C 76def
D 76def9
E Compilation fails.

QUESTION 14
Given:

```
7. class Bold {
8.   public static void main(String[] args) {
9.     Boolean boo = true;
10.    assert(!boo): "yee ";
11.    System.out.println("haw ");
12.  }
13. }
```

And the command line invocation:

```
java -ea Bold
```

What is the result?

A yee with no errors
B haw with no errors
C yee haw with no errors
D An Assertion error including yee in the output
E An Assertion error including haw in the output
F An Assertion error with neither yee or haw in the output

QUESTION 16
Given:

```
1. class Parser extends Utils {
2.   public static void main(String [] args) {
3.     try { System.out.print(new Parser().getInt("42"));
4.     } catch (Exception e) {
5.       System.out.println("Exc"); }
6.   }
7.   int getInt(String arg) {
8.     return Integer.parseInt(arg);
9.   }
10. }
11. class Utils {
12.   int getInt(String arg) throws Exception { return 42; }
13. }
```

What is the result?

A 42
B Exc
C 42Exc
D Compilation fails.
E An exception is thrown at runtime.

QUESTION 18
Given:

```
1. class Birds {
2.   public static void main(String [] args) {
3.     try {
4.       throw new Exception();
5.     } catch (Exception e) {
6.       try {
7.         throw new Exception();
8.       } catch (Exception e2) { System.out.print("inner "); }
9.       System.out.print("middle ");
10.    }
11.    System.out.print("outer ");
12.  }
13. }
```

What is the result?

A inner
B inner outer
C middle outer
D inner middle outer
E middle inner outer
F Compilation fails.
G An exception is thrown at runtime.

QUESTION 20
Given:

```
1. class Calc {
2.   public static void main(String [] args) {
3.     try {
4.       int x = Integer.parseInt("42a");
5.     // insert code here
6.       System.out.print("oops ");
7.     }
8.   }
9. }
```

Which two, inserted independently at line 5, cause the output to be "oops "? (Choose two.)

A `} catch (ClassCastException c) {`
B `} catch (IllegalStateException c) {`
C `} catch (NumberFormatException n) {`
D `} catch (IllegalArgumentException e) {`
E `} catch (ExceptionInInitializerError e) {`

Section 3: API Contents

QUESTION 22
Given:

```
5. public class Ali {
6.   public static void main(String[] args) {
7.     // insert code here
8.     jab(y);
9.   }
10.  static void jab(Long x) {
11.    System.out.println("Long");
12.  }
13. }
```

And the following four code fragments:

I. int y = 7;
II. long y = 7;
III. Long y = 7;
IV. Integer y = 7;

Which code fragments, inserted independently at line 7, will compile?

A Only fragment II.
B Only fragment III.
C Both fragments II and III.
D Fragments I, II, and III.
E Fragments II, III, and IV.
F All four fragments will compile.

QUESTION 24
Given:

- f is a reference to a valid java.io.File instance
- fr is a reference to a valid java.io.FileReader instance
- br is a reference to a valid java.io.BufferedReader instance

And:

```
34.  String line = null;
35.
36.  // insert code here
37.    System.out.println(line);
38.  }
```

Which code, inserted at line 36, will loop through a text file and output a line at a time from the text field?

A `while((line = f.read()) != null) {`
B `while((line = fr.read()) != null) {`
C `while((line = br.read()) != null) {`
D `while((line = f.readLine()) != null) {`
E `while((line = fr.readLine()) != null) {`
F `while((line = br.readLine()) != null) {`

Calendar NumberFormat
console

QUESTION 26
Given:

```
12. NumberFormat n = new NumberFormat();
13. n.setMaximumFractionDigits(2);
14. System.out.println((String) n.format(765.4321));
```

No se puede hacer new

What is the result?

A 765.43
B 65.4321
C 765.4321
D Compilation fails.
E An exception is thrown at runtime.

QUESTION 28

Which regex pattern finds both 0x4A and 0X5 from within a source file?

A 0[xX][a-fA-F0-9]
B 0[xX](a-fA-F0-9)
C 0[xX]([a-fA-F0-9])
D 0[xX]([a-fA-F0-9])+ ✓ 1+
E 0[xX]([a-fA-F0-9])? ✗ 0-1

Section 4: Concurrency

QUESTION 30
Given:

```
5. public class Pins implements Runnable {
6.   public static void main(String[] args) {
7.     Pins p = new Pins();
8.     Thread t1 = new Thread(p);
9.     Thread t2 = new Thread(p);
10.    t1.start();
11.    t2.start();
12.    t1.start();
13.  }
14.  public void run() { System.out.print("x"); }
15. }
```

✗

What is the result?

A x
B xx
C xxx
D Compilation fails.
E The code runs with no output.
F An exception is thrown at runtime. ✓

QUESTION 32
Given:

```
5. class Order implements Runnable {
6.   public void run() {
7.     try { Thread.sleep(2000); } catch (Exception e) { }
8.     System.out.print("in "); 1 2
9.   }
10.  public static void main(String [] args) {
11.    Thread t = new Thread(new Order());
12.    t.start();
13.    System.out.print("pre "); 1 2
14.    try { t.join(); } catch (Exception e) { }
15.    System.out.print("post "); 3
16. } }
```

Which two can possibly result? (Choose two.)

A in pre
B pre in
C in post pre
D in pre post
E pre in post
F pre post in

QUESTION 34
Given:

```
5. class NoGo implements Runnable {
6.   private static int i;
7.   public synchronized void run() {
8.     if (i%10 != 0) { i++; }
9.     for(int x=0; x<10; x++, i++)
10.      { if (x == 4) Thread.yield(); }
11.  }
12.  public static void main(String [] args) {
13.    NoGo n = new NoGo();
14.    for(int x=0; x<101; x++) {
15.      new Thread(n).start();
16.      System.out.print(i + " ");
17. } } }
```

Which is true?

A The output can never contain the value 10.
B The output can never contain the value 30.
C The output can never contain the value 297.
D The output can never contain the value 820.
E Making the run method un-synchronized will NOT change the possible output.

Section 5: OO Concepts

QUESTION 36
Which set of characteristics would be considered the most desirable in the design of an object oriented software program?

A low coupling and low cohesion
B low coupling and high cohesion
C tight coupling and low cohesion
D tight coupling and high cohesion

QUESTION 38
Given:

```
4. class Slug {
5.   static void crawl() { System.out.print("crawling "); }
6. }
7. public class BananaSlug extends Slug {
8.   public static void main(String[] args) {
9.     Slug[] sa = { new Slug(), new BananaSlug() };
10.    for(Slug s: sa)
11.      crawl();
12.  }
13.  static void crawl() { System.out.print("shuffling "); }
14. }
```

What is the result?

A crawling crawling
B crawling shuffling
C shuffling shuffling
D Compilation fails
E An exception is thrown at runtime.

QUESTION 40
Given:

```
4. public class Utility {
5.   public static void main(String[] args) {
6.     System.out.print(x + " ");
7.     new Utility().go(x);
8.     System.out.println(x);
9.   }
10.  private void go(int x) {
11.    x += 5;
12.  }
13.  int x = 7;
14. }
```

What is the result?

A 7 5
B 7 7
C 7 12
D Compilation fails
E An exception is thrown at runtime

QUESTION 42
Given:

```
4. class Gadget {
5.   Gadget openStuff() { s = s + "g "; return this; }
6.   static String s = "";
7. }
8. public class Opener extends Gadget {
9.   public static void main(String[] args) {
10.    Gadget g1 = new Gadget();
11.    Gadget g2 = new Opener();
12.    g1.openStuff();
13.    g2.openStuff();
14.    System.out.println(s);
15.  }
16.  Opener openStuff() { s = s + "o "; return this; }
17. }
```

What is the result?

A g g
B g o
C o g
D o o
E Compilation fails
F An exception is thrown at runtime

QUESTION 44
A programmer wants to develop an application in which Fizzlers are a kind of Whoosh, and Fizzlers also fulfill the contract of Oompahs. In addition, Whooshes are composed with several Wingits.
Which code represents this design?

A
```
class Wingit { }
class Fizzler extends Oompah implements Whoosh { }
interface Whoosh {
Wingits [] w;
}
class Oompah { }
```

B
```
class Wingit { }
class Fizzler extends Whoosh implements Oompah { }
class Whoosh {
Wingits [] w;
}
interface Oompah { }
```

C
```
class Fizzler { }
class Wingit extends Fizzler implements Oompah { }
class Whoosh {
Wingits [] w;
}
interface Oompah { }
```

D
```
interface Wingit { }
class Fizzler extends Whoosh implements Wingit { }
class Wingit {
Whoosh [] w;
}
class Whoosh { }
```

b equals(a) → a.hashCode() = b hashCode()

Section 6: Collections / Generics

QUESTION 46

If a class X correctly overrides equals() and hashCode(), and if a and b are valid references to instances of class X, which two are true? (Choose two.)

A If a.equals(b) is false then b.equals(a) is ALWAYS false. ✓
B If a.hashCode() == b.hashCode() then a.equals(b) is ALWAYS true. ✗
C If b.equals(a) is true, then a.hashCode() is ALWAYS == to b.hashCode(). ✓
D If a.equals(b) is false, then a.hashCode() will NOT be == to b.hashCode(). ✗
E The class's equals method could be:

```
public boolean equals(X myX) {
    return y.equals(myX.y);
  }
```

→ Object

QUESTION 48

Given:

```
1. import java.util.*;
2. class SubGen {
3.   public static void main(String [] args) {
4.     // insert code here
5.   }
6. }
7. class Alpha { }
8. class Beta extends Alpha { }
9. class Gamma extends Beta { }
```

And the four code fragments:

```
s1.  ArrayList<? extends Alpha> list1 = new ArrayList<Gamma>();
s2.  ArrayList<Alpha> list2 = new ArrayList<? extends Alpha>();
s3.  ArrayList<? extends Alpha> list3 = new ArrayList<? extends Beta>();
s4.  ArrayList<? extends Beta> list4 = new ArrayList<Gamma>();  ArrayList<? extends Alpha>
list5 = list4;
```

Which, inserted independently at line 4, allow the code to compile?

A Only s1
B Only s3 ✗
C Only s1 and s3 ✗
(D) Only s1 and s4
E Only s1, s3, and s4 ✗
F All of the codes will compile. ✗

QUESTION 50
Given:

```
2. class Marjoram {
3.   public static void main(String [] args) {
4.     Marjoram g = new Marjoram();
5.     g.go(1);
6.   }
7.   <A extends Alpha> Alpha go(int i) {
8.     if (i == 1) return new Alpha();
9.     else return new Beta();
10.  }
11. }
12. class Alpha { }
13. class Beta extends Alpha { }
```

→ Definição método genérico

<A extends Alpha>
↓
Retorno

What is the result?

(A) The code compiles.
B Compilation fails due to multiple errors.
C Compilation fails due only to an error on line 7.
D Compilation fails due only to an error on line 8.
E Compilation fails due only to an error on line 9.

QUESTION 52
Given:

```
4. import java.util.*;
5. class Looking {
6.   public static void main(String[] args) {
7.     String[] sa = {"d", "c", "a", "b" };
8.     int x = Arrays.binarySearch(sa, "b");
9.     Arrays.sort(sa);
10.    int y = Arrays.binarySearch(sa, "b");
11.    System.out.println(x + " " + y);
12.  }
13. }
```

Which two results are possible? (Choose two.)

A 7 0
(B) 7 1
C 7 3
D -1 0
(E) -1 1
F -1 3

Section 7: Fundamentals

QUESTION 54

Given two files:

```
1. package x;
2. public class X {
3.   // insert code here
4. }
```

```
 7. package x;
 8. public class Find4 {
 9.   public static void main(String [] args) {
10.     X myX = new X();
11.     myX.doX();
12.   }
13. }
```

And the four methods:

```
I.   public static void doX() { System.out.print("doX 1 "); }
II.  static void doX() { System.out.print("doX 2 "); }
III. protected static void doX() { System.out.print("doX 3 "); }
IV.  private static void doX() { System.out.print("doX 4 "); }
```

Which methods, inserted independently at line 3, will compile?

A Only method I.
B Only methods I and II.
C Only methods I and III.
D Only methods II and III.
E Only methods I, II, and III
F All all the methods will compile.

QUESTION 56
Given:

```
1. class Flibitz {
2.   public static void main(String [] args) {
3.     int grop = 7;
4.     new Flibitz().go(grop);
5.     System.out.print(grop);
6.   }
7.   void go(int grop) {
8.     if(++grop > 7) grop++;
9.     System.out.print(grop);
10.  }
11. }
```

What is the result?

A 77
B 79
C 97
D 99
E Compilation fails.
F An exception is thrown at runtime.

QUESTION 58
A programmer wants to work from a directory that contains: - A subdirectory named jarDir that contains a JAR file called MyJar.jar. - A file named Test.java that uses MyJar.jar. Which two will allow the programmer to compile the program? (Choose two.)

A Invoke javac -classpath jarDir/MyJar.jar Test.java
B Invoke javac -CLASSPATH jarDir/MyJar.jar Test.java
C Add jarDir to the CLASSPATH and invoke javac Test.java
D Add jarDir/MyJar.jar to the CLASSPATH and invoke javac Test.java

QUESTION 60
Given:

```
3. public class Doctor {
4.   public static void main(String[] args) {
5.     String s = "";
6.     int x = 2;
7.     if((7 > (4*2)) ^ (5 != 4))   s += "1st ";
8.     if((5 < 7) ^ (7 > 5))   s += "2nd ";
9.     if(((4 * x++) < 9) ^ (x > 3)) s += "3rd ";
10.    System.out.println(s);
11.  }
12. }
```

What is the result?

A 1st
B 2nd
C 3rd
D 1st 2nd
E 1st 3rd
F 2nd 3rd
G No output is produced