

Note: Correct responses are based on Java, J2sdk v 5.0, from Sun Microsystems, Inc. All provided code segments are intended to be syntactically correct, unless otherwise stated (i. e. `error` is an answer choice) and any necessary Java 2 Standard Packages have been imported. Ignore any typographical errors and assume any undefined variables are defined as used.

QUESTION 1

$$11011_2 + 101_4 = ?$$

- A. 110110_2 B. 101010_2 C. 101100_2 D. 230_4 E. more than one of these

QUESTION 2

What is output by the code to the right?

- A. 2 B. 5 C. 2.0 D. 5.0 E. 16

```
int x = 14, y = 3;
double z = x / 3 % 2 + 17 % y;
out.println(z);
```

QUESTION 3

What is output by the code to the right?

- A. MONSTERMASH B. MONSTERMONSTER
C. MASHMASH D. MASHMONSTER E. MASHMASHMASH

```
String s = "MONSTER";
String t = "MASH";
s = t;
out.println(s + t);
```

QUESTION 4

What is output by the code to the right?

- A. abxye B. abxyde
C. abcxxy D. abcxxye E. abcdxy

```
StringBuffer sb = new
    StringBuffer("abcde");
sb.replace(3,4,"xy");
out.println(sb);
```

QUESTION 5

What is output by the code in line 1?

- A. 50 B. 45 C. 55 D. 20 E. 40

```
int x = 0, y = 0;
for(int i = 4; i >= 0; i--)
    for(int j = 0; j < 5; j++) {
        x += i;
        y++;
    }
out.println(x);           // line 1
out.println(y);           // line 2
```

QUESTION 6

What is output by the code in line 2?

- A. 45 B. 20 C. 25 D. 30 E. 50

QUESTION 7

What is output by the code to the right?

- A. 0 B. 1
C. 4 D. 8 E. infinite loop

```
int a[] = {1,2,1,2,1,2,1,2};
int i = 0, s = 0;
while(a[i++]%2 == a[i%2])
    s++;
out.println(s);
```

QUESTION 8

What is the value of `check("2FAST4U")`?

- A. 2FAST4U B. 2FASTXUZZ
C. 2FAST4UZ D. 2FASTXUZ E. ZFASTXZ

```
public static String check(
    String s) {
    String a = s;
    for(int i=0;i<s.length();i++)
        switch(s.charAt(i)) {
            case 'A': case 'T': break;
            case 'S': case 'U': break;
            case '4': a = a.replace(
                a.charAt(i),'X'); break;
            default: a += "Z";
        }
    return a;
}
```

QUESTION 9

Which of the following, if used as a parameter, would return a `String` with exactly three `Z`'s?

- A. "ASK_ME" B. "TAKS"
C. "TAXES" D. "DALLAS" E. "SMART"

QUESTION 10																
What is output by the code to the right?	<code>out.println(21 / 2 + 14 * 3 % 7);</code>															
A. 1 B. 10 C. 20.5 D. 12 E. 12.5																
QUESTION 11																
What is output by the code to the right?	<code>int x = 21, y = 16, z; z = x%y > 5 ? x/5 : y/5; out.println(z);</code>															
A. 3 B. 4 C. 2 D. 5 E. 0																
QUESTION 12																
What is output by the code to the right?	<code>out.println(17 5);</code>															
A. 0 B. 22 C. 21 D. 12 E. 1																
QUESTION 13																
What is output by the code to the right?	<code>int[] a = {1,2,3,4,5,6}; for(int i : a) { i++; out.print(i); }</code>															
A. 125 B. 123456 C. 246 D. 234567 E. runtime error																
QUESTION 14																
What is output by the code to the right?	<code>String e = "e", c = "c"; out.println(c.compareTo(e));</code>															
A. 0 B. -2 C. 1 D. -1 E. 2																
QUESTION 15																
What is output by the code in line 1?	<code>String s = "PIRATES"; String[] t = s.split("[AEIOU]"); out.println(t[2]); // line 1 out.println(t.length); // line 2</code>															
A. S B. I C. R D. A E. T																
QUESTION 16																
What is output by the code in line 2?																
A. 1 B. 2 C. 3 D. 4 E. 5																
QUESTION 17																
What will be returned by the call <code>tester(1)</code> ?	<code>public static int tester(int n) { if(n <= 1) return 2; else return tester(n/2)+tester(n-1); }</code>															
A. 2 B. 0 C. 3 D. 1 E. -1																
QUESTION 18																
What will be returned by the call <code>tester(8)</code> ?																
A. 10 B. 36 C. 26 D. 11 E. 24																
QUESTION 19																
Which statement is represented by the truth table to the right?	<table><tr><th>a</th><th>b</th><th>c</th></tr><tr><td>true</td><td>true</td><td>true</td></tr><tr><td>true</td><td>false</td><td>true</td></tr><tr><td>false</td><td>true</td><td>true</td></tr><tr><td>false</td><td>false</td><td>false</td></tr></table>	a	b	c	true	true	true	true	false	true	false	true	true	false	false	false
a	b	c														
true	true	true														
true	false	true														
false	true	true														
false	false	false														
A. <code>c = a && b !a</code> B. <code>c = a && !b</code> C. <code>c = (a b) && !a</code> D. <code>c = a b && !a</code> E. more than one of these																
QUESTION 20																
Given the declarations to the right, which value of <code>n</code> would cause an exception to be thrown at runtime?	<code>int y = 3, n; int []x = new int[49]; for(int i = 0; i < n; i++) out.println(x[i]);</code>															
A. <code>y+7</code> B. <code>50*y</code> C. 0 D. <code>47/y</code> E. <code>47+y</code>																

QUESTION 21

Which of the following will **not** cause a compile error?

- I. `word.toString();`
 II. `word.compareTo("State");`
 III. `word.equals("Winner");`

- A. I only B. I and III only C. II and III only
 D. II only E. I, II and III

```
Object word = new String("UIL CS");
```

QUESTION 22

What are the contents of array `j` after the code to the right executes?

- A. `[8, 6, 4, 2, 0]` B. `[6, 4, 2, -7, 0]`
 C. `[10, 8, 6, 4, 0]` D. `[10, 8, 6, 4, 2]`
 E. `[-1, 8, 6, 4, 2]`

```
int[] j = {-1, -3, -5, -7, 0};
int[] k = {2, 4, 6, 8, 10};
int i, h = 4;
for(i=0; i<j.length && h > 0; i++)
    j[i] = k[h--];
```

QUESTION 23

What is output by the code to the right?

- A. 3.142 B. 3.1 C. 0003.1
 D. 3.140 E. 003.1

```
final double PI = 3.14159265;
out.printf("%05.1f", PI);
```

QUESTION 24

What is output by the code to the right?

- A. 10 9 10 B. 8 9 10 C. 8 9 8
 D. 9 8 9 E. 9 10 9

```
int x = 3, y = 17, z = 0;
while(z < 3)
    z = (++x < --y) ? z++ : y--;
out.println(x + " " + y + " " + z);
```

QUESTION 25

Which of the following declarations will produce the 2-D array to the right?

- A. `char[][] m = {{ 'H', 'I', '!' }, { 'B', 'O', 'O' }, { 'B', 'Y', 'E' } };`
 B. `String[] m = { "HBB", "IOY", "IOE" };`
 C. `char[][] m = { { 'H', 'B', 'B' }, { 'I', 'O', 'Y' }, { '!', 'O', 'E' } };`
 D. `char[3][3] m = { "HI!", "BOO", "BYE" };`
 E. more than one of these

H	I	!
B	O	O
B	Y	E

QUESTION 26

Which of the following is not a class that implements the `Collection` interface?

- A. `HashSet` B. `LinkedList` C. `ArrayList` D. `TreeSet` E. `TreeMap`

QUESTION 27

What is output by the code in line 1?

- A. 0 B. 5 C. 4 D. 6 E. nothing

```
int [] intArray = {7,5,8,3,9};
out.print(intArray.length); //line 1
```

QUESTION 28

What is output by the code in line 2?

- A. 0 B. 20 C. 32 D. 33 E. 24

```
int sum = 0;
for (int i : intArray)
    sum+=i;
out.print(sum); //line 2
```

QUESTION 29

What is output by the code in line 3?

- A. 3 B. 5 C. 7 D. 8 E. 9

```
Arrays.sort(intArray);
out.print(intArray[2]); //line 3
```

QUESTION 30

What is the value of `q` at line 1?

- A. 5 B. 2 C. 3 D. 0 E. null

QUESTION 31

What is the value of `r` at line 2?

- A. 5 B. 2 C. 3 D. 0 E. null

QUESTION 32

What is output by the code in line 3?

- A. 5 B. 2 C. 3 D. 0 E. null

QUESTION 33

Which of the following could be placed in line 4 to increment `w`'s `x` value by 2?

- A. `w.x += 2;`
 B. `w.x *= 2;`
 C. `x + = 2;`
 D. an `increment(int)` method must be added to class `A` and place `w.increment(2);` in line 4
 E. an `increment(int)` method must be added to class `Wow` and place `w.increment(2);` in line 4

```
public class Wow {
    private int x=2;

    private class A {
        private int x=3;

        public void mix( int x ) {
            int q = Wow.this.x; //line 1
            int r = this.x;      //line 2
        }
    }

    public void mix() {
        A y = new A();
        y.mix(5);
        out.println(y.x);      //line 3
    }
}

----- code from client program -----
Wow w = new Wow();
w.mix();
// line 4
```

QUESTION 34

Which of these replaces `< ** >` to change the item "Amarillo" to "Denton"?

- A. `it.next(); it.next(); it.set("Denton");`
 B. `it.next(); it.set("Denton");`
 C. `cities.set(0, "Denton");`
 D. `cities.set(2, "Denton");`
 E. More than one of these

```
LinkedList<String> cities =
    new LinkedList<String>();
cities.addFirst("Amarillo");
cities.addLast("Lubbock");
cities.addFirst("Austin");
cities.addLast("Houston");
cities.add(2,"Dallas");

ListIterator<String> it =
    cities.listIterator();

< ** >

out.println(cities.poll()); //line 1
```

QUESTION 35

What is the running time of the `addLast()` method for a length `n` `LinkedList`? Choose the most restrictive correct answer.

- A. $O(1)$
 B. $O(n \log n)$
 C. $O(n)$
 D. $O(\log n)$
 E. $O(n^2)$

QUESTION 36

What is output by the code in line 1?

- A. Amarillo B. Lubbock
 C. Austin D. Houston
 E. Dallas

QUESTION 37

Which statement replaces `< ** >` so this code segment will sort the elements of `x` from least to greatest?

- A. `x[mid].compareTo(x[i]) < 0`
- B. `x[mid].compareTo(x[i]) > 0`
- C. `x[mid].compareTo(x[i]) == 0`
- D. `x[mid].compareTo(x[i]) < -1`
- E. `x[mid] >= 0`

QUESTION 38

Which best identifies `sort()`?

- A. bubble sort
- B. selection sort
- C. merge sort
- D. quick sort
- E. insertion sort

```
public void sort(Comparable[] x ) {
    int len = x.length;
    for (int i=1; i<len; ++i) {
        int loc1=0, loc2=i-1;
        while (loc1<=loc2) {
            int mid=(loc1+loc2)/2;
            if (< ** > )
                loc1=mid+1;
            else
                loc2=mid-1;
        }

        Comparable temp = x[i];

        for (int j=i; j>loc1; --j)
            x[j] = x[j-1];
        x[loc1] = temp;
    }
}
```

QUESTION 39

What is output by the code in line 1?

- A. class A 1
- B. class A 2
- C. class B 1
- D. class B 2
- E. B 1

```
class A {
    private int x;
    private A() {
        x = 0;
    }
    protected A(int x) {
        this.x = x ;
    }
}

class B extends A {
    static int count;
    public B() {
        super(2);
        count++;
    }
    public String toString() {
        return "" + getClass() + " " + count;
    }
    public static void main (String[] args)
        throws IOException {

        A x = new B();
        out.println(x);                                //line 1
    }
}
```

QUESTION 40

What is output by the code to the right?

- A. One B. dog
- C. One two dog D. two
- E. One.two.dog

```
String[] s = "One.two.dog".split("\\.");
ArrayList<String> r = new
ArrayList<String>(Arrays.asList(s));
String big = Collections.min(r);
out.println(big);
```