

15. The expression at right

- a. will always evaluate to true.
- b. will evaluate to true if either x or y is true.
- c. will evaluate to true only if both x and y are true.
- d. none of the above

`(x || y) && x`

16. What is the output of the code segment at right?

- a. 0
- b. 4
- c. 8
- d. 48
- e. none of the above

```
int x = 0;
ArrayList<Integer> list = new
ArrayList
    <Integer>();
for (int i = 1; i < 5; i++)
    list.add(i);
for (int i : list)
    x *= 2;
out.println(x);
```

17. What is the output of the code segment at right?

- a. 00000
- b. 01010
- c. 10101
- d. 891011
- e. 1000100110101011

```
int x = 8, y, z;
for (y = 0; y < 4; y++)
{
    z = (x ^ y);
    out.print (z);
}
```

18. What is the output of the code segment at right?

- a. true
- b. false
- c. error *message*

```
int x = 8, y = 16;
out.println(x < y && x / 0 < y);
```

19. What is the output of the code segment at right? a. true b. false c. falsetrue d. falsefalse	<pre>public class Main { public static void main(String[] args) { boolean[] flags = new boolean[3]; System.out.println(flags[1]); } }</pre>
20.. What is the output of the code segment at right? a. 0 b. 1 c. 2 d. 10 e. none of the above	<pre>int arr [] = new int[5]; int n = 1, sum = 0; for (int i = 0; i < 5; i++){ arr[i] = n; while (n >= 0){ sum += arr[i]; n--; } } out.print (sum);</pre>
21. Given the code segment at right, which of the following statements is true. a. When executed, the output will be 9. b. When executed, there will be no output. c. "y == 5" will not be evaluated due to short-circuit evaluation. d. The code will generate a syntax error. e. More than one of the above statements are true.	<pre>int x = 4, y = 5; if (x < 4 y == 5) out.print (x + y);</pre>
22. What is the output of the code segment at right when called with m(10)? a. -101234610 b. 01234610 c. 1234610 d. 012346 e. error	<pre>public static void m(int x){ if (x > 0) m(x / 2 + 1); out.print(x); }</pre>
23. What is the output of the code at right? a. 19 14 b. 16 c. 25 d. 30	<pre>public class Main { public static void main(String[] args) { int result = (int)(7 + 3 * 2.5); System.out.println(result); } }</pre>

24. What is output by line 5 when the code at right is executed?

- a. 4
- b. 8
- c. 16
- d. 32
- e. none of the above

```
int x = 4, y = 8;
int z = y > x ? y : y * 2;
x = z > y ? x : y;
out.println (z);           // line 5
out.println (x);           // line 6
```

25. What is output by line 6 when the code at right is executed?

- a. 4
- b. 8
- c. 16
- d. 32

26. $F_{16} =$

- a. 5
- b. 6
- c. 15
- d. 16
- e. 17

27. Which of the following could be the output of the code segment at right?

- a. 7 32
- b. ~~-7 -32~~ -33 16
- c. -7 32
- d. ~~7 -32~~ 33 -16

```
String s1 = "A";
String s2 = "b";
String s3 = "1";
out.print (s1.compareTo(s2)+ " "
+ s1.compareTo (s3));
```

28. What is the output of the code segment at right?

- a. 0
- b. 7
- c. 10
- d. 12

```
public class Main {
    public static int mult(int
a, int b) {
        if (b == 0) return 0;
        return a + mult(a, b -
1);
    }

    public static void
main(String[] args) {

        System.out.println(mult(3, 4));
    }
}
```

29. What is the output of the code segment at right?

- a. 8
- b. 10
- c. 12
- d. 16
- e. none of the above

```
int[] arr = {1, 3, 5, 7};
int sum = 0;
for (int i = 1; i < arr.length; i += 2) {
    sum += arr[i];
}
System.out.println(sum);
```

30. Assuming *i* and *j* are of type *int* and *x* and *y* are of type *double*, which of the following is a valid call of the method at right?

- a. `m(i * j)`
- b. `m(i * x)`
- c. `m(x * y)`
- d. all of the above
- e. 2 of the above

```
public static double m (int num){
    return num - 1;
}
```

31. What is the output of the code segment at right?

- a. true
- b. false
- c. 2468
- d. nothing will be printed

```
int []list = {2, 4, 6, 8};
boolean test = true;
for (int i = 0; i < list.length; i++)
    test = test && (list[i] % 2 == 1);
out.print (test);
```

32. In order for the code at right to compile, what data type could num be?

- a. Integer
- b. double
- c. both of the above

```
num = new Integer(10);
```

33. Using Big-O analysis, which of the following best estimates how many asterisks will be printed when the code at right is executed?

- a. $O(n)$
- b. $O(2n)$
- c. $O(n^2)$
- d. $O(n^4)$
- e. $O(2)$

```
for(int i = 0; i < n; i++){  
    for(int j = 0; j < n; j++){  
        out.print("***");  
    }  
}
```

34. What is the output of the computation at right?

- a. 32
- b. 33
- c. 11121
- d. 100001

```
int one =  
Integer.parseInt("10111", 2);  
int two =  
Integer.parseInt("1010", 2);  
  
out.println(one + two);
```

35. Which of the following resembles the table created by the code at right?

a.

0	2	4
1	4	16
2	8	32

b.

0	1	2
1	2	4
2	4	16

c.

0	1	4
1	2	5
2	3	6

d.

0	1	8
1	2	9
2	3	10

```
int[][] table = new int [3][3];  
for (int i = 0; i < 3; i++)  
    for (int j = 0; j < 3; j++)  
        table[i][j] = i + (int) Math.pow(j,3);
```

36. If *class C* is to inherit features from both *class A* and *class B*, it can be defined as follows:

- a. `public class C extends A extends B`
- b. `public class C extends A, B`
- c. `public class C extends A, extends B`
- d. `public class C extends A && extends B`
- e. None of the above. A class cannot extend two other classes.

37. What is the output of the code segment at right?

- a. hhhh
- b. hhihig
- c. hhhhihig
- d. high

```
String str= "high";  
int i = 0;  
for (; i < str.length ( ) ;i++)  
    out.print (str.substring(0,i));
```

38. Which of the statements at right will cause an error?

- a. I
- b. II
- c. III
- d. more than one of the above
- e. none of the above

```
I.    byte b = 20;  
II.   float f = 3.5;  
III.  short s = 110
```

39. A binary tree with 6 levels, in which each node (except the nodes in the last level) has 2 children, has _____ nodes.

(Free Response: Write your answer on the blank on the answer sheet.

40. What is the output of the code segment at right?

(Free Response: Write your answer on the blank on the answer sheet.)

```
String str = "one\n"+  
            "two\n\tthree";  
String[] nums =str.split("\\s+");  
out.println(nums.length);
```