

The time limit for the contest is 45 minutes. Each correct question is awarded 6 points; no points are given or subtracted if unanswered; 2 points are deducted for an incorrect answer.

## Best of Texas 2015-16 Computer Science Test 2

<p>1. <math>AB_{16} =</math></p> <ul style="list-style-type: none"><li>a. <math>10101011_2</math></li><li>b. <math>10101001_2</math></li><li>c. <math>10011001_2</math></li><li>d. <math>10011011_2</math></li><li>e. <math>11101011_2</math></li></ul>	
<p>2. How many asterisks are output by the code at right?</p> <ul style="list-style-type: none"><li>a. 1</li><li>b. 10</li><li>c. 11</li><li>d. The code will result in an error.</li></ul>	<pre>for (int i = 10; i &gt;= 0; i--)     out.print("*");</pre>
<p>3. What is the output of the code at right?</p> <ul style="list-style-type: none"><li>a. 0</li><li>b. 3</li><li>c. 3.0</li><li>d. 4</li><li>e. 4.0</li></ul>	<pre>int a = 16, b = 3; double c = a / 3 % 2 + 11 % b; out.print (c);</pre>
<p>4. What is the output of the code at right?</p> <ul style="list-style-type: none"><li>a. hobnob</li><li>b. bonboh</li><li>c. ob</li><li>d. oh</li><li>e. bhonob</li></ul>	<pre>String s1 = "hobnob"; String s2 = "bonohb"; String s3; for (int i = 1; i &lt; 6; i++){     s3 = s1.substring(i-1);     s2 = s3; } out.print(s2);</pre>
<p>5. What is the output of the code at right?</p> <ul style="list-style-type: none"><li>a. 24 45</li><li>b. 24 15</li><li>c. 1 45</li><li>d. 12 45</li><li>e. 12 15</li></ul>	<pre>int a = 102; int b = 15; a %= b * 3; out.print(a + " " + b);</pre>

6. Which of the following statements is true?

- a. c is false when a is false and b is true
- b. c is false when a is true and b is false
- c. c is always false
- d. c is always true

```
boolean a, b, c;  
c = !a || a && b;
```

7. What is the output of the code at right?

- a. 7
- b. 50
- c. 64
- d. 100
- e. 128

```
int x = 1;  
do  
    x *= 2;  
while (x < 100);  
out.print(x);
```

8. What is the output of the code at right?

- a. 1
- b. 16
- c. -16
- d. 17
- e. -17

```
int sum = 0;  
for (int i = 15; i >= 0; i--)  
    sum++;  
out.print(sum);
```

9. What is the output of the code at right?

- a. 64
- b. 64.0
- c. 81
- d. 81.0
- e. 7

```
out.print(Math.pow(4, 3));
```

10. Of the 8 possible combinations of values for x, y, and z, how many will result in b being set to true?

- a. 2
- b. 3
- c. 5
- d. 6
- e. 8

```
boolean x, y, z;  
//code to initialize x, y, and z  
boolean b = (x || y && z);
```

11. What is the output of the code at right?

- a. 4abc22
- b. 4abcd
- c. 4abcc
- d. eabcd
- e. eabc22

```
int a = 6;
int b = 2;
String c = "abc";
out.print(a - b + c + b + b);
```

12. What is returned when the method at right is called with m(2)?

- a. 2
- b. 6
- c. 20
- d. 30
- e. 120

```
public static int m(int i){
    if (i < 1)
        return 1;
    else
        return m(i-1) * i;
}
```

13. What is returned when the method at right is called with m(4)?

- a. 4
- b. 8
- c. 24
- d. 30
- e. 160

14. What is the output of the code at right?

- a. 9
- b. 11
- c. 12
- d. 13
- e. 14

```
int[] ar = {1, 2, 3, 4, 5};
ar[1] += ar[1] + 2 + ar.length;
out.print(ar[1]);
```

15. What is the output of the code at right?

- a. 2
- b. 5
- c. 10
- d. 15
- e. 1.7

```
out.print(17/3 | 10);
```

16. What is output when the method at right is called with m(6,11)?

- a. 6+11=17
- b. 6 + 11 = 17
- c. 6+11=611
- d. 6 + 11 = 611
- e. An error will result.

```
public static void m (int a, int b){  
    out.print(a + "+" + b + "=" + (a + b));  
}
```

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

- a. 0
- b. 1
- c. 01
- d. 10
- e. 11

```
int x = 0, y = 1;  
if (x < y)  
    out.print(x);  
else  
    out.print(y);
```

18. If a, b, and c are integers, which of the following statements will correctly calculate the average of a, b, and c?

- a. int avg = (a+b+c)/3;
- b. int avg = (double) (a+b+c)/3;
- c. double avg = (double) (a+b+c)/3;
- d. double avg = (a+b+c)/3.0;
- e. more than one of the above

19. What is the output of the method at right when called with m(10)?

- a. 0
- b. 10
- c. 210
- d. 12510
- e. 02105

```
public static void m(int n){  
    if (n > 0){  
        m (n/2);  
        out.print (n);  
    }  
}
```

20. In the code at right, what could replace <missing code> so that true is printed?

- a. 0
- b. Integer.MIN\_VALUE
- c. Integer.MAX\_VALUE
- d. more than one of the above

```
int x = Integer.MAX_VALUE;  
x++;  
out.print(x == <missing code>);
```

21. What is returned when the method at right is called with m(17,4)?

- a. 0
- b. 1
- c. 2
- d. 4
- e. 17

```
public static int m (int x, int y){  
    if (x%y == 0)  
        return y;  
    else  
        return m(y, x % y);  
}
```

22. What is returned when the method at right is called with m(23,46)?

- a. 0
- b. 1
- c. 2
- d. 23
- e. 46

23. What is the output of the code at right?

- a. 11
- b. 12
- c. 19
- d. 20
- e. 27

```
out.print(20 ^ 15);
```

24. What is the output of the code at right?

- a. 13
- b. 14
- c. 15
- d. 18
- e. 19

```
int a = 5;  
double b = 4.6;  
a += b * 2;  
out.print(a);
```

25. What is the output of the code at right?

- a. 89
- b. 90
- c. 98
- d. 187
- e. 890

```
int i = (100<<3)+90;
out.print(i);
```

26. What is the output of the code at right?

- a. 0
- b. 1
- c. 4
- d. 12
- e. 15

```
int a = 0;
int b = 8;
int i = 0;
while (b > 0){
    for (i = 0; i < 10; i++){
        if (a < i){
            a += i;
            break;
        }
        b--;
        if (b == i)
            continue;
    }
    out.print (a);
}
```

27. What is the output of the code at right?

- a. 5
- b. 10
- c. 12
- d. 20
- e. 25

```
int a = 0, b = 10;
Integer c;
while (b > 0){
    a += b;
    b = b >> 2;
}
c = new Integer (a);
out.print (c.intValue());
```

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

- a. 0 0
- b. 25 15
- c. 8 50
- d. 15 25
- e. 25 50

```
int i = 15;
int j = 25;
i = i^j;
j = i^j;
i = i^j;
out.print(i + " " + j);
```

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

- a. true true
- b. true false
- c. false true
- d. false false

```
String a = "Computer Science";  
String b = new String ("Computer Science");  
out.print(a.equals(b) + " " + (a == b));
```

30. What is the output of the code at right?

- a. 10
- b. 20
- c. 30
- d. 40
- e. 60

```
int a = 30, b = 20, c = 10;  
out.print(a | b & c);
```

31. Which of the following could cause a compile-time error, following the declaration at right?

- a. String st = ob;
- b. ob.toString();
- c. ob.compareTo("person");
- d. both A and B
- e. both A and C

```
Object ob = new String("animal");
```

32. What is the output of the code at right?

- a. 12
- b. 12.5
- c. 13
- d. compile-time error
- e. run-time error

```
int x = 10;  
x += 2.5;  
out.print(x);
```

33. Which of the following could replace `<missing code>` to allow `Name` objects to be properly constructed?

- a. 

```
public Name (String myFirst,
String myLast){
    first = myFirst;
    last = myLast;
}
```
- b. 

```
public Name (String first,
String last){
    first = first;
    last = last;
}
```
- c. 

```
public Name (String myFirst,
myLast){
    first = myFirst;
    last = myLast;
}
```
- d. A or B
- e. A or C

```
public class Name {
    <missing code>
    private String first, last;
}
```

34. If `<missing code>` is filled in correctly, which of the following builds a `Name` object representing John Doe?

- a. `Name n = new Name("John", "Doe");`
- b. `Name n = ("John", "Doe");`
- c. `Name n ("John", "Doe");`
- d. A or B
- e. B or C

35. Which of the following is not a keyword in Java?

- a. `extends`
- b. `import`
- c. `size`
- d. `protected`
- e. `try`

36. What is the output of the code at right?

- a. 2
- b. 3
- c. 4
- d. 5
- e. 6

```
out.print("Mississippi".indexOf('s'));
```

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

- a. `true true`
- b. `true false`
- c. `false true`
- d. `false false`

```
String st = "hello";
out.print(st.matches("o.*"));
out.print(st.matches("ello"));
```

38. What is the output of the code at right?

- a. true
- b. false
- c. hi
- d. hello

```
String s1 = "hi";
boolean ob = s1 instanceof Object;
boolean st = s1 instanceof String;
if(ob && st)
    s1 = "hello";
out.print(s1);
```

39. What is the output of the code at right?

- a. 1
- b. 5
- c. 6
- d. 7
- e. 9

```
int a = 10;
int b = 1;
while (b < a){
    b++;
    a--;
}
out.print (a);
```

40. What is the Big O of the code in *Line 1* at right? Choose the smallest correct answer.

- a.  $O(n)$
- b.  $O(1)$
- c.  $O(\log n)$
- d.  $O(n^2)$

```
ArrayList ar = new ArryList();
ar.add("ab");
ar.add("bc");
ar.add("cd");
ar.add(2, "de");
```

Best of Texas 2015-16 Computer Science Test 2 Answer Key

- |     |   |     |   |
|-----|---|-----|---|
| 1.  | A | 21. | B |
| 2.  | C | 22. | D |
| 3.  | C | 23. | E |
| 4.  | C | 24. | B |
| 5.  | E | 25. | E |
| 6.  | B | 26. | E |
| 7.  | E | 27. | C |
| 8.  | B | 28. | B |
| 9.  | B | 29. | B |
| 10. | C | 30. | C |
| 11. | A | 31. | E |
| 12. | A | 32. | A |
| 13. | C | 33. | A |
| 14. | B | 34. | A |
| 15. | D | 35. | C |
| 16. | A | 36. | A |
| 17. | A | 37. | D |
| 18. | E | 38. | D |
| 19. | D | 39. | B |
| 20. | B | 40. | A |

# Computer Science Answer Sheet

- |           |           |           |           |
|-----------|-----------|-----------|-----------|
| 1. _____  | 11. _____ | 21. _____ | 31. _____ |
| 2. _____  | 12. _____ | 22. _____ | 32. _____ |
| 3. _____  | 13. _____ | 23. _____ | 33. _____ |
| 4. _____  | 14. _____ | 24. _____ | 34. _____ |
| 5. _____  | 15. _____ | 25. _____ | 35. _____ |
| 6. _____  | 16. _____ | 26. _____ | 36. _____ |
| 7. _____  | 17. _____ | 27. _____ | 37. _____ |
| 8. _____  | 18. _____ | 28. _____ | 38. _____ |
| 9. _____  | 19. _____ | 29. _____ | 39. _____ |
| 10. _____ | 20. _____ | 30. _____ | 40. _____ |

# correct x 6 \_\_\_\_\_

# incorrect x 2 - \_\_\_\_\_

\_\_\_\_\_