

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 2019-20 Computer Science Test 2

1. $3546_8 + 7642_8 =$

- a. 6053_{16}
- b. 9188_{16}
- c. 12300_8
- d. 13410_8
- e. 12207_8

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

- a. .1
- b. .3
- c. 1
- d. 1.3
- e. 3

```
int x = 4;
int y = 3;
int z = (x + y * y) % 10;
out.print (z);
```

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

- a. 10
- b. 11
- c. 40
- d. 45
- e. 46

```
int score = 0;
for (int i = -2; i <= 20; i++)
    score +=2;
out.print (score);
```

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

- a. true
- b. false
- c. U
- d. UIL
- e. null

```
Boolean[] UIL = new Boolean[3];
out.print(UIL[1]);
```

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

- a. ou
- b. iou
- c. aeiou
- d. vowel
- e. error

```
String vowel =
    "aeiou".substring(3,5);
out.print (vowel);
```

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

- a. 4 b. 5.5 c. 40 d. 47

```
out.print (47-26/4*1-1);
```

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

- a. 14
b. 15
c. 14.6
d. error

```
int x = 12;  
x += 2.6;  
out.print(x);
```

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

- a. 20
b. 25
c. 30
d. error

```
int j = 0;  
int k;  
for (k = 0; k < 5; k++)  
    j += k * 2;  
out.print (j + k);
```

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

- a. 2
b. 10
c. 250
d. 1024
e. 100000

```
int j = 1000;  
j = j >> 2;  
out.print (j);
```

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

- a. -4
b. -4.0
c. -4.5
d. -5
e. -5.0

```
double d = -4.2;  
out.print (Math.ceil(d));
```

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

- a. -1
- b. 0
- c. 1
- d. 5
- e. error

```
int num = 0, i = 5;
while (i > 0){
    num++;
    i--;
}
out.print (i);
```

12. What is output by Line 1 at right?

- a. blue green
- b. dark green
- c. light green
- d. yellow green
- e. light blue

```
class Color{
    void tint() {print("blue
green");}
    void hue() {print("yellow
green");}
    void print (String st){
        out.print(st);
    }
}
```

```
class Blues extends Color{
    void tint() {print ("dark
green");}
}
```

13. What is output by Line 2 at right?

- a. blue green
- b. dark green
- c. light green
- d. yellow green
- e. light blue

```
class Greens extends Color {
    void hue() {print("light
blue");}
}
```

```
public class Paint {
    public static void main
        (String args[]){
        Color blend;
        blend = new Blues();
        blend.tint();           //Line 1
        blend.hue();           //Line 2

        blend = new Greens();
        blend.tint();           //Line 3
        blend.hue();           //Line 4
    }
}
```

14. What is output by Line 3 at right?

- a. blue green
- b. dark green
- c. light green
- d. yellow green
- e. light blue

15. What is output by Line 4 at right?

- a. blue green
- b. dark green
- c. light green
- d. yellow green
- e. light blue

<p>16. What is the output of the code at right?</p> <ul style="list-style-type: none">a. 033b. 27c. 020d. 0x33e. 0111	<pre>out.print (012 + 021);</pre>
<p>17. What is the output of the code at right?</p> <ul style="list-style-type: none">a. Horse 4.5b. Horse 1.1c. Horse 42.5d. Horse 2.55e. Horse 42.515	<pre>String s1 = "Horse"; double d = 42.515; out.printf ("%s %1.1f", s1, d);</pre>
<p>18. What is the output of the code at right?</p> <ul style="list-style-type: none">a. 1 3b. 3c. 3 5d. 5e. error	<pre>int array[] = {1, 3, 5, 7, 9}; out.print (array [2]);</pre>
<p>19. What is returned by the method call <i>test(1)</i> in the code at right?</p> <ul style="list-style-type: none">a. -1b. 0c. 1d. 4e. 6	<pre>public static int test(int i){ if (i <= 0) return 0; else return 1 + test (i-2); }</pre>
<p>20. What is the output of the code at right?</p> <ul style="list-style-type: none">a. 10b. 11c. 19d. 20e. 100	<pre>int sum = 0; for (int i = 0; i < 10; i++){ for (int j = 0; j < 10; j++){ sum++; if (sum >= 10) break; } } out.print(sum);</pre>

21. What is output by Line 1 at right?

- a. 1
- b. 2
- c. 12
- d. 1234
- e. 234

```
String s1 = "1727374";  
String[] s2 = s1.split("7");  
out.print (s2[1]);          //Line 1  
out.print (s2.length);    //Line 2
```

22. What is output by Line 2 at right?

- a. 1
- b. 2
- c. 3
- d. 4
- e. error

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

- a. 50-20-0
- b. 50-20-2
- c. 50-20-2.5
- d. 30
- e. 27.5

```
int a = 50;  
int b = 20;  
int c = b/a;  
out.print(a + "-" + b + "-" + c);
```

24. What is returned by the method call `m(6)` in the code at right?

- a. 2
- b. 3
- c. 4
- d. 5
- e. 8

```
public static int m (int i){  
    int j = i;  
    j = i-1;  
    i /= 2;  
    return i + j;  
}
```

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

- a. 18
- b. 22
- c. 28
- d. 48
- e. 184

```
int a = 3;
int b = a;
b++;
a *= b + 2;
out.print(a + b);
```

26. Which of the following is not a Java keyword?

- a. byte
- b. sort
- c. transient
- d. volatile
- e. default

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

- a. symbol \\\
- b. symbol "\"
- c. symbol "\\\"
- d. symbol "\\\"
- e. An error will occur.

```
out.print(symbol "\\\"");
```

28. What is returned by the method call Weather.hot(15)?

- a. 14
- b. 16
- c. 14.0
- d. 16.0

```
public class Weather{
    public static double hot(int a)
    {
        return a-1;
    }
    public static double hot(double a)
    {
        return a+1;
    }
}
```

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

- a. [2, 4, 8]
- b. [2, 8]
- c. [2, 6, 10]
- d. [2, 4]

```
Stack<Integer> st;  
st = new Stack<Integer>();  
st.push(2);  
st.push(4);  
st.peak();  
st.push(6);  
st.pop();  
st.push(8);  
st.push(10);  
st.pop();  
st.peak();  
out.print(st);
```

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

- a. 1133
- b. 2244
- c. 1144
- d. 2233
- e. 3333

```
public class A{  
    public static void main  
        (String[] args)  
    {  
        int ar[]={1,2,3,4};  
        int a, b, c;  
        for (a=0; a<2; a++)  
            ar[a]+= a;  
        for (b=0;b<=1;b++)  
            for (c=0;c<=1;c++)  
            {  
                if (a%2==0)  
                    out.print(ar[a]);  
            }  
    }  
}}
```

31. What is the maximum number of levels a binary search tree with 32 elements could have?

- a. 8
- b. 12
- c. 16
- d. 24
- e. 32

32. What elements are contained in the set *set1* following execution of the code at right?

- a. [2, -3]
- b. [2, 2, -3, -3]
- c. [2, 2, 2, 4]
- d. [-1, -2, 3, 4]
- e. []

```
int[] ar = [2, -2, 2, -3, 3, -3];  
Set<Integer> set1 = new  
    HashSet<Integer>();  
for (int i : ar)  
    set1.add(i);  
Set<Integer> set2 = new  
    TreeSet<Integer>();  
for (int i : ar)  
    set2.add(i + 1);  
set1.removeAll(set2);
```

33. What is output by Line 1 at right?

- a. 0
- b. null
- c. 50
- d. There will be no output.
- e. error

```
String whole="109209309409509";  
String[] parts=whole.split("9");  
out.print (parts[4]); //Line 1  
out.print(parts.length);//Line 2
```

34. What is output by Line 2 at right?

- a. 1
- b. 5
- c. 6
- d. error

35. What is returned by the method call *m(1)* in the code at right?

- a. -2
- b. 0
- c. 2
- d. 4
- e. 5

```
public static int m (int i){  
    int num = 0;  
    if(i <=0)  
        num = 2;  
    else  
        num = 2 + m(i-1);  
    return num;  
}
```

36. Which of the following is not automatically initialized to 0 or null?

- a. a local variable
- b. an array element
- c. an instance variable
- d. all are automatically initialized

37. Which of the following best represents array *ar* after execution of the code at right?

- a.

0	0	0	0
0	0	0	0
0	0	0	0
- b.

0	1	2	3
0	1	2	3
0	2	2	3
- c.

0	0	0	0
1	1	1	1
2	2	2	2
- d.

1	2	3	4
1	2	3	4
1	2	3	4

```
int [][] ar = new int[3][4];  
for (int i = 0; i < 3; i++)  
    for (int j = 0; j < 4; j++)  
        ar[i][j] = i;
```

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

- a. c
- b. h
- c. ch
- d. hool
- e. chool

```
public class A {  
    public static void main  
        (String[] args){  
        out.print ("school".charAt(2));  
    }  
}
```

39. The following values are inserted one at a time in the order shown (left to right) into a binary search tree using the traditional insertion algorithm. What is the height of the resulting tree? (The height of a tree is the number of links from the root node to the deepest leaf.)

-5, 6, 15, 8, 17, 32, 8, 9, 10

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

40. What is returned by the method call m(6)?

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

```
public int m (int x){  
    if(x <= 2)  
        return x * 2;  
    else  
        return m(x-2) + m(x-1) + 1;  
}
```

Best of Texas 2019-20 Computer Science Test 2 Answer Key

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

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 - _____
