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 2018-19 Computer Science Test 1

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

   a. 7
   b. 8
   c. 9
   d. 12
   e. error

```
String s = "sixty-one";
int length = s.length( );
out.print(length);
```

2. Given the statements at right, which of the following are valid assignments?

   a. n1 = (int) n2;
   b. n1 = n2;
   c. n1 = (int) n3;
   d. more than one of the above

```
int n1 = 4;
double n2 = 8;
String n3 = "7";
```

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

   a. 2
   b. 8
   c. 9
   d. 012122
   e. 012012012

```
for (int a = 0; a < 3; a ++)
  for (int b = a; b < 3; b++)
    out.print(b);
```

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

   a. 3
   b. 345
   c. 4
   d. 5
   e. none of the above

```
String str = "Computer Science";
out.print (str.indexOf("put"));
```

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

   a. t
   b. y
   c. werty
   d. 4
   e. 5

```
String s1 = "qwerty";
String s2 = "ty";
out.print(s1.indexOf(s2,1));
```

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

   a. 1
   b. 2
   c. 3
   d. 4

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

---

7. The code segment at right could output which of the following values?

   a. -1
   b. 0
   c. 4
   d. more than one of the above

```
Random r = new Random ( ) ;
out.println((int)(r.nextInt (4)));
```

---

8. $165_8 + 510_8 =$

   a. 695_8
   b. 585_8
   c. 605_8
   d. 595_8
   e. 675_8

---

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

   a. 0
   b. 1
   c. 32
   d. There is an error in the code.

```
out.print ('a' /= 2);
```

---

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

    a. no output
    b. 0
    c. null
    d. VariableNotIntitilizedException
    e. syntax error

```
String str;
out.print(str);
```

11. What is the value of x following execution of the code segment at right?

a. 0
b. 3
c. 4
d. 5
e. error

```
int x, y = 3, z = 4;
x = ++y < ++z ? ++y : ++z;
```

12. What is the value of *x* following execution of the code segment at right?

a. -1
b. 0
c. 1
d. 2
e. 12

```
int x = 12; int y = 15;
while (y >= 0)
{
  x = x-- ;
  y = --y ;
}
```

13. What is the value of *y* following execution of the code segment at right?

a. -2
b. -1
c. 0
d. 1
e. 15

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

a. 2
b. 5
c. 7
d. error

```
int[] ar = {3,5,7,9};
out.print(ar.get(2));
```

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

a. true
b. false
c. 0
d. error

```
String str1 = "equals";
String str2 = "EqUaLs";
out.print(
   str1.equalsIgnoreCase(str2));
```

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

a. truefalse
b. truetrue
c. falsetrue
d. falsefalse

```
String s = “Howdy”;
out.print(s.matches(“ .*^”));
out.println(s.matches(“[^H]”));
```

---

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

a. 0
b. 1
c. 2
d. 10
e. none of the above

```
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);
```

---

18. 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.

.

```
int x = 4, y = 5;
if (x < 4 | y == 5)
   out.print (x + y);
```

---

19. 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

```
public static void m(int x){
   if (x > 0)
      m(x / 2 + 1);
   out.print(x);
}
```

---

20. In Java, the type *char* requires the same memory as _____.

a. int
b. byte
c. float
d. A and B
e. none of the above

21. Given the code segment at right, which of the following are valid statements?

a. list.add(d);
b. list.add(new Double(d));
c. list.add(new Integer(i));
d. a and b only
e. b and c only

```
List <Double>list = new ArrayList
        <Double> ( ) ;
double d = 3.5;
int i = 4;
```

---

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

a. true
b. false
c. error

```
boolean x = true, y = false;
out.print((x && y) && (!x || !y));
```

---

23. What is the output of the code segment at right when called with m(6)?

a. 0
b. 1
c. 2
d. 4
e. 5

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

---

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

a. 13
b. 23
c. 123
d. An exception will be thrown.

```
List <String>list = new
            ArrayList<String> ( ) ;
list.add("1");
list.add("2");
list.add("3");
list.remove(1);
Iterator <String> iter = list.iterator ( ) ;
while (iter.hasNext ( ) )
    out.print(iter.next ( ) );
```

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

a. 3
b. 4
c. 5
d. 6
e. none of the above

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

---

26. 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;
        }
```

---

27. 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);
```

---

28. 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);
```

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

```
String str = "\"abracadabra\"";
out.println(str.indexOf ("ra"));
```

a. 0
b. 2
c. 3
d. 4
e. 11

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

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

out.println(one + two);
```

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

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

```
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,2);
```

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	4
1	2	6
2	3	9

32. 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.

33. What is printed by the code segment at right?

a. 0
b. 3
c. 6
d. 9
e. none of the above

```
public class MyClass{
  static int i;

  public static void main(String[] args){
    System.out.println(n(3,3));
    // This location for #34
  }

  public static int n(int x, int y){
    ++i;
    if (y <= 0)
      return x * y;
    else
      return x + n (x, y-1);
  }

}
```

34. What is the value of *i* at the location indicated at right?

a. 0
b. 3
c. 4
d. *i* is undefined
e. none of the above

35. Given that *que* is a queue object, that is output by the code segment at right?

a. redblue
b. blueyellow
c. redredblueblue
d. redbluegreenyellow

```
que.enqueue("red");
que.enqueue("blue");
que.enqueue("green");
que.enqueue("yellow");
out.print(que.peekFront());
out.print(que.dequeue());
out.print(que.peekFront());
out.print(que.dequeue);
```

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

a. 6
b. 1 3 5
c. 7
d. 3 5 7
e. none of the above

```
int num = 1;
while (num != 6)
    num += 2;

out.println(num + " ");
```

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

a. test
b. tttt
c. ttetes
d. tttetes
e. error

```
String str= "test";
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. What is the output of the code at right?

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

```
public class C
{
 private static int n;
 public static void main (String[]args){
   n = 4;
   n++;
   {
        int n = 10;
        n++;
    }
   f(n);
 }
 public static void f (int nn){
      nn += 2;
      out.print (nn);
  }
 }
```

---

40. 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("**");
   }
}
```

.

Best of Texas 2018-19 Computer Science Test 1 Answer Key

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

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 -_____

_____