

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 2024-25 Computer Science Test 1

1. $165_8 + 510_8 =$

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

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. 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);
```

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. Using Big-O analysis, which of the following best estimates how many asterisks will be printed when the code at right is executed?
- $O(n)$
 - $O(2n)$
 - $O(n^2)$
 - $O(n^4)$
 - $O(2)$

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

30. What is the output of the computation at right?
- 32
 - 33
 - 11121
 - 100001

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

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

31. 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	4
1	2	6
2	3	9

```
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);
```

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

- public class C extends A extends B
- public class C extends A, B
- public class C extends A, extends B
- public class C extends A && extends B
- None of the above. A class cannot extend two other classes.

<p>33. What is printed by the code segment at right?</p> <ul style="list-style-type: none"> a. 0 b. 3 c. 6 d. 9 e. none of the above 	<pre>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); } }</pre>
<p>34. What is the value of <i>i</i> at the location indicated at right?</p> <ul style="list-style-type: none"> a. 0 b. 3 c. 4 d. <i>i</i> is undefined e. none of the above 	<pre>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); } }</pre>
<p>35. Given that <i>que</i> is a queue object, that is output by the code segment at right?</p> <ul style="list-style-type: none"> a. redblue b. blueyellow c. redredblueblue d. redbluegreenyellow 	<pre>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());</pre>
<p>36. What is the output of the code segment at right?</p> <ul style="list-style-type: none"> a. 6 b. 1 3 5 c. 7 d. 3 5 7 e. none of the above 	<pre>int num = 1; while (num != 6) num += 2; out.println(num + " ");</pre>
<p>37. What is the output of the code segment at right?</p> <ul style="list-style-type: none"> a. test b. tttt c. ttetes d. tttetes e. error 	<pre>String str= "test"; int i = 0; for (; i < str.length ();i++) out.print (str.substring(0,i));</pre>

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

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

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

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 - _____
