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.

2018-19 Computer Science Test 3

1. What is the sum of 1001_2 and 11_2?

   a. 1100_2
   b. 1010_2
   c. 1011_2
   d. 10100_2
   e. 1111_2

2. 10.0 + 7/3 =

   a. 12
   b. 12.0
   c. 12.3
   d. 12.3…
   e. none of the above

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

```
System.out.print ("One");
System.out.println ("Two");
System.out.println ("Three");
```

   a. One
      Two
      Three

   b. One
      TwoThree

   c. OneTwo
      Three

   d. 123

4. Given the statement at right, which of the following returns the position of the second 'a'?

```
String  s = "alphabet";
```

   I. s.find(2, 'a');
   II. s.indexOf(1, 'a');
   III. s.lastIndexOf("a");

   a. I only
   b. II only
   c. III only
   d. II and III
   e. none of the above

5. What is output by the code at right?

```
int x =13;
int y = 16;
System.out.print (x | y);
```

   a. 0 b. 16 c. 29 d. true

   e. false

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

a. *true* will be printed
b. *false* will be printed
c. there will be a syntax error
d. there will be a run-time error

```
int n1 = 4;
int n2 = n1;
Math.pow(Math.sqrt(n1),2);
System.out.print (n1 == n2);
```

---

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

a. xyz
b. 3
c. 9
d. 10
e. 12

```
int x = 3;
int y = 2;
System.out.println (x + y * x);
```

---

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

a. Success!
b. Failure!
c. There will be a syntax error.
d. none of the above

```
String str = "Best of Texas";
char ch = str.charAt(3);
if (ch = 't')
out.println("Success!");
else out.println( "Failure!");
```

---

9. In the code at right, for what value of *n* will **** be output?

a. 50
b. 80
c. 500
d. 5000
e. none of the above

```
int n;
n = <value of n here>;
do {
  System.out.print ('*');
   n /= 4;
   }
while (n > 0);
```

---

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

a. 0
b. 1
c. 5
d. 6
e. null

```
int[] t = new int [5];
t[1] = t[2] + t[4];
System.out.print (t[1]);
```

11. What is the output of the code segment at right when given this input?

5.2.1.2\2\2.2

a. 5
b. 8
c. 10
d. 14
e. 16

```
Scanner s = new Scanner (System.in);
s.useDelimiter("\\.");

int sum = 0;
while (s.hasNextInt ( ) )
  sum += s.nextInt ( );
System.out.print (sum);
```

---

12. What is output by the code segment at right?

a. 0
b. 5
c. 6
d. 10
e. 12

```
int total = 0;
for (int i = 0; i <= 5; i++)
  total += 2;
System.out.println (total);
```

---

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

a. false true
b. false false
c. true true
d. true false
e. true false true

```
char ans = 'Y';
boolean b1, b2;
b1 = ans != 'Y' || ans != 'y';
b2 = ans > 'A';
System.out.print (b1 + " " + b2);
```

---

14. The following values are inserted one at a time into a binary search tree using the traditional insertion algorithm. How many leaves are in the resulting tree?

13, 0, -5, 5, 10, 7, 15, 21

a. 0
b. 1
c. 3
d. 6
e. 8

---

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

a. 12
b. 13
c. 123
d. index out-of-bounds error
e. none of the above

```
List<Integer> list = new ArrayList<Integer> ( );
list.add(1);
list.add(2);
list.add(3);
for (Integer i : list)
    System.out.print(i);
```

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

a. 0
b. null
c. []
d. ArrayOutOfBoundsException

```
ArrayList<String> str = new
                        ArrayList<String>();
out.print (str);
```

---

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

a. 0
b. 1
c. true
d. false
e. aab

```
String s = "aab";
out.println (s.matches ("a*b"));
```

---

18. Explicitly converting a value from one type to another type is called

a. throwing
b. casting
c. catching
d. directing

.

---

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

a. 2
b. 16
c. 4
d. 72
e. 324

```
System.out.println(18>>2);
```

---

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

a. 1
b. 12
c. 123
d. There will be no output
e. syntax error

```
int a = 0;
do{
  switch (a%2){
  case 0: out.print('1');
          break;
  case 1: out.print('2');
          break;
  default: out.print('3');
  }
a++;
}
while (a <= 0);
```

21. What is output by line 3 at right?

a. 4
b. 4.0
c. 04
d. 100

```
int n1= 4;
double n2 = 28.16;
System.out.printf("%o \n",n1); //line 3
System.out.printf ("%4.1f",n2); //line 4
```

---

22. What is output by line 4 at right?

a. 28.1
b. 28.10
c. 28.2
d. 132.1

---

23. What is the value of z following execution of the code segment at right?

a. 4 b. 5 c. 6 d. 10

e. none of the above

```
int x = 0, y = 1, z;
while (y< 5)
{
  x += y;
  y++;
}
z = y;
```

---

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

a. 't of Texa'
b. 'st of Texas'
c. 't of Texas'
d. ' of Texas'
e. throws IndexOutOfBoundsException

```
String s = “Best of Texas”;
int length = s.length();
int index = s.indexOf('t');
System.out.printf(“"%s"”,
   s.substring(index,length));
```

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

a. 2
b. 32
c. 33
d. none of the above

```
int x = 1, y = 2, z = 0;
for (int c = 1; c < 4; c++)
    z = x + y;
    y = z;
    x += y++;
out.print (x);
```

---

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

a. 433
b. 1230
c. 120413
d. throws IndexOutOfBounds exception
e. none of the above

```
List<String> list = new ArrayList<String> ( ) ;
list.add("1");
list.add("2");
list.add("3");
list.set(0, "4");
list.add(1, "3");
list.remove(2);
for (String str : list)
    System.out.print(str);
```

---

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

a. FordDodge
b. DodgeJeep
c. ChevyJeep
d. ArrayOutOfBoundsException

```
ArrayList <String>cars = new
                    ArrayList<String> ( ) ;
cars.add(“Ford”);
cars.add(“Chevy”);
cars.add(“Dodge”);
cars.add(“Jeep”);
Iterator it = cars.iterator ( ) ;
it.next ( ) ;
it.remove ( ) ;
it.next ( ) ;
it.remove ( ) ;
it = cars.iterator ( ) ;
while (it.hasNext ( ) ){
  String list = (String) it.next ( ) ;
  out.print (list);
}
```

---

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

a. 0123
b. 1234
c. 2345
d. 12345
e. There is an error in the code.

```
int i=1, n = 5;
for (; i < n; )
  out.print (i);
```

29. Following execution of the code segment at right, what is the value of s2[0];

a. 1
b. 1234
c. 1 2 3 4
d. none of the above

```
String s1 = "1 2 3 4";
String[]s2 = s1.split ("\\s");
```

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

a. 0
b. 2
c. 3
d. There will be a syntax error.
e. The code will generate an infinite loop.

```
int x = 6, y = 3;
do{
   x -= y++;
   ++x--;
   System.out.print(x );
 }
while (x >= y);
```

31. Which of the following, replacing <code> in line 3, will allow ch to be printed only if it is a digit.

a. Character.isDigit(ch)
b. isDigit.Character(ch)
c. ch.isDigit
d. isDigit.ch
e. more than one of the above

```
List<Character> list = new
                ArrayList<Character> ( );
list.add('c');
list.add('2');
list.add('b');
for (Character ch : list)
     if (  <code>              )  //line 3
         System.out.print(ch);
```

32. What is the returned by the method at right when called with m(3, 4)?

a. 1
b. 6
c. 27
d. none of the above

```
public static int m (int x, int y){
 if (x == 0)
   return 1;
 else
   return (x * m(--x, y));
}
```

33. What is the output of the 1st out.println statement when the method at right is called with *m("1 2 3 4 5")*?

a. 1
b. 2
c. 3
d. 4
e. 5

```
public static void m (String str)
{
   int sum = 0, i = 1;
   String data[]= str.split("\\s+");
  while (i < data.length){
     sum += Integer.parseInt (data[i]);
     i++;
   }
 out.println (i);
 out.println (sum);
}
```

34. What is the output of the 2nd out.println statement when the method at right when called with *m("1 2 3 4 5")?*

a. 1
b. 10
c. 14
d. 15
e. none of the above

35. In a(n) _____, it is possible to insert or remove an element from the middle without copying the data.

a. array
b. linked list
c. stack
d. queue

36. The 2s complement of -13 is

a. 00001101
b. 01110011
c. 11110010
d. 11110011

37. What is output by the code at right?

a. null
b. 5
c. 7
d. 8
e. 12

```
PriorityQueue<Integer> p;
p = new PriorityQueue<Integer>();
int [] toAdd = {12, 5, 7, 5, 8};

for (int i : toAdd)
  p.add(i);
p.remove();
System.out.println(p.peek() );
```

38. Which answer is logically equivalent to the following boolean expression, where x and y are boolean variables?

!(x || !y)

a. x
b. !y
c. !x || !y
d. !x && y
e. !x && !y

---

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

Free Response: _____
(write your answer in the blank)

```
TreeMap <String, Integer> imap =
      new TreeMap <String, Integer> ( ) ;

imap.put("S", 312);
imap.put("E", 247);
imap.put("T", 314);

Iterator <Map.Entry<String, Integer>> it;
it = imap.entrySet ( ) .iterator ( ) ;
System.out.print (it.next ( ) .getValue ( ) );
```

---

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

Free Response: _____
(write your answer in the blank)

```
boolean r = true;
boolean s = true;
if (r ^ s)
  System.out.print (1);
else if (r || s)
  System.out.print (2);
else
  System.out.print (3);
```

2018-19 Computer Science Test 3 Answer Key

1.	A	21.	A
2.	B	22.	C
3.	C	23.	B
4.	C	24.	C
5.	C	25.	D
6.	A	26.	A
7.	C	27.	B
8.	C	28.	E
9.	B	29.	A
10.	A	30.	D
11.	B	31.	A
12.	E	32.	B
13.	C	33.	E
14.	C	34.	C
15.	C	35.	B
16.	C	36.	D
17.	C	37.	B
18.	B	38.	D
19.	C	39.	247
20.	A	40.	2

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 -_____

_____