

Name: _____ Code: _____

Lab: (circle one) 12MW 2MW 4MW 5:30MW 7:00MW

Multiple Choice 70 points (35 items @ 2 point each) Select the letter in front of the most correct answer, and mark your answer scan sheet accordingly. Be sure and consider each response.

For questions 1-10, write the word "nothing" if no output is created. Assume the following variables have been declared:

```
int    n1, n2;
double d1, d2;
```

1. What is the exact output of the following code segment?

```
n1 = 3;
n2 = 8;
if (n1 <= n2)
    System.out.print(n1 + " ");
System.out.print(n2 + " ");
System.out.println ("end");
```

- a) 3 8 end
b) 8 end
c) 3
8
end
d) 8
end
e) nothing

2. What is the exact output of the following code segment?

```
d1 = 13.4;
d2 = 9.801;
if (d1 == d2)
    System.out.print ("equal ");
else if (d1 > d2)
    System.out.print ("greater ");
else { System.out.print ("less ");
      System.out.print ("end");
    }
```

- a) end **b) greater** c) greater end d) greater less end e) nothing

3. What is the exact output of the following code segment?

```
n1 = 16;
d1 = 3.2;
n2 = 0;
while (d1 < n1) {
    n2 = n2 + 1;
    d1 = d1 + 5;
}
System.out.println (n2 + " " + d1);
```

- a) 0 3.2 b) 1 13.2 c) 2 18.2 **d) 3 18.2** e) nothing

4. What is the exact output of the following code segment?

```
if ( 23 <= 5)
    if (4 >= 2)
        System.out.print ("middle ");
    else
        System.out.print ("not ");
System.out.print ("end");
```

- a) end b) not end c) middle end d) middle not end e) nothing

5. What is the exact output of the following code segment?

```
if ( 3 <= 15)
    if (4 >= 2)
        System.out.print ("happy ");
    else System.out.print ("sad ");
System.out.println ("end");
```

a) happy b) sad c) sad end d) happy end e) nothing

6. What is the exact output of the following code segment?

```
if ( 13 <= 5)
    if (4 <= 2)
        System.out.print ("red ");
    else {
        System.out.print ("blue ");
        System.out.print ("end");
    }
}
```

a) red b) blue end c) red end d) red blue end e) nothing

7. What is the exact output of the following code segment?

```
if ( 13 <= 5) {
    if (4 <= 2)
        System.out.print ("red ");
    else
        System.out.print ("blue ");
    System.out.print ("end");
}
```

a) end b) blue end c) red end d) red blue end e) nothing

8. What is the exact output of the following code segment?

```
n1 = 3;
while (n1 < 8) {
    if (n1 % 2 == 0)
        System.out.print (n1 + " ");
    n1 = n1 + 3;

    if (n1 % 3 == 0)
        System.out.print (n1 + " ");
    n2 = n1;

    while (n2 < 6) {
        System.out.print (n2);
        n2 = n2 + 1;
    }
}
```

a) 3 6 9 b) 3 3 9 c) 6 6 9 d) 3 4 5 e) nothing

9. What is the exact output of the following code segment?

```
n2 = 0;
for (n1 = 24; n1 <= 30; n1 = n1 + 2)
    n2 = n2 + n1;
System.out.println (n2);
```

a) 78 b) 108 c) 24 50 78 d) 24 50 78 108 e) nothing

10. What is the exact output of the following code segment?

```
char ch;
String s1 = new String("this is it");
n1 = 0;
n2 = 0;
do {
    if (s1.charAt(n1) == 'i')
        n2 = n2 + 2;

    else
        n2++;
    n1 = n1 + 1;
} while (n1 < s1.length());
System.out.println (n2);
```

- a) 6 b) 10 c) 11 **d) 13** e) nothing

11. What is the exact output of the following code segment?

```
int num = 6;
while (num < 16) {
    switch (num % 4) {
        case 0: System.out.print ("multiple ");
                break;
        case 1: System.out.print ("one ");
                break;
        case 2: System.out.print ("two ");
        case 3: System.out.print ("three ");
                break;
    }
    num += 3;
}
```

- a) one multiple one two three b) one multiple one three two **c) two three one multiple three**
d) two one multiple three e) none of the above

12. Which of the following is a correct interface?

Code 1: interface A { void print() { }; }	Code 2: abstract interface A { print(); }	Code 3: abstract interface A { abstract void print() { }; }	Code 4: interface A { void print(); }
--	--	--	--

- a) Code 1
b) Code 2
c) Code 3
d) Code 4
e) none of the above

13. Given the following code segment: where A is an interface, B is a concrete class with a default constructor that implements A.

```
interface A{

}

class B implements A{

}
```

Which of the following is correct?

- a) A a = new A();
b) A a = new B();
c) B b = new A();
d) B b = new B();
e) b and d

14. What is the representation of the third element in an array called a?
a) a[2] b) a(2) c) a[3] d) a(3) e) none of the above

15. Analyze the following code.

```
public class Test {  
    public static void main(String[] args) {  
        int[] x = new int[3];  
        System.out.println("x[0] is " + x[0]);  
    }  
}
```

- a) The program has a compiler error because the size of the array wasn't specified when declaring the array.
b) The program has a runtime error because the array elements are not initialized.
c) **The program runs fine and displays x[0] is 0.**
d) The program has a runtime error because the array element x[0] is not defined.
e) none of the above
16. Which of the following statements is valid?

- a) int i = new int(30);
b) **int[] i = {3, 4, 3, 2};**
c) double d[30] = new double[];
d) char[] c = new char();
e) char[] c = new char[4]{'a', 'b', 'c', 'd'};

17. What is the output of the following code?

```
public class Test17 {  
    public static void main(String[] args) {  
        int[] x = {1, 2, 3, 4};  
        int[] y = x;  
  
        x = new int[2];  
  
        for (int i = 0; i < y.length; i++)  
            System.out.print(y[i] + " ");  
    }  
}
```

- a) **1 2 3 4**
b) 0 0
c) 0 0 3 4
d) 0 0 0 0
e) none of the above
18. Assume double[][] x = new double[4][5], what are x.length and x[2].length?
a) 4 and 4 b) **4 and 5** c) 5 and 4 d) 5 and 5 e) none of the above

19. What is wrong in the following code?

```
class TempClass {  
    int i;  
    public void TempClass(int j) {  
        int i = j;  
    }  
}  
  
public class C {  
    public static void main(String[] args) {  
        TempClass temp = new TempClass(2);  
    }  
}
```

- a) The program has a compilation error because TempClass does not have a default constructor.
b) **The program has a compilation error because TempClass does not have a constructor with an int argument.**
c) The program compiles fine, but it does not run because class C is public.
d) a and b.
e) None of the above.

20. Variables that are shared by every instances of a class are _____ variables.
a) public b) private c) protected **d) static** e) instance
21. To declare a constant MAX_LENGTH as a static variable with value 99.98, you write
a) final static MAX_LENGTH = 99.98;
b) final static double MAX_LENGTH = 99.98;
c) static double MAX_LENGTH = 99.98;
d) final double MAX_LENGTH = 99.98;
e) final double static MAX_LENGTH = 99.98;
22. To set a FlowLayout in panel jp, you can use the method _____.
a) jp.setLayout(new FlowLayout(FlowLayout.center));
b) jp.setLayout(new FlowLayout(FlowLayout.CENTER));
c) jp.setLayout(new FlowLayout());
d) jp.setLayout(FlowLayout());
e) a or b
23. What is the output of the following code?

```
public class Test23 {
    public static void main(String[] args) {
        int n = 2;
        xMethod(n);

        System.out.println("n is " + n);
    }

    void xMethod(int n) {
        n++;
    }
}
```

- a) The code has a compiler error because xMethod does not return a value.
b) The code has a compiler error because xMethod is not declared static.
c) The code prints n is 1.
d) The code prints n is 2.
e) The code prints n is 3.
24. What does the first System.out.println in the main method print?

```
public class Foo {
    static int i = 0;
    static int j = 0;

    public static void main(String[] args) {
        int i = 2;
        {
            int j = 3;
            System.out.print("i + j = " + (i + j));
        }

        System.out.println("; j = " + j);
    }
}
```

- a) i+j=5;j=0**
b) i+j=5;j=3
c) i+j=0;j=0
d) i+j=0;j=3
e) compiler error

25. The default layout out of a contentPane in a JFrame is _____.

- a) **FlowLayout**
- b) GridLayout
- c) BorderLayout
- d) GridBagLayout
- e) TabbedLayout

26. Java arrays can store primitive types and Strings, but cannot store any other type of Object other than Strings.

- a) True
- b) **False**

27. What is the printout of the following switch statement?

```
char ch = 'b';

switch (ch) {
    case 'a':
        System.out.print(ch);
    case 'b':
        System.out.print(ch);
    case 'c':
        System.out.print(ch);
    case 'd':
        System.out.print(ch);
}
```

- a) abcd
- b) bcd
- c) **bbb**
- d) bb
- e) b

28. What is the output of the following code?

```
class Test29{
    public static void main(String[] args) {
        int x = 3;
        int y = 0;

        switch (x + 3) {
            case 6: y = 0;
            case 7: y = 1;
            default: y += 1;
        }

        System.out.print (y);
    }
}
```

- a) 1
- b) **2**
- c) 3
- d) 4
- e) 9

29. What is y after the following statement is executed?

```
int x = 0;
int y = (x > 0) ? 10 : -10;
```

- a) 0
- b) 10
- c) 20
- d) **-10**
- e) Illegal expression

30. The following loop is syntactically correct.

```
for ( ; ; );
```

- a) **True**
- b) False

31. What is the printout of the following switch statement?

```
char ch = 'a';

switch (ch) {
    case 'a':
    case 'A':
        System.out.print(ch);
        break;
    case 'b':
    case 'B':
        System.out.print(ch);
        break;
    case 'c':
    case 'C':
        System.out.print(ch);
        break;
    case 'd':
    case 'D':
        System.out.print(ch);
}
}
```

- a) ab b) aa **c) a** d) abcd e) compiler error

32. The following two statements result in the same value in sum

<pre>int sum = 0; for (int i = 0; i < 3; i++) { sum += i; }</pre>	<pre>int sum = 0; for (int i = 0; i < 3; i = i+1) { sum += i; }</pre>
--	--

- a) True** b) False

33. In order to implement Comparable in a class, what method(s) must be defined in that class?

- a) equals
b) compares
c) both lessThan and greaterThan
d) compareTo
e) both compares and equals

34. Aggregation is

- a) described as a has-a relationship**
b) using an object reference as a local variable
c) a form of software documentation
d) all of the above
e) none of the above

35. When a class implements an interface, what must it do?

- a) it must redefine each constant from the interface.
b) it must declare and provide a method body for each method in the interface.
c) it must declare a variable for each constant in the interface.
d) it must include a private method for each method in the interface.
e) none of the above

Short Answer 10 points (4 + 3 + 3 points each)

What is the output of the following code fragments? Place your answer in the space provided)

36)	<pre>public class Short1 { public static void main(String[] args) { int[] list = {1, 2, 3, 4}; int[] newList = new int[list.length]; for (int i = 0; i < list.length; i++) newList[i] = list[list.length - 1 - i]; for (int i = 0; i < newList.length; i++) System.out.print(newList[i] + " "); } }</pre>	Output: 4 3 2 1
37)	<pre>public class Short2 { public static void main(String argv[]) { MyClass m1 = new MyClass (); m1.iMyVal=0; MyClass m2 = new MyClass (); m2.iMyVal=1; MyClass m3 = new MyClass (); m3.iMyVal=99; System.out.println("m1.iMyVal = "+m1.iMyVal); System.out.println("m2.iMyVal = "+m2.iMyVal); System.out.println("m3.iMyVal = "+m3.iMyVal); } } class MyClass{ public static int iMyVal=0; }</pre>	Output: m1.iMyVal = 99 m2.iMyVal = 99 m3.iMyVal = 99
38)	<pre>class Short3{ public static void main (String args[]){ int result = 0; int j = 7; if (3 > 2) { result = 1; if (j > 4) result = 6; else result = 5; } System.out.println ("Result = " + result); String i = (j<=6)? "lesser" : "greater"; System.out.println ("i = " + i); i = (j<=8)? "lesser" : "greater"; System.out.println ("i = " + i); } }</pre>	Output: Result = 6 i = greater i = lesser

39) Problem (20 points) In the following driver program we create an array of 3 books and print out the details of each using a for loop. Then using the method largest we determine the book with the most number of pages. Fill in the missing parts (20 blanks @ 1 point each) of the following Java program. Use the SAMPLE OUTPUT to help determine your answers. Place your answers in spaces provided.

```

1  class DriverProgram{
2      static private Book[] library = new Book[3];
3
4      public static void main (String[] args){
5          library[0] = new Book("William", "Strunk Jr.", "The Elements of Style", 105 );
6          library[1] = new Book("Thomas", "Friedman", "The World Is Flat", 496 );
7          library[2] = new Book("Dan", "Brown", "Angels & Demon", 608);
8
9          for (int i= 0; i < library.length; i++ )
10             System.out.println( library[i] );
11
12             System.out.println ("\\n\\nBook with most number of pages = ");
13             System.out.println( largest(library[0], library[1], library[2]) );
14         }
15
16         static Comparable largest (Comparable b1,
17         Comparable b2, Comparable b3 ){
18             Comparable largest=null;
19
20             if (b1.compareTo(b2)>0 && b1.compareTo(b3)>0)
21                 largest = b1;
22
23             if (b2.compareTo(b3)>0 && b2.compareTo(b1)>0)
24                 largest = b2;
25
26             if (b3.compareTo(b2)>0 && b3.compareTo(b1)>0)
27                 largest = b3;
28             return largest;
29         }
30     }
31
32     class Book implements Comparable {
33     private String authorFirst,
34         authorLast, title;
35     private int pages;
36
37     public Book (String authorF, String authorL,
38         String title, int pages){
39         authorFirst = authorF;
40         authorLast = authorL;
41         this.title = title;
42         this.pages = pages;
43     }
44
45     public String toString(){
46         String result = "Author: " + authorFirst + " " + authorLast + "\\tTitle: " +
47             title + "\\tPages: " + pages;
48         return result;
49     }
50
51     public int compareTo (Object obj ){
52         Book obj2 = (Book) obj;
53         Integer pagesObj1 = new Integer (pages);
54         Integer pagesObj2 = new Integer (obj2.pages);
55         return (pagesObj1.compareTo(pagesObj2));
56     }
57 }

```

SAMPLE OUTPUT

Author: William Strunk Jr.	Title: The Elements of Style	Pages: 105
Author: Thomas Friedman	Title: The World Is Flat	Pages: 496
Author: Dan Brown	Title: Angels & Demon	Pages: 608
Book with most number of pages =		
Author: Dan Brown	Title: Angels & Demon	Pages: 608