Mark the correct answer on your Scantron sheet for each of the following questions.

1. Which of the following is **not** an auxiliary storage device?
   a. Floppy drive b. DVD drive c. Zip drive **d. Scanner**

2. The smallest unit of information that can be process by a computer is called
   a. a byte. **b. a bit**. c. a nano-bit. d. a micro-byte.

3. Which of the following is **not** an example of a system software category?
   a. Internet communication software **b. Database system software** c. User interface subsystem
   d. Software compiler

4. Which of the following is used to convert program source code into object code?
   a. An assembler b. A linker **c. A compiler** d. An interpreter

5. Which type of programming language is Java?
   a. **Object-oriented** b. Procedural c. Method-oriented d. Integrated

6. What is a small Java program contained in a web page and interpreted by a web browser called?
   a. A script **b. An applet** c. A JVA d. A mini-apps

7. Which of the following is required in order to run a Java program?
   a. A Windows Operating System **b. A Java Virtual Machine** c. An internet connection
   d. A Java object code translator

8. Which of the following is the first phase in the software development life cycle?
   a. **Analysis** b. Design c. Integration d. Implementation

9. A Java compiler translates Java into a pseudomachine language called
   a. **Java byte code**. b. Java virtual machine. c. an interpreter. d. a parameter.

10. Which of the following prints or displays characters?
    a. Cout b. Terminal.out **c. System.out** d. Println

11. Which source code file extension is used for Java?
    a. .jav **b. .java** c. .jsrc d. .jcod

12. How many different values can a boolean variable hold?
    a. 0 **b. 2** c. 127 d. 32,767

13. Which keyword is used to define a constant variable?
    a. Const **b. Final** c. Literal d. Static

14. An example of an escape character instruction is
    a. %. b. /. **c. \.** d. #.

15. Which type of error is encountered if a program performs a division by zero?
    a. Logic b. Syntax **c. Run-time** d. Pointer

16. Which of the following would be best suited defined as a double rather than an *int* variable?
    a. **The distance driven from home to the mall** b. The store manager's name
    c. The number of leaflets distributed at a mall d. The number of boxes of chocolate in an inventory

17. Which of the following quantities would be best represented with a *boolean* type variable?
    a. The number of tacos ordered b. The average number of tacos sold per day
    c. Whether the customer wants a soft or hard shell taco d. The middle initial in the manager's name

18. Which of the following would be best suited defined as an *int* rather than a *double* variable?
    a. **The number of bananas sold at the market** b. The average grade of a student in calculus
    c. The height of a football player d. The football player's name

19. How many bits are used to represent a character with the Unicode standard?
    a. 32 **b. 16** c. 8 d. 4

20. Which of the following is **not** an example of a JAVA comment?
    a. **/* this is a comment** b. // this is a comment c. /* this is a comment */ d. // this is a comment //

21. XYZ is most likely which kind of Java primitive data type, given the following code?
    XYZ = false;
    if (XYZ == true) answer = 'H';
    a. Int b. Char **c. Boolean** d. Double

22. In question #21, which kind of primitive data type would answer most likely be?
    a. Int **b. Char** c. Boolean d. Double

23. Which of the following statements creates a new object call ME of a class named STUDENT?
    a. **STUDENT ME = new STUDENT ();** b. ME = new STUDENT; c. ME(STUDENT) = new STUDENT;
    d. STUDENT.ME = new STUDENT;

24. Which of the following best describes an assignment operator?
    a. **The value on the right-hand side of a = is assigned to the variable on the left-hand side of the =.**
    b. The value on the left-hand side of a = is assigned to the variable on the right-hand side of the =.
    c. The value on the right-hand side of a == is assigned to the variable on the left-hand side of the =.
    d. The value on the left-hand side of the == is assigned to the variable on the right-hand side of the =.

25. What is the output produced by the following statement when *x is 10*?
    System.out.println (x/5 + 16%x);
    a. 7 b. 3.6 **c. 8** d. 10

26. What is the output produced by the following statement when *x is 2002*?
    System.out.println ((x%10)/10);
    a. **0** b. 2 c. 20 d. 200

27. What is the output produced by the following statement?
    System.out.println (21/3 + 15%2);
    a. 11 b. 1 **c. 8** d. 5

28. Which statement is legal given the following definition?
    private final double PI = 3.1416;
    a. PI = PI *10000; b. PI = 3.14; **c. system.out.println(PI);** d. All are legal.

29. Which statements are **not** legal given the following definitions?
    int Gallons = 52;
    double Volume = 26.0;
    a. Gallons = Volume; **b. Gallons = Volume%26;** c. Volume = Gallons/26; d. Volume = Gallons;

30. Which of the following would center the string "My Name" in a field 24 characters wide?
a. Justify.align('c', "My Name", 24); **b. Align.justify('c', "My Name", 24);**
c. Format.justify('c', "My Name", 24); d. Format.align('c', "My Name", 24);

31. Which characteristic of an object distinguishes it from all other objects in a program?
a. Behavior **b. Identity** c. State d. Name

32. Java was developed in the early 1990's by a group from
a. **Sun Microsystems.** b. IBM. c. Microsoft. d. NASA.

33. What is used to change the state of an object?
a. A modifier b. An editor **c. A mutator** d. An accessor

34. The break statement
a. immediately terminates a program. b. causes the program go into an infinite loop.
c. immediately terminates a loop. d. is a special interpreter command.

35. To what statement is the following statement JAVA command equivalent?
*S *= x;*
a. **S = S * x;** b. S = x * x; c. x = S * x; d. x = S * S;

36. Which statement is the following statement JAVA command equivalent?
S--
a. S = S - S; **b. S = S - 1;** c. S -= S; d. S = S + 1;

37. What is the output produced by the following segment of code?
```
for (int i = 5;  i >= 1; i--)
    System.out.print( i );
```
a. **54321** b. 543210 c. 12345 d. 43210

38. The major difference between a *while loop* and a *do-while loop* is
a. the while loop can execute the body of its code more times.
b. the while loop always executes its code at least once.
c. **the do-while loop always executes its code at least once.**
d. there is no difference; they are identical.

39. What is the output produced by the following segment of code?
```
for (int i = 1; i < 5; i++)
    System.out.print( i );
```
a. **1234** b. 12345 c. 2345 d. 012345

40. What is the output produced by the following segment of code?
```
for(int i=3; i<=5; i++);
    System.out.print( i );
```
a. **345** b. 34 c. 5 d. 6

41. What is the output produced by the following segment of code?
```
String A = new String("Jim");
String B = new String("Hi There");
System.out.println ( B + " " + A );
```
a. Jim Hi There **b. Hi There Jim** c. Hi ThereJim d. Cannot add Strings in Java

42. What is the output produced by the following segment of code?

```
String Name = new String("Mr.Smith");
System.out.println ( Name.indexOf('i'));
```

a. **5** b. 6 c. 7 d. 4

43. What is the output produced by the following segment of code?

```
String A, B;
A = "123";
B = "456";
System.out.println (B-A);
```

a. 456-123 b. 123-456 c. 333 **d. Strings cannot be subtracted.**

44. Which of the following symbols is used to represent a logical *OR* operator?

a. || b. ** c. && d. OR

45. What is the output produced by the following segment of code?

```
int x = 100;
int y = 200;
if (x == y)
System.out.print( "A");
else if (x < y)
        System.out.print( "B");
else if (x != y)
        System.out.print( "C");
```

a. BC **b. B** c. AB d. C

46. What is the output produced by the following segment of code?

```
int x = 100;
int y = 200;
if (x == y)
    System.out.print( "A");
if (x < y)
    System.out.print( "B");
if(x != y)
    System.out.print( "C");
```

a. **BC** b. B c. AB d. C

47. Which of the following statements is equivalent to A <B && B < C?

a. (A > B) || (B > C) b. ! (A <= B) || ! (B >= C) c. A < C **d. ! ((A >= B) || (B >= C))**

48. What command can be used as an alternative to an extended *if-else* ladder?

a. for **b. switch** c. && d. while

49. What is the output produced by the following segment of code?

```
int x = 6;
do
{
        System.out.print( "*");
        x -= 2;
} while (x > 1);
        System.out.println ( "done");
```

a. ***done** b. *done c. done d. An infinite loop of asterisks is displayed.

50. What is the output produced by the following segment of code?

```
int x = 6;
do
{
        System.out.print( "*");
        x += 2;
} while (x != 1);
System.out.println ( "done");
```

a. ***done b. *done c. done **d. An infinite loop of asterisks is displayed.**

51. What is the output produced by the following segment of code?

```
int x = 0, y = 0;
while (y <= 5)
{
        y += 2;
        x -= y;
}
System.out.println ( y + " "+ x);
```

a. -6 6 b. 6 -6 c. 6 -8 **d. 6 -12**

52. What is the output produced by the following segment of code?

```
for ( int i = 1; i < 10; i += 2)
    System.out.print( i + ' ');
```

a. 1 3 5 7 9 11 b. 2 3 4 5 6 7 8 9 10 c. 2 4 6 8 10 **d. 1 3 5 7 9**

53. What is the output produced by the following segment of code?

```
int x = 6, y = 0;
while (y <= 5);
{
        y += x;
        y -= 2;
        x += 2;
}
System.out.println ( y + "  " + x);
```

a. **4** 8 b. 6 0 c. 6 2 d. 10 10

54. Which of the following does **not** describe when a recursive solution could be used?
   a. A method of repeatedly calling itself. b. It can always be used in place of iteration.
   c. Execution usually takes longer than a loop.
   d. **The method does not require a well-defined termination or stopping condition.**

55. A statement that must be true at the beginning of a method for it to work properly is called
   a. a default parameter. b. a post condition. **c. a precondition**. d. a method prototype.

56. Which of the following can be returned by a method through a return statement?
   a. Two long values b. Two int values **c. A String value** d. Three boolean values

57. What value is returned by the following method: BumpIt(5,15)); the following definitions and postconditions?

```
public int BumpIt(int x, int y)      // postcondition:  returns DoIt(y,x)
public int DoIt(int x, int y)        // postcondition:  returns x / y
```

a. 15 **b. 3** c. 0 d. None, the method call is illegal.

58. What is the value returned by the following method: DoIt(2,BumpIt(3,5)); given the following definitions and post conditions?

```
public int BumpIt(int x, int y)     // postcondition:  return x * y
public int DoIt(int x, int y)       // postcondition:  return x + y
```

a. **17** b. 30 c. 32 d. 16

59. Using the same name for two different methods is called
a. incrementing. **b. overloading.** c. overriding. d. illegal, because two methods cannot have the same name.

60. Which type of method performs some action and returns no result?
a. Long b. Char c. Boolean **d. Void**

61. What is the output returned by the following method: ChangeIt(4,6)?

```
public int ChangeIt(int x, int y)
{
        if (y<= 1) return x;
        else
            return ChangeIt(x, y-2);
}
```

a. 24 b. 6 **c. 4** d. 0

62. What default value will be assigned to every cell of an integer array when it is instantiated?
a. Null b. 0 c. -1 **d. No value is assigned until the array is initialized.**

63. What would be an appropriate name for the method defined in the following code?

```
public void MandM( int one, int another )
{
        int t = one;
        one = another;
        another = t;
}
```

a. CompareIt b. StoreIt c. AddIt **d. SwapIt**

64. Which of the following statement(s) are true about Java arrays?
a. They have range checking at runtime. b. They include a length field.
c. They have a fixed size once constructed. **d. All of the above**

65. What kind of error would be encountered when accessing the 101st item in an array defined to consist of 100 items?
a. Logic error b. Syntax error **c. Range bound error** d. Invalid range error

66. What is the output produced by the following segment of code?

```
int [ ] List;
List = new int[5] ;
for(int k=0; k<List.length; k++)
    List[k] = k;
for(int j=1; j<List.length; j++)
    System.out.print( List[j]);
```

a. 01234 b. 012345 c. 12345 **d. 1234**

67. Which of the following correctly declares and instantiates an array of 10 double values?
a. array <double> List[10]; b. double [ ] List; List = new double [10] c. array<double> List; List = new [10];
d. double List[ ]; List = new double [10];

68. Which of the following correctly prints all the elements of an array List?
   a. **for (int i = 0; i<List.length; i++)**
      System.out.println (List[i]);
   b. for (int i = 1; i<=List.length(); i++)
      System.out.println (List[i]);
   c. for (int i = 0; i<=List.length(); i++)
      System.out.println (List[i]);
   d. for (int i = 1; i<List.length(); i++)
      System.out.println (List[i]);

69. In this code segment, what value is stored in the variable overtime?
```
int hours = 43;
boolean overtime = (hours > 40);
```
   a. 3 b. 43 **c. True** d. False

70. Which class allows a Java programmer to read one line at a time from a text file?
   a. InputStreamReader **b. BufferReader** c. StreamTokenizer d. None of these

71. Which class allows a Java programmer to write an integer to a nontext file?
   a. **DataOutputStream** b. PrintWriter c. StreamTokenizer d. None of these

72. What is the output produced by the following segment of code?
```
int X = 2;
switch (X)
{
        case 1: System.out.print ("Square ");break;
        case 2: System.out.print ("Pants ");
        case 3: System.out.print ("Bob ");break;
}
```
   a. Pants b. Square Pants Bob **c. Pants Bob** d. Bob

73. What is the output produced by the following segment of code?
```
int X = 2;
switch (X)
{
        case 1: System.out.print ("Square ");break;
        case 2: System.out.print ("Pants "); break;
        case 3: System.out.print ("Bob ");break;
}
```
   a. **Pants** b. Square Pants Bob c. Pants Bob d. Bob

74. What is the output produced by the following segment of code?
```
int X = 5;
switch (X)
{

        case 1: System.out.print ("Square ");
        case 2: System.out.print ("Pants ");
        case 3: System.out.print ("Bob ");
        default: System.out.print ("invalid value"); break;
}
```
   a. An error will occur. b. Square Pants Bob c. Pants Bob **d. Invalid value**

75. Which of the following is **not** a file stream class?
    a. FilterInputStream b. PrintStream c. DataOutputStream **d. ConsoleOutputStream**

76. A Java method must be
    a. public. b. private. c. protected. **d. All of the above.**

77. Which of the statements below correctly reflects the syntax of a for loop?
    a. for (int i = 0, i++, i < 10) b. for (int i = 0; i++; i < 10) c. for (int i = 0, i < 10, i++)
    b. **d. for (int i = 0; i < 10; i++)**

78. A subclass may add to the inherited functionality by
    a. adding to class variables. b. adding new methods. c. adding instance variables. **d. all of the above.**

79. A default constructor
    a. **requires no arguments.**
    b. is called for every object declared.
    c. must have arguments for every data member in the class.
    d. returns an int indicating whether the constructor succeeded or not.

80. When working with arrays, you must make certain that the subscript you use remains in the range _____, where n is the number of elements in the array.
    a. 1 through n b. 0 through n c. 1 through n-1 **d. 0 through n-1**

81. Which of the following is **not** true about classes?
    a. They are used to instantiate objects. b. Properties of classes include member functions.
    c. They are used to define file streaming. d. They can be included in a library.

82. Which of the following is **not** a Java language reserve word?
    a. **Unprotected** b. Float c. This d. Try

83. A searching method that repeatedly references the midpoint of an array is a(n)
    a. **binary algorithm.** b. quicksort algorithm. c. bubble algorithm. d. insertion algorithm.

84. A sorting method that moves elements around a pivot element is called
    a. binary algorithm. **b. quicksort algorithm.** c. bubble sort algorithm. d. insertion sort algorithm.

85. Which is **not** true about the various kinds of sorts?
    a. **The insertions sort normally uses a looping process.** b. The quicksort normally uses a looping process.
    c. The selection and merge sorts normally use a recursive process.
    d. The merge sort normally uses a looping process.

86. Computer scientists study the relationship between an array's length and its execution time using
    a. **recursion.** b. the iterative process. c. a binary search algorithm. d. big-O notation.

87. A subclass inherits characteristics of its parent for
    a. all instance variables. b. all class variables. c. all methods. **d. all of the above.**

88. Objects are usually passed as reference parameters because
    a. there is no other way to perform the passing operation.
    b. **reference parameters make a local copy of the object.**
    c. reference parameters reduce the time and memory required in passing the object.
    d. objects are always required to be modified by the methods.

89. Which is the maximum number of steps needed for a binary search algorithm to search a sorted list of 255 elements?
    a. 6 b. 7 **c. 8** d. 9

90. Which of the following is considered to be the best?
    a. O(log n) **b. O(n2)** c. $O(n^2 - 1)$ d. O(n)

91. Which of the following big-O values represents a quadratic algorithm?
    a. O(n log n) b. $O(n^3)$ **c. O(n2)** d. $O(2^n)$

92. The keyword super can be used to
    a. called parents constructor. b. access parents methods. **c. Both A & B** d. None of the above

93. The keyword extends is used when
    a. inheritance is invoked. b. a new class is called a subclass.
    c. a parent class called superclass and a parent of a subclass. **d. All of the above**

94. Which of the following statements is/are true concerning polymorphism?
    a. A subclass may override or redefine methods that are accessible. b. A subclass method is used if available.
    c. If a method is not overridden, then the superclass method is executed. **d. All of the above**

95. In the graphics environment interface window, labels, buttons, and data entry fields are referred to as
    a. GUI icons. **b. window objects.** c. active controls. d. control objects.

96. In the graphics environment a single dot, or picture element on the screen is called a
    a. window. b. class. c. Mouse . **d. pixel.**

97. In the graphics environment colors can by fine tuned with
    a. 256 shades of red. b. 256 shades of green. c. 256 shades of blue. **d. all of the above.**

98. Which Button methods permit you to load text into and retrieve text from a Button object's label?
    a. add() and remove() b. setLabel() and getLabel() **c. setText() and getText()** d. write() and read()

99. What is returned by the call to ComputeTheAnswerTo(13); given the following definition?

```
public void ComputeTheAnswerTo (int N)
{
        System.out.print( N + " * ");
        if (N > 0)
        {
                ComputeTheAnswerTo(N/3);
                System.out.print( N + " * ");
        }
}
```

    a. 13 * 4 * 1 * 0 * b. 13 * 4 * 1 * 1 * 4 * 13 * **c. 13 * 4 * 1 * 0 * 1 * 4 * 13 *** d. An error will occur.

100. What is returned by the call to ComputeTheAnswerTo(11); given the following definition?

```
public int ComputeTheAnswerTo (int N)
{
        if (N == 0)
                return(0);
        else
                return(N%2 +  ComputeTheAnswerTo (N/2));
}
```

    a. 0 b. 2 **c. 3** d.