MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

1) (Tricky) What is output of the following code: 1) ______

```java
public class Test {
    public static void main(String[] args) {
        int[] x = {120, 200, 016};
        for (int i = 0; i < x.length; i++)
            System.out.print(x[i] + " ");
    }
}
```

A) 016 is a syntax error. It should be written as 16.
B) 120 200 20
C) 120 200 14
D) 120 200 16

2) What is the representation of the third element in an array called a? 2) ______


3) What is the correct term for numbers[99]? 3) ______

A) indexed variable
B) array
C) array variable
D) index
E) index variable

4) The arraycopy method does not allocate memory space for the target array. The target array must already be created with memory space allocated. 4) ______

A) true B) false
5) Analyze the following code:

```java
public class Test {
    public static void main(String[] args) {
        boolean[][] x = new boolean[3][];
        x[0] = new boolean[1]; x[1] = new boolean[2];
        x[2] = new boolean[3];

        System.out.println("x[2][2] is "+ x[2][2]);
    }
}
```

A) The program runs and displays x[2][2] is null.
B) The program runs and displays x[2][2] is true.
C) The program has a syntax error because new boolean[3][] is wrong.
D) The program has a runtime error because x[2][2] is null.
E) The program runs and displays x[2][2] is false.

6) Which of the following declarations are correct? (choose all that apply)
   A) public static void print(double... numbers)
   B) public static void print(double... numbers, String name)
   C) public static double... print(double d1, double d2)
   D) public static void print(String... strings, double... numbers)
   E) public static void print(int n, double... numbers)

7) Analyze the following code:

```java
public class Test {
    public static void main(String[] args) {
        int[] oldList = {1, 2, 3, 4, 5};
        reverse(oldList);
        for (int i = 0; i < oldList.length; i++)
            System.out.print(oldList[i] + " ");
    }

    public static void reverse(int[] list) {
        int[] newList = new int[list.length];
        for (int i = 0; i < list.length; i++)
            newList[i] = list[list.length - 1 - i];
        list = newList;
    }
}
```

A) The program displays 5 4 3 2 1 and then raises an ArrayIndexOutOfBoundsException.
B) The program displays 1 2 3 4 5 and then raises an ArrayIndexOutOfBoundsException.
C) The program displays 5 4 3 2 1.
D) The program displays 1 2 3 4 5.
8) What would be the result of attempting to compile and run the following code?

```java
public class Test {
    public static void main(String[] args) {
        double[] x = new double[]{1, 2, 3};
        System.out.println("Value is " + x[1]);
    }
}
```

A) The program has a syntax error because the syntax `new double[]{1, 2, 3}` is wrong and it should be replaced by `new double[]{1.0, 2.0, 3.0}`;
B) The program compiles and runs fine and the output "Value is 2.0" is printed.
C) The program has a syntax error because the syntax `new double[]{1, 2, 3}` is wrong and it should be replaced by `{1, 2, 3}`;
D) The program compiles and runs fine and the output "Value is 1.0" is printed.
E) The program has a syntax error because the syntax `new double[]{1, 2, 3}` is wrong and it should be replaced by `new double[3]{1, 2, 3};`

9) Given the following declaration:

```java
int[][] m = new int[5][6];
```

Which of the following statements is true?
A) m[0].length has the value 5.
B) m.length has the value 6.
C) m[2][4] represents the element stored in the 2nd row and the 4th column of m.
D) The name m represents a two-dimensional array of 30 int values.

10) In the following code, what is the printout for list1?

```java
class Test {
    public static void main(String[] args) {
        int[] list1 = {1, 2, 3};
        int[] list2 = {1, 2, 3};
        list2 = list1;
        list1[0] = 0; list1[1] = 1; list2[2] = 2;
        for (int i = 0; i < list1.length; i++)
            System.out.print(list1[i] + " ");
    }
}
```

A) 0 1 3    B) 1 1 1    C) 1 2 3    D) 0 1 2

11) Which of the following statements is valid? (choose all that apply)
A) int i = new int(30);
B) char[] c = new char();
C) int[] i = {3, 4, 3, 2};
D) char[] c = new char[4]{'a', 'b', 'c', 'd'};
E) double d[] = new double[30];
12) Which of the following are valid array declarations?
   A) double[3] nums = {3.5, 35.1, 32.0};  
   B) char[] charArray = "Computer Science";
   C) int[] words = new words[10];  
   D) char[] charArray = new char[26];

13) Analyze the following code:

   ```java
   public class Test {
       public static void main(String[] args) {
           double radius;
           final double PI = 3.15169;
           double area = radius * radius * PI;
           System.out.println("Area is "+ area);
       }
   }
   ```

   A) The program has a syntax error because a constant PI is defined inside a method.
   B) The program compiles and runs fine.
   C) The program has syntax errors because the variable radius is not initialized.
   D) The program has no syntax errors but will get a runtime error because radius is not initialized.

14) A method that is associated with an individual object is called _______.
    A) an object method  
    B) an instance method 
    C) a class method  
    D) a static method

15) All data fields in an object have default values.
    A) true  
    B) false

16) All local variables in a method have default values.
    A) true  
    B) false

17) Which of the following statements are true? (choose all that apply)
    A) Encapsulating data fields makes the program easy to maintain.
    B) Encapsulating data fields helps prevent programming errors.
    C) Use the private modifier to encapsulate data fields.
    D) Encapsulating data fields makes the program short.
18) Analyze the following code and choose the best answer:

```java
public class Foo {
    private int x;

    public static void main(String[] args) {
        Foo foo = new Foo();
        System.out.println(foo.x);
    }
}
```

A) Since x is an instance variable, it cannot be directly used inside a main method. However, it can be accessed through an object such as foo in this code.
B) Since x is private, it cannot be accessed from an object foo.
C) Since x is defined in the class Foo, it can be accessed by any method inside the class without using an object. You can write the code to access x without creating an object such as foo in this code.
D) You cannot create a self-referenced object; that is, foo is created inside the class Foo.

19) A static method in a class can access the class variables in the same class.
A) true  B) false

20) You can access a class variable using a syntax like objectName.classVariable or ClassName.classVariable.
A) true  B) false

21) A static method in a class can access the instance variables in the same class.
A) true  B) false

22) Each class in the file is compiled into a separate bytecode file.
A) true  B) false

23) How many JFrame objects can you create and how many can you display?
A) three  B) one  C) two  D) unlimited

24) Suppose you enter 34.3, the ENTER key, 57.8, the ENTER key, 789, the ENTER key. Analyze the following code.

```java
Scanner scanner = new Scanner(System.in);
int value = scanner.nextDouble();
int doubleValue = scanner.nextInt();
String line = scanner.nextLine();
```

A) After the last statement is executed, line contains character '\n'.
B) After the last statement is executed, intValue is 34.
C) After the last statement is executed, line contains characters '7', '8', '9'.
D) After the last statement is executed, line contains characters '7', '8', '9', '\n'.
E) The program has a runtime error because 34.3 is not an integer.
25) What is the output of the following code?

```java
public class Test {
    public static void main(String[] args) {
        String s1 = "Welcome to Java!";
        String s2 = s1;

        if (s1 == s2)
            System.out.println("s1 and s2 reference to the same String object");
        else
            System.out.println("s1 and s2 reference to different String objects");
    }
}
```

A) s1 and s2 reference to different String objects
B) s1 and s2 reference to the same String object

26) Assume StringBuffer strBuf is "ABCCEFC", after invoking ________, strBuf contains "ABTTEFT".

A) strBuf.replace('C', "TT")
B) strBuf.replace('C', 'T')
C) strBuf.replace("C", "T")
D) strBuf.replace(2, 7, "TTEFT")
E) strBuf.replace("CC", "TT")

27) Which of the following is the correct header of the main method? (choose all that apply)

A) public static void main(String args[])
B) public static void main(String[] args)
C) static void main(String[] args)
D) public static void main(String x[])
E) public static void main(String[] x)

28) What is displayed by the following statement?

```java
System.out.println("Java is neat").replaceAll("is", "AAA");
```

A) JavaAAA neat
B) JavaAAAneat
C) Java AAA neat
D) Java AAAAneat

29) "ab".compareTo("aB") is ________.

A) less than or equal to 0
B) less than 0
C) greater than 0
D) equal to 0
30) Analyze the following code.

```java
class Test {
    public static void main(String[] args) {
        StringBuffer strBuf = new StringBuffer(4);
        strBuf.append("ABCDE");
        System.out.println("What's strBuf.charAt(5)? " + strBuf.charAt(5));
    }
}
```

A) The program compiles and runs fine.
B) The program has a runtime error because the buffer's capacity is 4, but five characters "ABCDE" are appended into the buffer.
C) The program has a compilation error because you cannot specify initial capacity in the StringBuffer constructor.
D) The program has a runtime error because the length of the string in the buffer is 5 after "ABCDE" is appended into the buffer. Therefore, strBuf.charAt(5) is out of range.

31) "smiles".substring(1, 5) returns "mile".
A) true  B) false

32) Which of the following statements are incorrect? (choose all that apply)
A) float f = 4.5;  
B) String s = 'r';  
C) int k = null;  
D) char c = "r";

33) _______ can be accessed from any instance method in the class. (choose all that apply)
A) A local variable  
B) A static variable  
C) An instance variable
34) Analyze the following code:

```java
class Test {
    private double i;

    public Test(double i) {
        this.t();
        this.i = i;
    }

    public Test() {
        System.out.println("Default constructor");
        this(1);
    }

    public void t() {
        System.out.println("Invoking t");
    }
}
```

(choose all that apply)
A) this(1) must be replaced by this(1.0).
B) this.i may be replaced by i.
C) this(1) must be called before System.out.println("Default constructor").
D) this.t() may be replaced by t().

35) Which of the following statements are true about an immutable object? (choose all that apply)
A) All properties of an immutable object must be private.
B) The contents of an immutable object cannot be modified.
C) An object type property in an immutable object must also be immutable.
D) All properties of an immutable object must be of primitive types.
E) An immutable object contains no mutator methods.
36) What is the printout for the second statement in the main method?

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

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

A) k is 2  B) k is 3  C) k is 0  D) k is 1

37) _______ can be accessed from any static method in the class.

   A) An instance variable        B) A local variable        C) A static variable

38) You can declare two variables with the same name in _______.

   A) a method one as a formal parameter and the other as a local variable
   B) different methods in a class
   C) two nested blocks in a method (two nested blocks means one being inside the other)
   D) a block
39) What is the printout for the third statement in the main method?

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

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

A) j is 3  
B) j is 2  
C) j is 1  
D) j is 0

40) The internal state of an immutable class cannot be changed. String is an immutable class.

A) true  
B) false

41) You can assign ________ to a variable of Object[] type. (choose all that apply)

A) new int[100]  
B) new char[100]  
C) new java.util.Date[100]  
D) new String[100]  
E) new double[100]

42) Every class has a toString() method and an equals() method.

A) true  
B) false

43) You use the keyword ________ to reference a method in the superclass from a subclass.

A) superObject  
B) that  
C) this  
D) super

44) A class design requires that a particular member variable must be accessible by any subclasses of this class, but otherwise not by classes which are not members of the same package. What should be done to achieve this?

A) The variable should be marked private.  
B) The variable should be marked protected.  
C) The variable should have no special access modifier.  
D) The variable should be marked private and an accessor method provided.  
E) The variable should be marked public.
Consider the following declaration for a class A.

class A {
    private int x;
    private int y;

    public A(int x, int y) {
        this.x = x;
        this.y = y;
    }
}

Class B is a subclass of A. Which of the following can be constructors in B?

I: public B() {
}

II: public B(int x, int y) {
    super(x,y);
}

III: public B() {
    super(0,0);
}

IV: public B(int x, int y) {
    this.x = x;
    this y = y;
}

(choose all that apply)
A) I
B) IV
C) III
D) II
E) None of the above.
46) What is the output of running class C?

```java
class A {
    public A() {
        System.out.println(
            "The default constructor of A is invoked");
    }
}

class B extends A {
    public B() {
        System.out.println(
            "The default constructor of B is invoked");
    }
}

public class C {
    public static void main(String[] args) {
        B b = new B();
    }
}
```

A) "The default constructor of B is invoked"
B) "The default constructor of A is invoked"
C) "The default constructor of B is invoked" "The default constructor of A is invoked"
D) "The default constructor of A is invoked" "The default constructor of B is invoked"
E) Nothing displayed

47) In OOP, a reference variable can reference to several type of objects. This is called _______.
   A) polymorphism     B) abstraction     C) inheritance     D) encapsulation

48) In general, the difference between inheritance and composition is the difference between an is-a relationship and a has-a relationship.
   A) true               B) false

49) Which of the following is incorrect? (choose all that apply)
   A) The constructors in an abstract class are private.
   B) You may declare a final abstract class.
   C) The constructors in an abstract class should be protected.
   D) An interface may contain constructors.
   E) An abstract class contains constructors.

50) _______ describes dependent relationships between two classes. (choose all that apply)
    A) Composition     B) Association     C) Dependency     D) Aggregation

51) "Students are comparable" is a weak inheritance relationship, which can be implemented using interfaces.
    A) true               B) false
52) Which of the following statements are true? (choose all that apply)
   A) The constructors must always be public.
   B) The constructors may be protected.
   C) A class should always contain a no-arg constructor.
   D) A class should describe a single entity and all the class operations should logically fit together to support a coherent purpose.

53) ________ is attached to the class of the composing class to denote the aggregation relationship with the composed object.
   A) An empty oval
   B) An empty diamond
   C) A solid diamond
   D) A solid oval

54) Analyze the following code.

```java
import java.awt.*;
import javax.swing.*;

public class Test {
    public static void main(String[] args) {
        Component c = new JButton("OK");
        JFrame frame = new JFrame("My Frame");
        frame.add(c);
        frame.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
        frame.setVisible(true);
    }
}
```

   A) You cannot add a Swing component directly to a JFrame using add(c) prior to JDK 1.4, but it is OK in JDK 1.5.
   B) You can only add c to a container because c's type is Component.
   C) You cannot assign a JButton to a variable of java.awt.Component.
   D) You cannot create a JFrame using new JFrame("My Frame").

55) What layout manager should you use so that every component occupies the same size in the container?
   A) a BorderLayout
   B) a FlowLayout
   C) a GridLayout
   D) any layout

56) Suppose a JFrame uses the GridLayout(0, 2). If you add six buttons to the frame, how many columns are displayed?
   A) 2
   B) 4
   C) 3
   D) 1

57) The order of the components added into a container of BorderLayout is immaterial.
   A) true
   B) false
58) Which color is the darkest?
   A) new Color(30, 0, 0)
   B) f.setForeGround(Color.yellow)
   C) new Color(10, 0, 0)
   D) new Color(0, 0, 0)
   E) new Color(20, 0, 0)

59) Which of the classes are in the java.lang package? (choose all that apply)
   A) Exception
   B) Throwable
   C) RuntimeException
   D) IOException

60) What exception type does the following program throw?

        public class Test {
            public static void main(String[] args) {
                String s = "abc";
                System.out.println(s.charAt(3));
            }
        }

   A) ArrayIndexOutOfBoundsException
   B) StringIndexOutOfBoundsException
   C) No exception
   D) ArithmeticException
   E) ClassCastException

61) Which of the following is not a correct assertion statement?
   A) assert "sum is " + sum;
   B) assert sum > 10 && sum < 5 * 10 ; "sum is " + sum;
   C) assert (i > 10);
   D) None of the above

62) ________ are unchecked exceptions.
   A) IOException
   B) Exception
   C) Throwable
   D) RuntimeException
63) What is displayed on the console when running the following program?

```java
class Test {
    public static void main(String[] args) {
        try {
            System.out.println("Welcome to Java");
            int i = 0;
            int y = 2/i;
            System.out.println("Welcome to Java");
        } catch (RuntimeException ex) {
            System.out.println("Welcome to Java");
        } finally {
            System.out.println("End of the block");
        }
        System.out.println("End of the block");
    }
}
```

A) The program displays Welcome to Java three times followed by End of the block.
B) The program displays Welcome to Java two times followed by End of the block.
C) The program displays Welcome to Java two times followed by End of the block two times.
D) You cannot catch RuntimeException errors.

64) The array index is not limited to int type.

A) true  
B) false

65) Analyze the following code:

```java
public class Test {
    public static void main(String[] args) {
        final 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) The program displays 1 2 3 4
B) The program displays 0 0
C) The elements in the array x cannot be changed, because x is final.
D) The program has a syntax error on the statement x = new int[2], because x is final and cannot be changed.
66) Suppose a method p has the following heading:

```java
public static int[][] p()
```

What return statement may be used in p()?
A) return {1, 2, 3};
B) return 1;
C) return new int[][1, 2, 3];
D) return new int[][]{{1, 2, 3}, {2, 4, 5}};
E) return int[][1, 2, 3];

67) Analyze the following code:

```java
public class Test {
    public static void main(String[] args) {
        int[] a = new int[4];
        a[1] = 1;
        a = new int[2];
        System.out.println("a[1] is " + a[1]);
    }
}
```

A) The program has a syntax error because new int[2] is assigned to a.
B) The program has a runtime error because a[1] is not initialized.
C) The program displays a[1] is 1.
D) The program displays a[1] is 0.

68) The default value for a data member of boolean type is true.
A) true                           B) false

69) To prevent a class from being instantiated, ____________.
A) don't use any modifiers on the constructor
B) use the private modifier on the constructor
C) use the static modifier on the constructor
D) use the public modifier on the constructor

70) Which of the following statements are true? (choose all that apply)
A) You may assign an int value to a reference variable.
B) A variable of a reference type holds a reference to where an object is stored in the memory.
C) Data fields have default values.
D) Local variables do not have default values.
E) A variable of a primitive type holds a value of the primitive type.
71) Analyze the following code:

```java
public class Test {
    private int t;

    public static void main(String[] args) {
        int x;
        System.out.println(t);
    }
}
```

A) t is non-static and it cannot be referenced in a static context in the main method.
B) The program compiles and runs fine.
C) The variable t is not initialized and therefore causes errors.
D) The variable x is not initialized and therefore causes errors.
E) The variable t is private and therefore cannot be accessed in the main method.

72) How can you get the word "abc" in the main method from the following call?

```java
java Test "+" 3 "abc" 2
```


73) Suppose you enter 34.3 57.8 789, then press the ENTER key. Analyze the following code.

```java
Scanner scanner = new Scanner(System.in);
int intValue = scanner.nextInt();
int doubleValue = scanner.nextInt();
String line = scanner.nextLine();
```

A) After the last statement is executed, intValue is 34.
B) After the last statement is executed, line contains characters '7', '8', '9'.
C) After the last statement is executed, line contains characters '7', '8', '9', '\n'.
D) The program has a runtime error because 34.3 is not an integer.

74) Which of the following is an object? (choose all that apply)

A) 343 B) new String("abc");
C) new Date() D) "abc"

75) A constructor can access ________. (choose all that apply)

A) A local variable defined in any method B) A static variable
C) A public instance variable D) A private instance variable
76) What is the printout for the first statement in the main method?  

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

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

A) i + j is 22  
B) i + j is 23  
C) i + j is 5  
D) i + j is 6

77) Java uses _______ to reference the current object.  

A) null  
B) that  
C) this  
D) thisObject

78) Which of the following statements is false?  

A) A private method cannot be accessed by a class in a different package.  
B) A protected method can be accessed by a subclass in a different package.  
C) A public class can be accessed by a class from a different package.  
D) A method with no visibility modifier can be accessed by a class in a different package.

79) The set of all instances of a subclass is a subset of the instances of its superclass.  

A) true  
B) false

80) What is the best suitable relationship between Company and Employee?  

A) Inheritance  
B) Aggregation  
C) Association  
D) None

81) An aggregation relationship is usually represented as _______ in _______.  

A) a data field/the aggregating class  
B) a method/the aggregated class  
C) a data field/the aggregated class  
D) a method/the aggregating class

82) To create an image icon for a file in c:\book\image\icon, use _______. (choose all that apply)  

A) new ImageIcon("c:\book\image\icon");  
B) new ImageIcon("c:\\book\image\\icon") if the c:\book is in the class path.  
C) new ImageIcon("c:\book\image\icon");  
D) new ImageIcon("c:\book\image\icon");  
E) new ImageIcon("c:\book\image\icon");
83) Analyze the following code:

```java
import javax.swing.*;

public class Test extends JFrame {
    private JButton jbtOK = new JButton("OK");

    public static void main(String[] args) {
        // Create a frame and set its properties
        JFrame frame = new Test();
        frame.setTitle("Logic Error");
        frame.setSize(200, 100);
        frame.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
        frame.setVisible(true);
    }

    public Test() {
        jbtOK.setToolTipText("This is a button");
        add(new JButton("OK"));
    }
}
```

A) The tool tip text is displayed when you move the mouse on the button.
B) The tool tip text will be displayed if you replace `add(new JButton("OK"))` with `add(jbtOK)`.
C) The tool tip text will be displayed if you replace `add(new JButton("OK"))` with `add(jbtOK = new JButton("OK"))`.
D) The tool tip text will be displayed if you swap the two lines in the Test constructor.

84) If no exception occurs in a try–catch block, the code in the finally clause _______.
   A) is ignored   B) is not executed   C) is executed   D) may be executed

85) What exception type does the following program throw?

```java
public class Test {
    public static void main(String[] args) {
        Object o = null;
        System.out.println(o);
    }
}
```

A) ArithmeticException
B) No exception
C) ArrayIndexOutOfBoundsException
D) NullPointerException
E) StringIndexOutOfBoundsException
86) Suppose int i = 5, which of the following can be used as an index for array double[] t = new double[100]? (choose all that apply)
   A) i + 6.5
   B) Math.random() * 100
   C) (int)(Math.random() * 100)
   D) i + 10
   E) i

87) Analyze the following code.

```java
public class Test {
    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 prints n is 1.
B) The code prints n is 3.
C) The code prints n is 2.
D) The code has a syntax error because xMethod is not declared static.
E) The code has a syntax error because xMethod does not return a value.

88) The replace method in the String class replaces a character in the string. So it does change the content of the string.
A) true
B) false

89) Analyze the following code:

```java
class Circle {
    private double radius;

    public Circle(double radius) {
        radius = radius;
    }
}
```

A) The program will compile, but you cannot create an object of Circle with a specified radius. The object will always have radius 0.
B) The program has a compilation error because it does not have a main method.
C) The program does not compile because Circle does not have a default constructor.
D) The program has a compilation error because you cannot assign radius to radius.
90) Analyze the following code.

```java
// Program 1
public class Test {
    public static void main(String[] args) {
        Object a1 = new A();
        Object a2 = new A();
        System.out.println(((A)a1).equals((A)a2));
    }
}

class A {
    int x;

    public boolean equals(A a) {
        return this.x == a.x;
    }
}

// Program 2
public class Test {
    public static void main(String[] args) {
        A a1 = new A();
        A a2 = new A();
        System.out.println(a1.equals(a2));
    }
}

class A {
    int x;

    public boolean equals(A a) {
        return this.x == a.x;
    }
}
```

A) Program 1 displays true and Program 2 displays true  
B) Program 1 displays false and Program 2 displays true  
C) Program 1 displays false and Program 2 displays false  
D) Program 1 displays true and Program 2 displays false

91) What is the best suitable relationship between Employee and Faculty?

A) Association  
B) Inheritance  
C) Aggregation  
D) None of the above.
92) To create a JPanel of the BorderLayout, use __________.
   A) JPanel p = new JPanel(BorderLayout());
   B) JPanel p = new JPanel(new BorderLayout());
   C) JPanel p = new JPanel().setLayout(new BorderLayout());
   D) JPanel p = new JPanel()

93) A method can throw a subclass of RuntimeException.
   A) true
   B) false

94) Consider the following code fragment:

   ```java
   int[] list = new int[10];
   for (int i = 0; i <= list.length; i++) {
       list[i] = (int)(Math.random() * 10);
   }
   ```

   Which of the following statements is true?
   A) The loop body will execute 10 times, filling up the array with random numbers.
   B) The code has a runtime error indicating that the array is out of bound.
   C) list.length must be replaced by 10
   D) The loop body will execute 10 times, filling up the array with zeros.

95) You can always use the default constructor even though the non-default constructors are defined in the class.
   A) true
   B) false

96) Which method can be use to create an input object for file temp.txt?
   A) new Scanner("temp.txt")
   B) new Scanner(new File("temp.txt"))
   C) new Scanner(File("temp.txt"))
   D) new Scanner(temp.txt)

97) The UML uses ________ before a member name to indicate that the member is protected.
   A) -
   B) #
   C) +
   D) None of the above.

98) ________ models an is-a relationship.
   A) Inheritance
   B) Association
   C) Dependency
   D) Composition

99) Which of the following statements are true? (choose all that apply)
   A) You can set a foreground color on any instance of Component.
   B) You can set a border on any instance of JComponent.
   C) You can set a background color on any instance of Component.
   D) You can set a tooltip text on any instance of JComponent.

100) A method must declare to throw ________.
    A) unchecked exceptions
    B) RuntimeException
    C) checked exceptions
    D) Error
Answer Key
Testname: MIDTERM

1) C  
2) A  
3) A  
4) A  
5) E  
6) A, E  
7) D  
8) B  
9) D  
10) D  
11) C, E  
12) D  
13) C  
14) B  
15) A  
16) B  
17) A, B, C  
18) A  
19) A  
20) A  
21) B  
22) A  
23) D  
24) A  
25) B  
26) D  
27) A, B, D, E  
28) C  
29) C  
30) D  
31) A  
32) A, B, C, D  
33) B, C  
34) C, D  
35) A, B, C, E  
36) A  
37) C  
38) B  
39) D  
40) A  
41) C, D  
42) A  
43) D  
44) B  
45) C, D  
46) D  
47) A  
48) A
Answer Key
Testname: MIDTERM

49) A, B, D
50) A, B, C, D
51) A
52) B, D
53) C
54) A
55) C
56) A
57) A
58) D
59) A, B, C
60) B
61) A
62) D
63) C
64) B
65) D
66) D
67) D
68) B
69) B
70) B, C, D, E
71) A
72) D
73) D
74) B, C, D
75) C, D
76) B
77) C
78) D
79) A
80) B
81) A
82) B, E
83) B
84) C
85) B
86) C, D, E
87) D
88) B
89) A
90) A
91) B
92) C
93) A
94) B
95) B
96) B

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Answer Key
Testname: MIDTERM

97) B
98) A
99) A, B, C, D
100) C