Unit 3 AP Computer Science A Practice Exam
Boolean Expressions and *if* Statements

Section I – Multiple Choice
Optional Time – 20 minutes
15 Questions

1) Determine the output of the following code:

```
int a = 7;
int b = 87 % 7;
System.out.println(a == b);
```

(A) true
(B) false
(C) Nothing would output
(D) An error would occur

2) Determine the output of the following code:

```
int a = 6;
int b = a;
a ++;
System.out.println(a != b);
```

(A) true
(B) false
(C) Nothing would output
(D) An error would occur

3) According to DeMorgan's laws, which of the following statements are equivalent to the one below?

boolean a = !(x<3 && y>2);

I. *boolean a = !(x<3) && !(y>2);*
II. *boolean a = !(x<3) || !(y>2);*
III. *boolean a = (x>=3 || y<=2);*

(A) I only
(B) II only
(C) I and II
(D) II and III
(E) I, II, and III

4) The ==, !=, >, <, >=, and <= operators are?

(A) Arithmetic Operators
(B) Compound Assignment Operators
(C) Relational Operators
(D) Conditional Operators

5) Which of the following are true about conditional statements?

I. Conditional statements interrupt the sequential execution of statements.
II. The code inside of an *if* statement may not always run in a program, so essential, configuring code usually will be outside of one.
III. *if* statements affect the flow of control by executing different statements based on the value of a boolean expression.

(A) I only
(B) II only
(C) I and II
(D) II and III
(E) I, II, and III

6) In order for there to be output from the code below, what would the value of "?" need to be?

```
int a = 24;
 if (a % 5 == _?_ % 7) {

    System.out.println("Correct!");
 }
```

(A) 7
(B) 26
(C) 53
(D) 77

7) Which of the following is FALSE about the following code?

```
if (false) {

     System.out.println("Hello!");
}
```

I. In its current state, the code will produce an error.
II. In its current state, the code will never produce any output.
III. If an else statement was added, the code inside of that will always run in the if statement's current state.

(A) I only
(B) II only
(C) I and II
(D) II and III

8) What is the value of the variable *grade* after the code is run below, if the variable *score* is initialized to the value of *86*?

```
if (score >= 90) grade = "A";
if (score >= 80) grade = "B";
if (score >= 70) grade = "C";
if (score >= 60) grade = "D";
else grade = "F";
```

(A) "B"
(B) "C"
(C) "D"
(D) "F"

9) Which of the following are true about the concept of short circuit evaluation?

I. If the first condition of an && is false, the second condition is not necessarily checked.
II. If the first condition of an | | is true, the second condition is not necessarily checked.
III. If the first condition of an | | is false, the second condition is not necessarily checked.

(A) I only
(B) II only
(C) I and II
(D) I and III
(E) II and III

10) Which of the following logical operators is NOT paired to its function?

(A) *! = "Not"*, negates a value
(B) *&& = "And"*, returns true if both expressions are true
(C) | | = *"Or"*, returns true if one expression is true
(D) None of the above

11) How many syntax errors are in the code shown below?

```
if (myGrade >= 90
   System.println("I am sad")
else {
   if (myGrade < 50)
      System.out.println("I sue the school");
   else {
      System.out.println("I drop the class");
   }
```

(A) 1
(B) 2
(C) 3
(D) 4
(E) 5

12) Determine the output of the following code:

```
int a = 7;
int b = 5;

if (b / a > 0)
   System.out.println("Hello");
   System.out.println("World");
```

(A) Hello
(B) World
(C) Hello
    World
(D) Nothing will be printed.

13) Which of the following is equivalent to the following code segment?

```
if (x > 3) x = x * 4;
if (x > 12) x = 8;
```

(A) *x = 8;*
(B) *if (x > 3) x *= 4;*
(C) *if (x > 3) x = 8;*
(D) *if (x > 3) x=8; else x *= 4;*

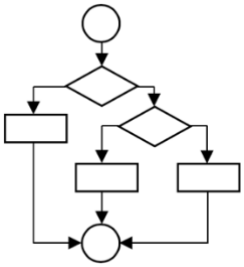
14) Determine the output of the following code:

```
String a = new String("Hello");
String b = new String("Hi");
String c = a;

System.out.println(a == b);
System.out.println(a == c);
```

(A) true
    true
(B) true
    false
(C) false
    true
(D) false
    false

15) What program best represents the control flow diagram below?



(A)
```
if (myVar == 6) {
    if (myVarTwo == 8) {
        System.out.println("One");
    }
    else if (myVarTwo == 10) {
        System.out.println("Two");
    }
    else {
        System.out.println("Three");
    }
}
```

(B)
```
if (myVar == 6) {
    if (myVarTwo == 8) {
        System.out.println("One");
    }
    else {
        System.out.println("Two");
    }
}
else {
    if (myVarTwo == 8) {
        System.out.println("Three");
    }
    else {
        System.out.println("Four");
    }
}
```

(C)
```
if (myVar == 6) {
    System.out.println("One");
}
else {
    if (myVarTwo == 8) {
        System.out.println("Two");
    }
    else {
        System.out.println("Three");
    }
}
System.out.println("Four");
```

(D) None of the above

END OF SECTION I

Section II – Free Response Section

Optional Time – 15 minutes

2 Questions

1) Fill in the truth table according to the blanks already filled in below.

A	**B**	**!A**	**A && B**	**A || B**
T	T			
T	F			
F	T			
F	F			

2) Using the grading scale A: 90-100, B: 80-89, C: 70-79, D, 60-69, F: 0-59, write a program that takes in a double variable *myGrade* and prints out the letter grade earned. Use conditionals in your answer.

END OF SECTION II