Name: _____   Score: _____

```
Working on the review questions will improve your grades
```

1. (5 points) True or False? An example of a logical (Boolean) expression is an arithmetic expression followed by a relational operator followed by an arithmetic expression.

   A. True

   B. False

2. (5 points) True or False? If ch1 contains the value 'C' and ch2 contains the value 'K', the value of the C++ expression

   ```
   ch1 <= ch2
   ```

   is true.

   A. True

   B. False

3. (5 points) True or False? The expression !(n < 5) is equivalent to the expression n > 5.

   A. True

   B. False

4. (5 points) True or False? The code segment

   ```
   if (speed <= 40)
     cout << "Too slow";
   if (speed > 40 && speed <= 55)
     cout << "Good speed";
   if (speed > 55)
     cout << "Too fast";
   ```

   could be written equivalently as

   ```
   if (speed <= 40)
     cout << "Too slow";
   else if (speed <= 55)
     cout << "Good speed";
   else
     cout << "Too fast";
   ```

   A. True

   B. False

5. (5 points) Which of the following is not a C++ relational operator?

   A. ==

   B. <

C. !=

D. &&

E. >=

6. (5 points) Which C++ logical expression correctly determines whether the value of beta lies between 0 and 100?

    A. `0 < beta < 100`

    B. `0 < beta && beta < 100`

    C. `(0 < beta) && (beta < 100)`

    D. b and c above

    E. a, b, and c above

7. (5 points) This question is about short-circuit evaluation of logical expressions. Consider the following expression in some imaginary programming language (not C++):

```
(N > 5) AND (K / N < 12)
```

If N equals 0 when this expression is evaluated, which of the following statements about the expression is true?

    A. It causes a divide-by-zero error only if the language uses short-circuit evaluation.

    B. It causes a divide-by-zero error only if the language does not use short-circuit evaluation.

    C. It causes a divide-by-zero error whether or not the language uses short-circuit evaluation.

    D. It never causes a divide-by-zero error.

8. (5 points) If the int variables i, j, and k contain the values 10, 3, and 20, respectively, what is the value of the following logical expression: `j < 4 || j == 5 && i <= k`

    A. 3

    B. false

    C. 20

    D. true

9. (5 points) After execution of the following code, what will be the value of angle if the input value is 10?

```
cin >> angle;
if (angle > 5)
  angle = angle + 5;
if (angle > 2)
  angle = angle + 10;
```

    A. 0

    B. 5

C. 10

D. 15

E. 25

10. (5 points) After execution of the following code, what will be the value of angle if the input value is 0?

```
cin >> angle;
if (angle > 5)
  angle = angle + 5;
else if (angle > 2)
  angle = angle + 10;
```

    A. 0

    B. 5

    C. 10

    D. 15

    E. 25

11. (5 points) Assuming alpha and beta are int variables, what is the output of the following code (which is indented poorly)?

```
alpha = 3;
beta = 2;
if (alpha < 2)
if (beta == 3)
cout << "Hello";
else cout << "There";
```

    A. Nothing is output.

    B. Hello

    C. There

    D. HelloThere

12. (5 points) Given the following code:

```
string name1;
string name2;

name1 = "Mark";
name2 = "Mary";
```

what is the value of the relational expression name1 <name2 ?

    A. true

    B. false

C. none; it causes a compile-time error

D. none; it causes a run-time error

13. (5 points) Given the following code:

```
string name1;
string name2;

name1 = "Maryanne";
name2 = "Mary";
```

what is the value of the relational expression name1 <= name2 ?

A. true

B. false

C. none; it causes a compile-time error

D. none; it causes a run-time error

14. (5 points) What are the two values that a boolean variable can have?

15. (5 points) Write a statement that stores a 0 in answer if one is greater than two.

16. (5 points) If you want to have more than one statement executed within an If statement, what syntax do you use?

17. (5 points) Write a C++ logical expression that is true if the variable testScore is greater than or equal to 90 and less than or equal to 100: _____

18. (5 points) What is the missing If condition in the following code fragment? The program is supposed to halt if the input file does not exist.

```
ifstream inFile;

inFile.open("myfile.dat");
if (             )
{
  cout << "Cannot open input file." << endl;
  return 1;
}
```

       A. inFile

       B. myfile.dat

       C. !inFile

       D. !myfile.dat

       E. inFile != myfile.dat

19. (5 points) Why won't the following expression result in a division-by-zero error when `someInt` has the value 0?

    ```
    someInt != 0 && 5/someInt > 5
    ```

20. (5 points) True or False?

    `It is not uncommon that a student starts math class with Calculus I in college.`

    is equivalent to

    `It is common that a student starts math class with Calculus I in college.`

           A. True

           B. False

21. (5 points) True or False?

    `Students are not allowed to either live off campus or work full-time during their freshmen year.`

    is equivalent to

    `Students can neither live off campus nor work full-time during their freshmen year.`

           A. True

           B. False

22. (5 points) True or False? `!(A == B)` is equivalent to `A != B`

           A. True

           B. False

23. (5 points) True or False? `!((A == B) || ( C == D))` is equivalent to `(A != B) && (C != D)`

           A. True

B. False

24. (5 points) True or False?

    Students will be accepted into the University if they have either a GPA of 3.0
    or above OR a SAT score of 1100 or above (combined Reading and Math) .

    is equivalent to

    Students will not be accepted into the University if they have a GPA below 3.0 AND
    a SAT score below 1100 (combined Reading and Math) .

    A. True
    B. False