The University of Alabama in Huntsville
Electrical and Computer Engineering
CPE 112 01
Test #2
October 9, 2002

Name: _____

True or False (2 points each)

1. _____   The single statement
```
cin >> alpha >> beta;
```
may be used in place of the two statements
```
cin >> alpha;
cin >> beta;
```

2. _____ When a While expression evaluates to `false`, the loop terminates and control goes back to the statement immediately before the While statement.

3. _____   In the statement
```
cin >> XXXXX;
```
the XXXXX must be a variable name, not a constant or arbitrary expression.

4. _____ The `>>` operator skips leading whitespace characters when looking for the next data value in the input stream.

5. _____   If a C++ program attempts to input invalid data, the computer system immediately terminates the program and displays an error message.

6. _____   If P and Q are logical expressions, the expression P && Q is TRUE if either P or Q is TRUE or both are TRUE.

7. _____   If the code fragment

```
if (a >= 10)
if (a < 20)
a = a + 2;
else
a = a + 1;
```

is indented according to the manner in which it is executed, the correct indentation is

```
if (a >= 10)
    if (a < 20)
        a = a + 2;
else
    a = a + 1;
```

8. _____ It is possible for the body of a While statement never to be executed.

Multiple Choice (2 points each)

9. _____   Which of the following is a valid input statement?

    a.   `cin >> studentAge;`
    b.   `cin << studentAge;`
    c.   `studentAge >> cin;`
    d.   `studentAge << cin;`
    e.   a and c above

10. ____ Which of the following code segments could be used to skip the first two characters of an input line (they may or may not be whitespace characters) and input the integer value that comes next? (Variable `dummy` is of type `char`, and `inputInt` is of type `int`.)

    a.   `cin >> dummy >> dummy >> inputInt;`

    b.   `cin.get(dummy);`
         `cin.get(dummy);`
         `cin >> inputInt;`

    c.   `cin >> inputInt;`

    d.   `cin.get(' ');`
         `cin.get(' ');`
         `cin >> inputInt;`

    e.   a and c above

11. _____Which of the following is *not* a reason for using batch I/O?

    a.   A large amount of input data is expected.
    b.   The input data can be prepared ahead of time.
    c.   Input prompts can be tailored to the experience level of the user.
    d.   The output data can be examined at the user's leisure.
    e.   The output from one program can be used as the input to another.

12. ____ What is the value of `someInt` after control exits the following loop?

```
someInt = 273;
while (someInt > 500)
 someInt = someInt - 3;
```

    a.   270
    b.   273
    c.   497
    d.   500
    e.   none of the above--this is an infinite loop

13. ____ What is the output of the following code fragment?

```
n = 1;
while (n <= 5)
{
  n++;
  cout << n << ' ';
}
```

    a.   1 2 3 4 5
    b.   1 2 3 4
    c.   1 1 1 forever
    d.   2 3 4 5
    e.   2 3 4 5 6

14. ____ After execution of the following code, what is the value of `length`? (`count` and `length` are of type `int`.)

```
length = 5;
count = 4;
while (count <= 6)
{
    if (length >= 100)
        length = length - 2;
    else
        length = count * length;
    count++;
}
```

    a.   600
    b.   100
    c.   98
    d.   20
  e.   none of the above

15. ____ If `p` is a Boolean variable, which of the following logical expressions always has the value `false`?

    a.   `p && p`
    b.   `p || p`
    c.   `p && !p`
    d.   `p || !p`
    e.   b and d above

16. ____ Given a Boolean variable `isEmpty`, which of the following is a valid C++ assignment statement?
    a.   `isEmpty = true;`
    b.   `isEmpty = !isEmpty;`
    c.   `isEmpty = m > n;`
    d.   a and b above
    e.   a, b, and c above

17. ____ What is the output of the following C++ code fragment? (Be careful here.)

```
int1 = 120;
cin >> int2;                        // Assume user types 30
if ((int1 > 100) && (int2 = 50))
    int3 = int1 + int2;
else
    int3 = int1 - int2;
cout << int1 << ' ' << int2 << ' ' << int3;
```

    a.   120 30 150
    b.   120 30 90
    c.   120 50 170
    d.   120 50 70
    e.   120 30 70

18. ____ With respect to the loop in the following `main` function, what is missing?

```
int main()
{
 int loopCount;

 while (loopCount <= 8)
 {
     cout << "Hi";
     loopCount++;
 }
 return 0;
}
```

    a.   the initialization of the loop control variable
    b.   the testing of the loop control variable
    c.   the incrementation of the loop control variable
    d. Nothing is missing.

19. ____ 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`

20. ____ What does the following statement print? (All variables are of type `int`.)

```
if (j < k)
    if (k < j)
        cout << 1;
    else
        cout << 2;
else
    if (j < k)
        cout << 3;
    else
        cout << 4;
```

    a.   It prints nothing unless j equals k.
    b.   It always prints 4.
    c.   It prints 2 if j equals k and 4 otherwise.
    d.   It prints 2 if j < k and 1 if k <= j.
    e.   It prints 2 if j < k and 4 otherwise.

Fill in the Blank (2 points each)

21. Write a C++ logical expression that is `false` if either `x` or `y` is equal to 5 _____

22. The operators `&&`, `||`, and `!` are known as _____ operators.

23. Before each iteration of a While loop, the loop _____ is performed at the beginning of the loop.

24. A(n) _____ is an assertion that must be true before a module begins executing.

25. A(n) _____ is a printed message that explains what the user should enter as input.

26. The C++ standard library defines a data type named _____ that represents a stream of characters coming from an input file.

27. (2 points) If the variable str contains the string "Now is the time for all women to be heardÓwhat is output by the following statement?

```
cout << str.substr(4, 7) << endl;
```

28. (10 points) Given these values for the Boolean variables x, y, and z:
    x=false; y=true; z=false;
    indicate whether each expression is `true`(T) or `false`(F).

    _____   a. `!(y || z) || x`

    _____   b. `z && x && y`

    _____   c. `!y || (z || !x)`

    _____   d. `z || (x && (y || z))`

    _____   e. `x || x && z`

29. (12 points) Write an If statement (or a series of If statements) that assigns to the variable `biggest` the greatest value contained in variables i, j, and k.

30. (12 points) Correct the following program so that it reads a value from the file stream `inData` and writes it to the file stream `outData`. The file associated with `inData` is input.dat.

```cpp
#include <fstream>

using namespace std;

int main()
{
    int      n;
    ifstream inData;

    outData.open(Òresults.datÓ);
    cin >> n;
    outData << n << endl;
    return 0;
}
```

31. (12 points) Write a program segment that adds up the even integers from 16 through 26, inclusive.