The University of Alabama in Huntsville
Electrical and Computer Engineering
CPE 112 02
Test #2
October 11, 2001

Name: _____

True or False (3 points each)

1. _____ If a program compiles successfully, it is guaranteed to execute correctly.

2. _____ A file is a named area in secondary storage that is used to hold a collection of data.

3. _____ Execution of the statement

```
someInt = 3 * int(someFloat);
```

does not change the contents of the variable `someFloat` in memory.

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. _____ A hierarchical implementation of a functional decomposition design is one in which some or all of the modules are implemented as separate C++ functions.

7. _____ Boolean variables cannot store the result of a comparison of two variables.

8. _____ If a C++ If statement begins with

```
if (age = 30)
```

the If condition is an assignment expression, not a relational expression.

Multiple Choice (3 points each)

9. _____ Given the constant declaration

```
const int FACTOR = 95;
```

which of the following is *not* a valid use of `FACTOR`?

a. `cout << FACTOR * 3;`
b. `FACTOR = 24;`
c. `cin >> FACTOR;`
d. a and c above
e. b and c above

10. ____ Which of the following is a legal string assignment?

a. `Name = ÔJonesÕ`
b. `Name = ÒJonesÓ`
c. `Name = ÔDÕ + ÒJonesÓ`

d. b and c above

11. ____ Given the three lines of input data

```
111 222 333
444 555 666
777 888 999
```

what value is read into `gamma` by the following code? (All variables are of type `int`.)

```
cin >> alpha;
cin.ignore(500, '\n');
cin >> beta >> gamma;
```

a. 333
b. 444
c. 555
d. 777
e. none of the above

12. ____ Which of the following is *not* one of the things a programmer must do in order to use files in a C++ program?

a. Use a preprocessor directive to include the header file `fstream`.
b. Declare each file stream in a variable declaration.
c. Prepare each file for reading or writing by calling the `open` function.
d. Specify the name of the file stream in each input or output statement that uses it.
e. Erase the contents of each output file before running the program.

13. ____ Which of the following statements about functional decomposition is *false*?

a. Modules are the basic building blocks of functional decomposition.
b. Each level of a solution tree is more abstract (less detailed) than the level above it.
c. A module can contain both abstract steps and concrete steps.
d. A concrete step is a step that can be translated directly into C++ code.
e. none of the above

14. ____ Which of the following is the *first* step in the *problem-solving phase* of a computer program's life cycle?

a. Translate the general solution into code.
b. Write a general solution for the problem.
c. Test the general solution.
d. Analyze the problem.
e. Test the solution on a computer

15. ____ In C++, the phrase "standard output device" usually refers to:

a. the keyboard
b. a floppy disk drive
c. the display screen

d. a CD-ROM drive
e. none of the above

16. ____ What is the output of the following code fragment if the input value is 20?

```
cin >> someInt;
if (someInt > 30)
    cout << "Moe ";
    cout << "Larry ";
cout << "Curly";
```

a. `Curly`
b. `Moe Larry Curly`
c. `Larry Curly`
d. no output; there is a compile-time error
e. no output; there is a run-time error

17. Which of the following is *not* a C++ relational operator?

a. `==`
b. `<`
c. `!=`
d. `&&`
e. `>=`

18. ____ Which logical operator (op) is defined by the following table? (T and F denote TRUE and FALSE.)

```
P  Q   P op Q
------------
T  T     T
T  F     F
F  T     F
F  F     F
```

a. NOT
b. AND
c. OR
d. none of the above

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 (3 points each)

21. 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: _____

22. A(n) _____ is an assertion that should be true after a module has finished executing.

23. _____ is the formal rules governing how valid instructions are written in a programming language.

24. A(n) _____ is a language that is used to write the syntax rules for another language.

25. Blanks and newline characters in an input stream are examples of _____ characters.

26. _____ is the act of printing out all of the input values so that the user can verify that they were entered correctly.

27. (2 points) If the `string` varible `str` contains the string "Now is the time for all women to be heard", what is output by the following statement?

```
cout << str.substr(8, 10) << endl;
```

28. (12 points) Write an if statement which gives the output found in the table given a value stored in the variable temp.

Activity	Temperature
Swimming	Temperature > 85
Tennis	70 < Temperature <= 85
Golf	32 < Temperature <= 70
Skiing	0 < Temperature <= 32
Dancing	Temperature < 0

29. (5 points) Describe the problem inputs, outputs, and algorithm for this problem: Given the three coefficients of a quadratic polynomial, write the two floating-point solutions to the screen, echo printing the inputs.

30. (3 points) The following code segment is supposed to print “Type AB” when Boolean variables typeA and typeB are both true, and print “Type O” when both variables are false. Instead it prints “Type O” whenever just one of the variables is false. Insert a {} pair to make the code segment work the way it should.

```
if (typeA || typeB)
  if (typeA && typeB)
    cout << ÒType ABÓ;
else
  cout << ÒType OÓ;
```