The University of Alabama in Huntsville
Electrical & Computer Engineering
CPE 112 01
Fall 2002
Test I
September 18, 2002

Name: _____

True/False (2 points each)

1. _____ In C++, the modulus operator (`%`) requires integer operands.

2. _____ There is only one unique way to translate a given algorithm into a C++ program.

3. _____ Every C++ program must have a function named `main`.

4. _____ Integer values and floating point values are stored differently inside the computer.

5. _____ The C++ compiler considers the identifier `CanOfWorms` to be the same as the identifier `canofworms`.

Multiple Choice (2 points each)

6. _____ Which of the following is a legal string assignment?
   a. `Name = ÔJonesÕ`
   b. `Name = ÒJonesÓ`
   c. `Name = ÔDÕ + ÒJonesÓ`
   d. b and c above

7. _____ Which of the following statements prints `HappyBirthday` on one output line?
   a.
   ```
   cout << "Happy" << endl;
   cout << "Birthday" << endl;
   ```
   b.
   ```
   cout << "Happy";
   cout << "Birthday" << endl;
   ```
   c.
   ```
   cout << "HappyBirthday" << endl;
   ```
   d. b and c above
   e. a, b, and c above

8. _____ Among the C++ operators `+`, `-`, `*`, `/`, and `%`, which ones have the *lowest* precedence?
   a. `+` and `-`
   b. `*` and `/`
   c. `*`, `/`, and `%`
   d. `+`, `-`, and `%`
   e. `+`, `-`, and `*`

9. _____ The value of the C++ expression `3 / 4 * 5` is:
   a. 0.0
   b. 0
   c. 3.75
   d. 3
   e. 0.15

10. _____ What is the output of the following program fragment?

```
age = 29;
cout << "Are you" << age << "years old?" << endl;
```

   a. `Are you29years old?`
   b. `Are you 29 years old?`
   c. `Are you29 years old?`
   d. `Are you 29years old?`
   e. `Are you age years old?`

11. _____ Formatting a program in a consistent, readable style is valuable to
   a. the person who writes the program.
   b. other people who need to understand and work with the program.
   c. the C++ compiler.
   d. a and b above
   e. a, b, and c above

Fill in the Blank (2 points each)

12. A(n) _____ is a step-by-step procedure for solving a problem in a finite amount of time.

13. A(n) _____ is a program that translates a high-level language program into machine code.

14. A(n) _____ is a location in memory, referenced by an identifier, where a data value that cannot be changed is stored.

15. The default mode of control of execution is _____.

Short Answer

16. (6 points) Put a check mark beside the variables that are syntactically correct.

_____ `_out_of_time`	_____ `try-it`	_____ `timeOfDay`
_____ `2beornot2be`	_____ `payRate`	_____ `const`

17. (8 points) Compute the value of each legal expression. Indicate whether the value is an integer of a floating-point value. If the expression is not legal, explain why.

	Integer	Floating Point
a. `10.0 / 3.0 + 5 * 2`	_____	_____
b. `10 % 3 + 5 % 2`	_____	_____
c. `10 / 3 + 5 / 2`	_____	_____
d. `12.5 + (2.5 / (6.2 / 3.1))`	_____	_____

18. (27 points) Given the following program fragment:

```
int i;
int j;
float z;

i = 4;
j = 17;
z = 2.6;
```

determine the value of each expression. If the result is a floating-point value, include a decimal point in your answer.

a. `i / float(j)`	_____
b. `1.0 / i + 2`	_____
c. `z * j`	_____
d. `i + j % i`	_____
e. `(1/ 2) * i`	_____
f. `2 * i + j - i`	_____
g. `j/2`	_____
h. `2 * 3 – 1 % 3`	_____
i. `int(z + 0.5)`	_____

19. (4 points) Write the following expression in C++ if all the variables (`a`, `c`, `d`, `e`, `u`, `v`, `w`) are all of type `float`.

$$\frac{(a*c)+d}{e(u-v)}$$

20. (2 points) Assign the value "`Albert`" to the `string` variable `first_name`.

21. (3 points) Write a C++ constant declaration that gives the name `PI` to the value 3.14159.

22. (4 points) Declare an `int` variable named `total` and a `float` variable named `average`.

23. (4 points) Add type casts to the following statements to make the type conversions clear and explicit. Your answers should produce the same results as the original statements.

a. `someInt = 5 + someFloat * 3;`

b. `someFloat = 2.5 * someInt / someFloat;`

24. (2 points) Which part of the following function call is its argument list?

```
Square(someInt + 1);
```

25. (10 points) Assume the `float` variable `pay` contains the value 120485.43295. Using the `fixed`, `setw`, and `setprecision` manipulators, what output statement would you use to print `pay` in dollars and cents with 6 leading blanks?