The University of Alabama in Huntsville
ECE Department
CPE 197 01
Spring 2001
Sample Test II
February 20, 2001

1) (8 points) Write a series of statements that input the first letter of each of the following names into the char variables chr1, chr2, and chr3.

```
Peter\n
Kitty\n
Kathy\n
```

2) (8 points) Write a program segment that prompts the user for one integer value and one floating point value, stores the values into variables called val1 and val2, and prints these values to the screen. Include any variable declarations needed.

3) (8 points) Write a program segment that reads nine integer values from a file and writes them to the screen, three numbers per output lint. The file is organized one value to a line.

4) (8 points) Given these values for variables `i`, `j`, p, and q: `i` = 10, `j` = 19, p = true, `q` = false, add parentheses (if necessary) to the expressions below so that they evaluate to `true`.

a. `i == j || p`
b. `i >= j || i <= j && p`
c. `!p !! q`
d. `!q && q`

5) (3 points) If the `string` varible `str` contains the string "Now is the time", what is output by the following statement?

```
cout << str.length() << ' ' << str.substr(1, 2) << endl;
```

6) (12 points) Use functional decomposition to write an algorithm for logging on to your computer system and entering and running a program. The algorithm should be simple enough for a novice user to follow.

7) (6 points)What is the output of the following program segment?

```
if (x > 10)
      if (y > 20)
            cout << "print # 1" << endl;
else
      cout << "print # 2" << endl;
cout << "print # 3" << endl;
```

a)int x = 15, y = 25; _____

b)int x = 15, y = 15; _____

c)int x = 5, y = 25; _____

8) (5 points) Given two points (x1, y1) and (x2, y2), calculate the slope of a line between them with a C++ statement. Also give necessary variable declarations.

9) (12 points) What is the output of the following program segment?

```
if (x > 10)
    cout << "x > 10" << endl;
else if (x > 20)
    cout << "x > 20" << endl;
else if (x > 30)
    cout << "x > 30" << endl;
else
    cout << "x is other" << endl;
```

a) x = 5 _____
b) x = 15 _____
c) x = 25 _____
d) x = 35 _____
e) x = 45 _____
f) x = 55 _____

10) (10 points) Write a multiple-alternative if statement that assigns to the variable lumens the expected brightness of a standard light bulb whose wattage has been stored in watts. Use this table:
Assign -1 to lumens if the value of watts is not in the table.

Watts	Brightness (in Lumens)
15	125
25	215
40	500
60	880
75	1000
100	1675

11) (3 points) What data types would you use to represent the following items:

Marital status _____
Annual income _____
Age _____

12) (5 points) Describe the problem inputs, outputs, and algorithm fo this problem: Predict the population of an insect colony at the end of a week, given population and the weekly growth rate (a percentage).

13) (3 points) What causes the error message "UNEXPECTED ELSE" when this code fragment is compiled?

```
if (mileage < 24.0)
{
   cout << "Gas ";
   cout << "guzzler.";
};
else
   cout << "Fuel efficient.";
```

14) (10 points) Match each logical expression in the left column with the logical expression in the right column that tests for the same condition.

____ a. `x < y && y < z`	(1) `!(x != y) && y == z`
____ b. `x > y && y >= z`	(2) `!(x <= y || y < z)`
____ c. `x != y || y == z`	(3) `y < z || y == z || x == y`
____ d. `x == y || y <= z`	(4) `!(x >= y) && !(y >= z)`
____ e. `x == y && y == z`	(5) `!(x == y && y != z)`