1) Indicate which of the following are legal variable names in C++ (12):

a. `x`

b. `formula1`

c. `average_rainfall`

d. `%correct`

e. `short`

f. `tiny`

g. `total output`

h. `aReasonablyLongVariableName`

i. `12MonthTotal`

j. `marginal-cost`

k. `b4hand`

l. `_stk_depth`

a, b,c, f, h, k, l are leagal variables.

2) List all possible values of type bool. (4)

True or False

3) Mark the following statements as true or false. (10)

    a) An identifier can be any sequence of digits and letters. (F)

    b) A C++ identifier can start with a digit. (F)

    c) The operands of the modulus operator must be integers. (T)

    d) If a = 4; and b = 3;, then after the statement a = b; the value of b is still 3. (T)

    e) In the statement cin >> y;, y can only be an int or a double variable. (F)

4) The following program has syntax mistakes. Correct them. On each successive line, assume that any preceding error has been corrected. (10)

```cpp
#include <iostream>

const int SECRET_NUM = 11,213;
const PAY_RATE = 18.35

main()
{
   int one, two;
   double first, second;
   one = 18;
   two = 11;

   first = 25;
   second = first * three;

   second = 2 * SECRET_NUM;
   SECRET_NUM = SECRET_NUM + 3;
   cout << first << " " << second << SECRET_NUM << endl;

   paycheck = hoursWorked * PAY_RATE

   cout << "Wages = " << paycheck << endl;
   return 0;
}
```

5) Preprocessor directives begin with which of the following symbols: (2)

    a) *   <mark>b)</mark> #   c) $ d) !   e) None of these.

6) Suppose a, b, and c are `int` variables and a = 5 and b = 6. What value is assigned to each variable after each statement executes? If a variable is undefined at a particular statement, report UND (undefined). (18)

```
a = (b++) + 3;
c = 2 * a + (++b);
b = 2 * (++c) - (a++);
```

	a	b	c
	—	—	—
	—	—	—
	—	—	—

9   7   UND

9   8   26

10 45 27

7) What is printed by the following program? Suppose the input is (12):
Miller
34
340

```cpp
#include <iostream>
#include <string>

using namespace std;

const int PRIME_NUM = 11;

int main()
{
    const int SECRET = 17;

    string name;
    int id;
    int num;
    int mysteryNum;

    cout << "Enter last name: ";
    cin >> name;
    cout << endl;

    cout << "Enter a two digit number: ";
    cin >> num;
    cout << endl;

    id = 100 * num + SECRET;

    cout << "Enter a positive integer less than 1000: ";
    cin >> num;
    cout << endl;

    mysteryNum = num * PRIME_NUM - 3 * SECRET;

    cout << "Name: " << name << endl;
    cout << "Id: " << id << endl;
    cout << "Mystery number: " << mysteryNum << endl;

    return 0;
}
```

Enter a positive less than 1000

Name=Müller

Id:3417

Mystery Number:3689

8) Indicate the values and types of the following expressions: (12)

a. `2 + 3`

b. `19 / 5`

c. `19.0 / 5`

d. `3 * 6.0`

e. `19 % 5`

f. `2 % 7`

a.   5 (int) b. 3 (int) c. 3.8 (double) d. 18 (int)

e. 4 (int)   f. 2 (int)

9) Will the following lines of code print the same thing? Explain why or why not. (5)
cout << x << endl;
cout << "x" << endl;

First expression cause an error, because x was not declared before.

Second expression prints out x, because comma makes it a character.

10) Suppose x, y, z, and w are int variables. What value is assigned to each of these variables after the last statement executes? (6)

x = 5; z = 3;
y = x - z;
z = 2 * y + 3;
w = x - 2 * y + z;
z = w - x;
w++;

x=5

y=2

z=3

w=9

11) What is the result of the following expression? (9)

(2+5.0)*4+static_cast<int>(5/2+3.6)-6/4.0

31.5