**Chapter 1. Lewis Structures & Formal Charges Problem Set**

1a. Draw a Lewis structure for each molecule shown below.

HO H2N H3C

H2O H3N H4C

H3O H4N H5C

What’s wrong here?

1b. Fill in all the electrons in your Lewis structures. Use the **octet rule** to figure out how many lone pair electrons should be drawn about each central atom.

1c. Calculate the formal charge on each O, N and C and fill it in above:

**Formal Charge = # of Valence Electrons - # Bonds - # Lone Pair Electrons**

**General Trends**

2a. Use the results from question 1c to come up with general trends for O, N and C. For example, when O is bonded to 2 other atoms, what is its formal change? What is O’s formal charge when it is bonded to 3 other atoms? When N is bonded to 4 other atoms, what is its formal charge?

2b. When figuring out the **number of electrons** to draw, should you use **valence** **electrons** or the **octet rule**? Why?

2c. When figuring out **formal charge**, should you use **valence electrons** or the **octet rule**? Why?

3. Use the trends you have determined in question 2a to *quickly* select the appropriate formal charge for each of the molecules show below.

