

General Chemistry II**Problem Set 3****Due Wednesday, September 29, 2004 (at 5 p.m.) (note change in day)**

Note my standard policy on Lewis structures: (1) Every valid Lewis structure must have all non-zero formal charges labeled, even if your textbook does not ask for this. (2) Don't bother labeling any formal charges that are zero, even if your textbook does ask for this. (3) If it is possible to eliminate formal charge by invoking valence expansion (for atoms in the 3rd period and below), you should always do it! (4) If it helps you to write down how you calculate the number of valence electrons or formal charges for a species, you are free to do so. But, unless I tell you otherwise, you are not required to do so for full credit.

1. (6 points) Rank order each of the following sets of atoms in order of increasing first ionization energy (IE_1). (a) N, B, Ne; (b) Br, Rb, Se; (c) As, Sb, Sn. Briefly explain your answers.
2. Atkins Exercise 2.2 (4 points). Justify your answer. Note that you should be able to answer the question without using data from Appendix 2D (although you are free to do so).
3. Atkins Exercise 2.10 (4 points)
4. Atkins Exercise 2.34 (4 points). Note that for each chemical formula, the first atom should be at the center of the Lewis structure.
5. Atkins Exercise 2.40 (2 points). Note that each of the three N atoms is bonded to the central C and to two H atoms.
6. Atkins Exercise 2.44 (3 points). Note that the best Lewis structure for a given species may not satisfy the octet rule.
7. Atkins Exercise 2.46 (3 points)
8. Atkins Exercise 2.50 (4 points). Present as your final answer only the best set of resonance structure(s). Draw as many resonance structure as is required by the symmetry of the species. Also note that for the chlorite and chlorate ions, the Cl should be at the center of their Lewis structures.

See announcement on back:

Announcement

Drop-in chemistry tutoring is now available in the chemistry computer room (Olin-Rice 341) at the following times:

Sundays: 2-5pm and 7-10pm

Monday - Thursday: 7-10pm

Our tutors are all able to help students with questions on Chem 111 through 212, and most have had other chemistry courses as well.

The chemistry computer lab will be open on the following schedule:

Sundays: 2-5pm and 7-10pm

Monday-Thursday: 9am-5pm and 7-10pm

Fridays: 9am-5pm

Saturdays: Closed