

Chem 455 Homework for Week 2, second part.
Zumdahl Chapters 13 and 14
Problems: Chapter 13 20, Chapter 14: 5, 13 (c,d,e,f,h,k) , 15

13:20) Define the term isoelectronic. When comparing sizes of monatomic ions of elements in the same period of the periodic table, why is it advantageous to compare isoelectronic species?

14:5) Draw the Lewis structure for HCN. Indicate the hybrid orbitals and draw a picture showing all the bonds between the atoms, labeling each bond as σ or π .

14:13) For each of the following molecules:
Write the Lewis Structure; Predict the molecular structure (including bond angles); Give the expected hybrid orbitals on the central atom; and Predict the overall polarity.

c) OF_2 d) BF_3 e) BeH_2 f) TeF_4 h) KrF_2 k) IF_5

14:15) Why must all 6 atoms in C_2H_4 be in the same plane? [Use your MO theory to explain this.]