Problem Set 1 #1,4,5,6 KEY

1	
10. What is meant by a chemical bond? Why do atoms form bonds with each other? Why do some elements exist as molecules in nature instead of as free atoms?	Chemical bonds are electrostatic forces of attraction between atoms. Atoms form bonds with each other because the release of energy produces a more stable system. Some elements exist as molecules because multiple atoms of those elements bonded together is a more stable arrangement than the atoms separated.
4	
8.40 Arrange the bonds in each of the following sets in order of increasing polarity: **(a)** C—F, O—F, Be—F; **(b)** O—Cl, S—Br, C—P; **(c)** C—S, B—F, N—O.	a) O-F < C-F < Be-F b) S-Br < C-P < O-Cl c) C-S < N-O < B-F
5	
34. Indicate the bond polarity (show the partial positive and partial negative ends) in the following bonds. **a.** C—O **b.** P—H **c.** H—Cl **d.** Br—Te **e.** Se—S	a) + C-O - b) - P-H + c) + H-Cl - d) - Br-Te + e) + Se-S -
6	
35. Predict the type of bond (ionic, covalent, or polar covalent) one would expect to form between the following pairs of elements. **a.** Rb and Cl **b.** S and S **c.** C and F **d.** Ba and S **e.** N and P **f.** B and H	a) ionic b) covalent c) polar covalent d) ionic e) polar covalent f) covalent