CHEMISTRY
Mr. Noble

Name:
Date:
Period:

Chapter 12: Chemical Bonding

1. Define electronegativity

2. How does electronegativity vary as the atomic number of an element increases within the same period of the periodic table?

3. How is the strength of a bond between two elements in a molecule related to their electronegativities?

4. What is the difference between an ionic and a covalent bond?

5. Referring to the table of electronegativities, classify each of the following bonds as either ionic (I) or covalent (C):

__ a. Al-O	__ b. Al-S	__ c. Bi-Cl
__ d. Bi-O	__ e. C-Cl	__ f. N-O
__ g. Na-S	__ h. P-O	__ i. S-O
__ j. Ti-Br	__ k. Ca-F	__ l. Ba-S

6. Underline the atom in each of the following pairs that has the lower electronegativity.
   a. Li Na b. Cs Rb c. Cs Ba d. Cl Br e. Fe Ni f. S Cl

7. Use Table 12-1 to estimate the percent of ionic character in the following bonds.

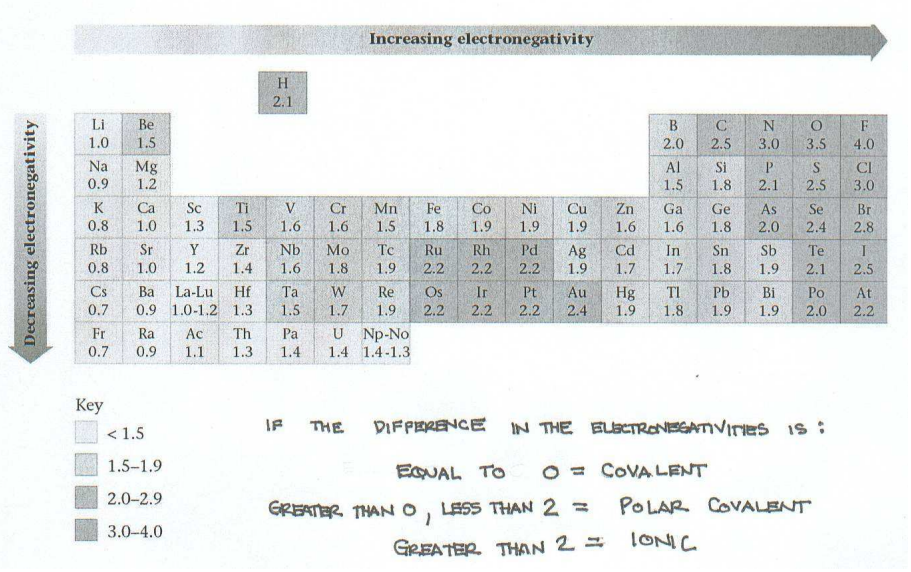
a. Pb-S	b. Ag-Cl	c. Na-Br
d. C-N	e. Cu-I	f. H-O
g. Ni-O	h. B-N	i. Ca-Cl
j. Fe-Si	k. Na-f	l. Zn-P

8. Use arrows to indicate the atom that carries the negative dipole.
   a. H – I b. P – I c. As – Br d. N – S

9. Arrange the following compounds in order if increasing ionic character of their bonds:
   LiF, LiBr, KCl, KI.

10. List four general characteristics of compounds that have ionic bonds.

11. List three general characteristics of compounds that formed entirely by covalent bonds.



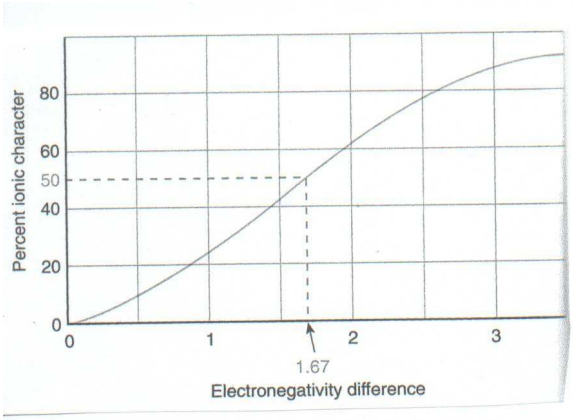


Figure 12.4 The percentage of ionic character of a bond between two atoms tends to increase as the difference in the electronegativities of the two elements increases.

Table 12-1

Character of Bonds										
Electronegativity Difference	0.00	0.65	0.94	1.19	1.43	1.67	1.91	2.19	2.54	3.03
Percent Ionic Character	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%
Percent Covalent Character	100%	90%	80%	70%	60%	50%	40%	30%	20%	10%