**Chemistry B Name**

**Bonding Review Period\_\_\_\_\_\_**

1. In a column (vertical row), the electronegativity tends to \_**B**\_\_\_\_ with increasing atomic number.

a. increase b. decrease c. remain the same

1. In a period (horizontal row), the electronegativity tends to \_**A**\_\_ with increasing atomic number.

a. increase b. decrease c. remain the same

1. \_D\_\_\_\_ generally have the lowest ionization energies.

a. Noble gases b. Metalloids c. Nonmetals d. Metals

4. Summarize the basic properties of metallic substances, ionic substances and covalent substances in terms of **Metallic Ionic Covalent**

1. conduction capabilities of the substances in different phases **High High Low**
2. melting points (high or low temperature) **High High Low**
3. type of solid (hard, definite crystal, ductile etc) D**uctile** **Crystal Noncrystalline**

5. Using the Periodic Table, predict the bond that would be formed between the two atoms indicated.

a. Mg-Cl **I** e. Cr-Ag **Metallic**

b. C-C **NP C** f. P-S **NP C**

c. Sr-S **I**\_\_\_\_ g. Se-O **PC**

d. Ag-Au **Metallic** h. Li-S **I**

6. Use the Periodic Table to classify the following as nonpolar covalent molecules, polar covalent molecules or ionic compounds

a. NO3 **PC** b. MnS **I** c. O3 **NP C**

d. CsCl **I** e. NiF  **I** f. F2 **NP C**

7. From the following pairs of atoms, circle the one having the highest electronegativity.

a. **Ba** or Rb b. **Ca** or Ba c. **Li** or Na d. **O** or C

e. S or **O** f. **He** or Cl g. Sb or **I** h. Al or **F**

8. Which would have the strongest covalent bond: O-O (same electronegativity difference) H-F (large electronegativitiy difference) or N-O (slight electronegativity difference)

**The strongest bonds have the lowest electronegativity difference. So O-O is the strongest covalent bond**

1. Draw Lewis structures and predict the geometry for the following molecules.

a. I2 b. O2

c. N2 d. HF

e. SiCl4 f. CCl4

g. CH3Br h. SCl2

i. NH3 j. SO2

1. NO3-1 l. ICl

m. CO2

2. Which molecules are polar? **D,h,I,j,k,l**

1. Which molecules are nonpolar? **A,b,c,e,f,g,m**
2. Draw Lewis structures for the following organic molecules.

a. C3H8 b. C2H4

c. C5H12

# Water has several physical properties that are unique in comparison to substances of comparable molecular weight. Using the concepts of hydrogen bonding in water, explain what surface tension and capillary action are and why water has an unusually high freezing and boiling point.