Homework #4

You must show your entire work on a separate sheet(s) of paper to get full credit.

Chapter 4

1. Draw the Lewis dot structures for the following elements
   a. X, an element from the Group IA family
   b. Z, an element from the Group IIA family
   c. J, an element from the Group IVA family
   d. K, an element from the Group VIA family

2. Use the Crossover Method to determine the following chemical formula.
   a. iron(III) sulfide
   b. calcium hydride
   c. magnesium nitride
   d. aluminum fluoride

3. Using the chemical formulas from question 2, write the structures step-by-step to obtain the Lewis dot structures and show how you balance the charges.

4. Draw the Lewis dot structures for: (Note: make sure it satisfies the octet rule)
   a. NI₃
   b. CS₂
   c. N₂F₂
   d. CH₂Cl₂

5. a. Which bond is more polar, H-Cl or H-O?
   b. Which of the following bonds is the most polar, that is, has the greatest ionic character: H-Br, N-H, N-O, P-Cl?

6. Write the formulas and names for the compounds of the following ions:

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<thead>
<tr>
<th></th>
<th>F⁻</th>
<th>O²⁻</th>
<th>P³⁻</th>
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<tbody>
<tr>
<td>K⁺</td>
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<tr>
<td>Ga³⁺</td>
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7. Which families are likely to form the following ions?
   a. +1   b. -1   c. +2   d. -2   e. +3   f. -3

8. Predict the following compounds by representing them as covalent bonds:
   a. CO₂   b. H₂SO₄   c. CH₃OH   d. N₂O₃

9. Show the dipole moment of each bond and then predict the overall molecule as either polar or nonpolar?
   a. CH₄   b. H₂S   c. PH₃   d. SO₃