GENERAL & ANALYTICAL CHEMISTRY I
CHMG-141
With Dr. Bailey

Name_____

Recitation
Week 5
Ionic Compounds

Problem 1: Write full electron configuration (spdf- notation, box-notation, noble gas notation), for the following:

a) Mg and Mg^{+2}
b) P and P^{-3}
c) Fe and Fe^{+3}

Problem 2: Use the principle of neutrality to determine the formulas for Type I binary ionic compounds.

Combination of Ions	# Cations needed	# Anions Needed	Empirical Formula	Name of Ionic Compound
Na^+ with Cl^-				
Li^+ with O^{2-}				
K^+ with P^{3-}				
Mg^{2+} with F^-				
Ca^{2+} with S^{2-}				
Be^{2+} with N^{3-}				
Al^{3+} with Cl^-				
Ga^{3+} with O^{2-}				
Al^{3+} with S^{2-}				

Problem 3:

Formulas and Names for ionic compounds containing ions of variable-charge metals

Combination of Ions	# Cations needed	# Anions Needed	Empirical Formula	Name of Ionic Compound
Cu^{+} with Cl^{-}				
Cu^{2+} with Cl^{-}				
Fe^{2+} with S^{2-}				
Fe^{3+} with S^{2-}				
Mn^{2+} with F^{-}				
Mn^{3+} with F^{-}				

Problem 4:

Formulas and Names for ionic compounds containing polyatomic ions

Combination of Ions	# Cations needed	# Anions Needed	Empirical Formula	Name of Ionic Compound
K^{+} with PO_4^{3-}				
Mg^{2+} with NO_3^{-}				
Al^{3+} with SO_4^{2-}				
Na^{+} with CO_3^{2-}				
Na^{+} with HCO_3^{-}				
NH_4^{+} with Cl^{-}				

Problem 5:

Putting it all together

Combination	Formula	Name
		Sodium fluoride
Magnesium with Nitrogen		
Ba with Cl		
		Potassium oxide
Al with Br		
Potassium with phosphate		
		Sodium sulfate
Iron (3+) with chlorine		
		Copper (II) chloride
Ammonium with sulfur		
		Vanadium (III) oxide
	Fe_2O_3	
		Potassium hydroxide
Copper (1+) with sulfate		

Problem 6: Write a formula for each of the following ionic compounds:

a. Copper (II) chloride

b. Calcium fluoride

c. Iron (II) phosphate

d. Potassium hydroxide

e. Ammonium sulfate

Problem 7: Name each of the following ionic compounds:

1. KF
2. Na_2O
3. $MgCl_2$
4. $FeCl_3$
5. $CoSO_4$
6. $Ba(NO_3)_2$
7. $(NH_4)_2CO_3$