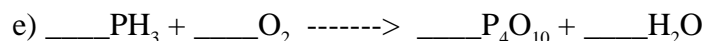
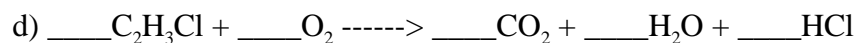
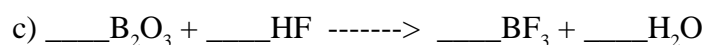
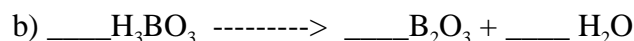
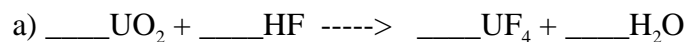


CHEM 130
PROBLEM SET Ch.2

Key begins on page 5.

1. Rubidium has two naturally occurring isotopes of mass 85.0 and 87.0 amu. What percent of Rubidium-85 is normally present given that its reported atomic mass is 85.47 amu?

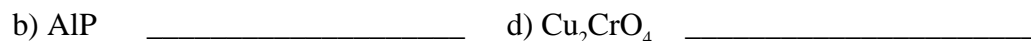
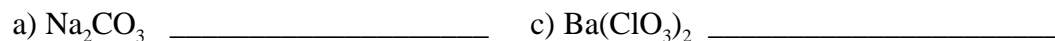
2. Balance the following equations.



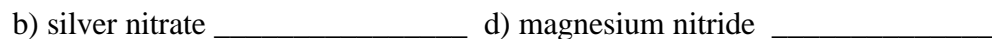
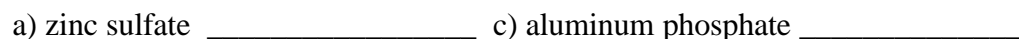
3. Indicate whether the following compounds are **ionic** or **covalent**.



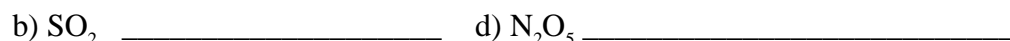
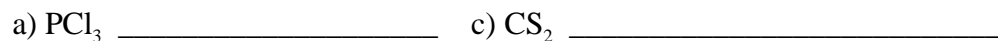
4. Give names for the following **ionic** compounds.



5. Give formulas for each of the following **ionic** compounds.



6. Give names for the following **covalent** compounds.



7. Give formulas for the following **covalent** compounds.

a) nitrogen triiodide _____ c) phosphorus trifluoride _____

b) oxygen difluoride _____ d) diphosphorus tetroxide _____

8. Indicate the "pet" name associated with each of the following.

a) Mg _____ c) K _____

b) Ar _____ d) Cl _____

9. Briefly distinguish between **homogeneous** and **heterogeneous** mixtures.

10. Briefly distinguish between **periods** and **groups** on the periodic table.

11. Briefly describe the difference between **anions** and **cations**.

Naming Ionic and Covalent Compounds

Give the names of the following ionic compounds	Write the formulas for the following ionic compounds
$\text{Al}(\text{NO}_3)_3$	calcium hydroxide
HgI_2	magnesium nitride
$\text{Fe}_2(\text{CrO}_4)_3$	copper(I) cyanide
NH_4NO_2	silver nitrate
Li_2CO_3	potassium bromide
SrO	lead(IV) bromide
$\text{Ba}(\text{OH})_2$	tin(II) sulfide
Mg_3P_2	potassium phosphate
CoF_3	mercury(I) iodide
$\text{Ca}(\text{C}_2\text{H}_3\text{O}_2)_2$	ammonium hydroxide
PbCl_4	potassium dichromate
Cu_2S	lead(II) carbonate
KMnO_4	barium sulfite
Na_2HPO_4	lithium phosphide

Give the name the following covalent compounds	Write the formula for the following covalent compounds
SeBr_4	carbon monoxide
F_2O_2	nitrogen triiodide
IBr_2	tetraphosphorus decasulfide
OF_2	disulfur dichloride
N_2S_5	dichlorine heptoxide
Br_3O_8	diphosphorus tetraoxide
CS_2	dinitrogen monoxide
S_4N_4	selenium hexafluoride

Valences of Some Common Ions

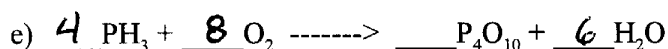
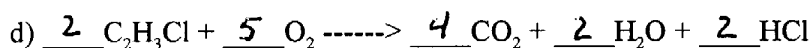
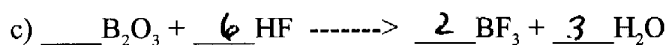
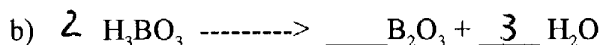
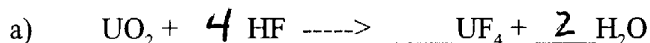
Cations (positive charge)		Anions (negative charge)			
+1		-1			
H ⁺ hydrogen	H ₃ O ⁺ hydronium	H ⁻ hydride	MnO ₄ ⁻ permanganate		
Li ⁺ lithium	Hg ⁺ mercury(I)	F ⁻ fluoride	ClO ⁻ hypochlorite		
Na ⁺ sodium		Cl ⁻ chloride	ClO ₂ ⁻ chlorite		
K ⁺ potassium		Br ⁻ bromide	ClO ₃ ⁻ chlorate		
Ag ⁺ silver		I ⁻ iodide	ClO ₄ ⁻ perchlorate		
Cu ⁺ copper(I)		OH ⁻ hydroxide	HCO ₃ ⁻ hydrogen carbonate		
NH ₄ ⁺ ammonium		NO ₂ ⁻ nitrite	C ₂ H ₃ O ₂ ⁻ acetate		
		NO ₃ ⁻ nitrate	HSO ₃ ⁻ hydrogen sulfite		
		CN ⁻ cyanide	HSO ₄ ⁻ hydrogen sulfate		
			H ₂ PO ₄ ⁻ dihydrogen phosphate		
+2		-2			
Mg ²⁺ magnesium	Cr ²⁺ chromium(II)	O ²⁻ oxide	C ₂ O ₄ ²⁻ oxalate		
Ca ²⁺ calcium	Co ²⁺ cobalt(II)	S ²⁻ sulfide	S ₂ O ₃ ²⁻ thiosulfate		
Sr ²⁺ strontium	Mn ²⁺ manganese(II)	CO ₃ ²⁻ carbonate	HPO ₄ ²⁻ monohydrogen phosphate		
Ba ²⁺ barium	Cd ²⁺ cadmium	SO ₃ ²⁻ sulfite	O ₂ ²⁻ peroxide		
Zn ²⁺ zinc	Sn ²⁺ tin(II)	SO ₄ ²⁻ sulfate			
Cu ²⁺ copper(II)	Pb ²⁺ lead(II)	CrO ₄ ²⁻ chromate			
Fe ²⁺ iron(II)	Ni ²⁺ nickel(II)	Cr ₂ O ₇ ²⁻ dichromate			
Hg ²⁺ mercury(II)					
+3		-3			
Al ³⁺ aluminum	Cr ³⁺ chromium(III)	N ³⁻ nitride	PO ₄ ³⁻ phosphate		
Fe ³⁺ iron(III)	Co ³⁺ cobalt(III)	P ³⁻ phosphide			
+4					
Sn ⁴⁺ tin(IV)					
Pb ⁴⁺ lead(IV)					

CHEM 130
PROBLEM SET Ch.2

1. Rubidium has two naturally occurring isotopes of mass 85.0 and 87.0 amu. What percent of Rubidium-85 is normally present given that its reported atomic mass is 85.47 amu?

$$\begin{array}{l}
 x = \text{FRACT ABUND. Rb-85} \quad (x)(85.0) + (1-x)(87.0) = 85.47 \\
 1-x = \text{ " " " Rb-87} \quad 85x - 87x + 87 = 85.47 \\
 \quad \quad \quad \quad \quad \quad -2x = -1.53 \Rightarrow x = 0.765 \quad \underline{\underline{76.5\%}}
 \end{array}$$

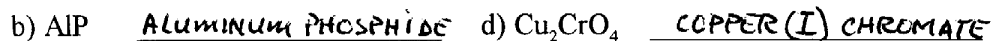
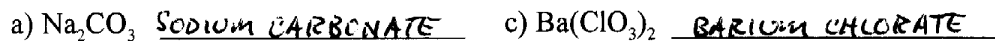
2. Balance the following equations.



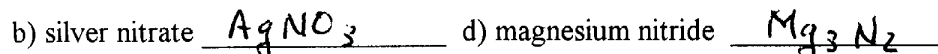
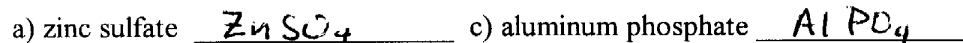
3. Indicate whether the following compounds are **ionic** or **covalent**.



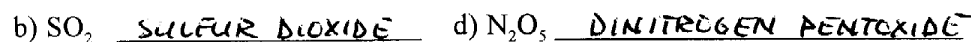
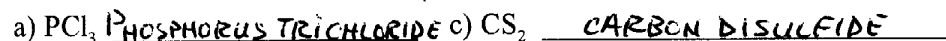
4. Give names for the following **ionic** compounds.



5. Give formulas for each of the following **ionic** compounds.



6. Give names for the following **covalent** compounds.



7. Give formulas for the following **covalent** compounds.

a) nitrogen triiodide NI_3 c) phosphorus trifluoride PF_3

b) oxygen difluoride OF_2 d) diphosphorus tetroxide P_2O_4

8. Indicate the "pet" name associated with each of the following.

a) Mg ALKALINE EARTH METAL c) K ALKALI METAL

b) Ar NOBLE GAS d) Cl HALOGEN

9. Briefly distinguish between **homogeneous** and **heterogeneous** mixtures.

IN TEXT.

10. Briefly distinguish between **periods** and **groups** on the periodic table.

IN TEXT.

11. Briefly describe the difference between **anions** and **cations**.

IN TEXT

Naming Ionic and Covalent Compounds

Give the names of the following ionic compounds	Write the formulas for the following ionic compounds
$\text{Al}(\text{NO}_3)_3$ ALUMINUM NITRATE	calcium hydroxide $\text{Ca}(\text{OH})_2$
HgI_2 MERCURY (II) IODIDE	magnesium nitride Mg_3N_2
$\text{Fe}_2(\text{CrO}_4)_3$ IRON (III) CHROMATE	copper(I) cyanide CuCN
NH_4NO_2 AMMONIUM NITRITE	silver nitrate AgNO_3
Li_2CO_3 LITHIUM CARBONATE	potassium bromide KBr
SrO STRONTIUM OXIDE	lead(IV) bromide PbBr_4
$\text{Ba}(\text{OH})_2$ BARIUM HYDROXIDE	tin(II) sulfide SnS
Mg_3P_2 MAGNESIUM PHOSPHIDE	potassium phosphate K_3PO_4
CoF_3 COBALT (III) FLUORIDE	mercury(I) iodide HgI
$\text{Ca}(\text{C}_2\text{H}_3\text{O}_2)_2$ CALCIUM ACETATE	ammonium hydroxide NH_4OH
PbCl_4 LEAD (IV) CHLORIDE	potassium dichromate $\text{K}_2\text{Cr}_2\text{O}_7$
Cu_2S COPPER (I) SULFIDE	lead(II) carbonate PbCO_3
KMnO_4 POTASSIUM PERMANGANATE	barium sulfite BaSO_3
Na_2HPO_4 SODIUM HYDROGEN PHOSPHATE	lithium phosphide Li_3P

Give the name the following covalent compounds	Write the formula for the following covalent compounds
SeBr_4 SELENIUM TETRABROMIDE	carbon monoxide CO
F_2O_2 DIFLUORINE DIOXIDE	nitrogen triiodide NI_3
IBr_2 IODINE DIBROMIDE	tetraphosphorus decasulfide P_4S_{10}
OF_2 OXYGEN DIFLUORIDE	disulfur dichloride S_2Cl_2
N_2S_5 DINITROGEN PENTASULFIDE	dichlorine heptoxide Cl_2O_7
Br_3O_8 TRIBROMINE OCTOXIDE	diphosphorus tetraoxide P_2O_4
CS_2 CARBON DISULFIDE	dinitrogen monoxide N_2O
S_4N_4 TETRASULFUR TETRA NITRIDE	selenium hexafluoride SeF_6