FUNDAMENTALS OF CHEMISTRY I **QUIZ 5**

March 30, 2011

INSTRUCTIONS:

PRINT YOUR NAME ————> NAME _____

***WORK 3* OF #1 THROUGH #4**

SHOW YOUR WORK FOR PARTIAL CREDIT

THE LAST PAGES ARE A PERIODIC TABLE AND A SCRATCH SHEET

R = 0.08206 lit-atm/mol-K **1____**

R = 8.3145 J/mol **2____**

h = 6.626 X 10^{-34} J-s **3____**

c = 2.9979 X 10^{8} m/s **4____**

$\Delta H_{vaporization}$ for H_2O at 100 °C = 40,700 J/mole

TOTAL(75)_____

1. For (a)-(j) give either the correct name or correct formula in the blank

(a) Calcium nitrate _____

(b) Potassium phosphate _____

(c) Iron(II)bromide _____

(d) hydroiodic acid _____

(e) H_2SO_3 _____

(f) N_2O_4 _____

(g) Na_2SO_4 _____

(h) $Ni(NO_3)_2$ Type II _____
(Ni = Nickel)

(i) P_4S_4 _____

(j) AlF_3 _____

(k) Write a balanced equation for the following reaction:

Aqueous sodium chloride reacts with aqueous lead(II)nitrate (lead = Pb) to form solid lead(II)chloride and aqueous sodium nitrate.

2. Vitamin C, chemical name ascorbic acid, has formula $C_6H_8O_6$. (Note Avogadro's number is $6.022 \times 10^{+23}$)

(a) What is the molar mass of vitamin C?

(b) What is the percent composition of oxygen in vitamin C?

(c) How many moles of vitamin C are there in 23.8 g of vitamin C.

(d) How many individual O atom atoms are there in vitamin C?

3. An unknown compound was analyzed and found to have a composition of 31.89% carbon, 5.35 % hydrogen, and 62.76 % chlorine. In a separate experiment the molar mass was found to be 112.99 g/mol. Determine the empirical and molecular formulas of the compound.

4. Balance the following equations

(a) $NaOH(aq) + FeBr_3(aq) \longrightarrow NaBr(aq) + Fe(OH)_3(s)$

(b) $HCl(aq) + MgCO_3(aq) \longrightarrow MgCl_2(aq) + H_2O(l) + CO_2(g)$

(c) $Cu_2O(s) + C(s) \longrightarrow Cu(s) + CO(g)$

(d) $Cr(s) + O_2(g) \longrightarrow Cr_2O_3(s)$

(e) $H_2O(l) + Al_2S_3(s) \longrightarrow Al(OH)_3(s) + H_2S(g)$

(f) $TiCl_4(l) + H_2O(l) \longrightarrow HCl(aq) + TiO_2(s)$