Name __*Key*__   Name __*BA = bad attempt*__
Sign   Print   *NW = no work*
Please **show work on all questions** for **full credit & partial credit**. (20 total pts)
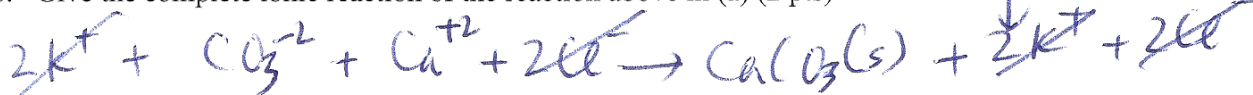
attempt $-\frac{1}{2}$

1.   Complete the following reaction (10 pts)

a.   Molecular reaction (formula equation) (hint: look at your solubility rules table) (6 pts, 3 pts each)

K$_2$ CO$_3$ + Ca Cl$_2$ → __$Ca\ CO_3 (s)$ +__ __$2\ K Cl$__

Spectator

b. Give the complete ionic reaction of the reaction above in (a) (2 pts)

$$2K^+ + CO_3^{-2} + Ca^{+2} + 2Cl^- \rightarrow CaCO_3(s) + 2K^+ + 2Cl^-$$

c. Give the net ionic reaction of the reaction above in (a) (2 pts)

$$CO_3^{-2} + Ca^{+2} \longrightarrow CaCO_3(s)$$

2. Given the reaction below and assuming complete dissociation and complete reaction (6 pts)

2 H Cl (aq) + Ba (OH)$_2$ (aq) → Ba Cl$_2$ (aq) + 2 H$_2$O (l)

If you start the reaction with 23.5 mL of 0.1 M H Cl solution, assuming that the HCl is the limiting reagent, how many grams of the Ba Cl$_2$ (FW Ba Cl$_2$ = 208.23 g/mol) will you make assuming complete reaction.

$$23.5\,mL\ HCl\ soln. \times \frac{0.1\ mol\ HCl}{1000\ mL\ HCl\ soln} \times \frac{1\ mol\ BaCl_2}{2\ mol\ HCl} \times \frac{208.23\ g\ BaCl_2}{1\ mol\ BaCl_2}$$

$$= 0.245\ g\ BaCl_2$$

BA-3 *attempt-1*   *attempt $-\frac{1}{2}$*   *NW $-\frac{1}{2}$*

3. Give the oxidation state in the following reagents. Show work or explain. (4 pts, 1 pt each)

a. Fe __*zero*__   b. Cl in Fe Cl$_2$ __*-1*__   c. Cl$_2$ __*zero*__   d. P in PO$_4^{-3}$ __*+5*__

    element   *group 7-8*   *element* $P + 4(-2) = -3$
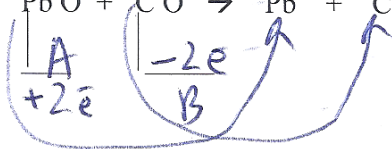 $P = -3 + 8 = +5$
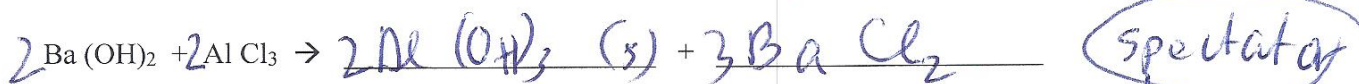
Extra Credit: (4 pts)   In the following redox reaction, fill in the blank with either (A) being reduced (B) being oxidized.   Note the oxidation states given above the elements

+2 -2 +2 -2   zero   +4 -2

Pb O + C O → Pb + C O$_2$

  A   -2e
 +2e   B

Gen Chem I (CHM 201) Fall 18 Dr. Hahn MWF 8 am Quiz VI form B 11/12 M Exam # _____

Name __Key_____   Name __BA = bad attempt__
Sign   Print __NW = no work__
Please **show work on all questions** for **full credit & partial credit**. (20 total pts)   pink

1.   Complete the following reaction (10 pts)   *attempt −½*

   a. Molecular reaction (formula equation) (hint: look at your solubility rules table) (6 pts, 3 pts each)

$2 Ba(OH)_2 + 2 AlCl_3 \rightarrow$ $2 Al(OH)_3 (s) + 3 BaCl_2$ *spectator*

   b. Give the complete ionic reaction of the reaction above in (a) (2 pts)

$2 Ba^{+2} + 4 OH^- + 2 Al^{+3} + 6 Cl^- \rightarrow 2 Al(OH)_3 + 3 Ba^{+2} + 6 Cl^-$

   c. Give the new ionic reaction of the reaction above in (a) (2 pts) (s)

$4 OH^- + 2 Al^{+3} \rightarrow 2 Al(OH)_3 (s)$

2.   Given the reaction below and assuming complete dissociation and complete reaction (6 pts)

$H_2SO_4 (aq) + 2 LiOH (aq) \rightarrow Li_2SO_4 (aq) + 2 H_2O (l)$
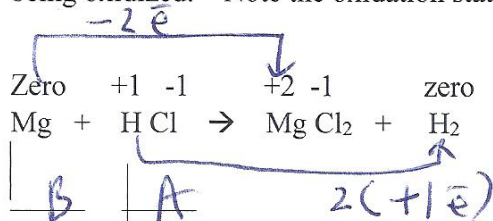
If you start the reaction with 79.2 mL of 1.32 M H_2SO_4 solution, assuming H_2SO_4 is the limiting reagent, how many grams of the Li_2SO_4 (FW Li_2SO_4 = 109.95 g/mol) will you make assuming complete reaction.

$79.2 \, mL \, H_2SO_4 \, soln \times \dfrac{1.32 \, mol \, H_2SO_4}{1000 \, mL \, H_2SO_4 \, soln} \times \dfrac{1 \, mol \, Li_2SO_4}{1 \, mol \, H_2SO_4} \times \dfrac{109.95 \, g \, Li_2SO_4}{1 \, mol \, Li_2SO_4}$

$= 11.5 \, g \, Li_2SO_4$ *BA −3* *attempt −1*

3.   Give the oxidation state in the following reagents. Show work. (4 pts, 1 pt each)

   a. Al __zero__   b. Al in $AlCl_3$ __+3__   c. S __zero__   d. N in HNO_3 __+5__
       element   +3 group 3   element $N + (+1) + 3(-2) = zero$
                                                     $N = +6 -1 = +5$

Extra Credit: (4 pts)   In the following redox reaction, fill in the blank with either (A) being reduced (B) being oxidized.   Note the oxidation states given above the elements

−2 $\bar{e}$

Zero +1 -1   +2 -1   zero
Mg + HCl → MgCl_2 + H_2

   B   A   2(+1 $\bar{e}$)

attempt −½

NW −½