CHEMISTRY 12
CHEMISTRY 11 REVIEW QUIZ

1. Write the **name** of the following compounds:

/8

a. $Pb(NO_3)_2$ Lead (II) nitrate

e. $Ca(OH)_2$ Calcium hydroxide

b. S_2O_3 disulphur trioxide

f. CF carbon monofluoride

c. $FeCl_2$ Iron (II) chloride

g. Na_2SO_4 Sodium sulphate

d. N_2O_5 dinitrogen pentoxide

h. P_5O_2 penta phosphorous dioxide

2. Write the **chemical formula** for the following compounds:

/6

a. Aluminum chloride
$AlCl_3$

d. Silver chromate
Ag_2CrO_4

b. Hydrogen fluoride
HF

e. carbon monochloride
CCl

c. Copper (I) nitrate
$CuNO_3$

f. Iron (II) phosphate
$Fe_3(PO_4)_2$

3. **Balance** and **identify** the following equations as either synthesis, decomposition, single replacement, double replacement, combustion or neutralization. Then write the **names** and **phases** of the compounds into a word equation, for example:

_2_ Ba (s) + ___ O_2 (g) -----> _2_ BaO (s),   synthesis
solid barium reacts with gaseous oxygen to form solid barium oxide

/6

a. __2_ CH_3CH_3 (g) + _7_ O_2 (g) ----> _4_ CO_2 (g) + _6_ H_2O (g) [Combustion]
ethane gas reacts with oxygen gas to produce
carbon dioxide gas and gaseous water.
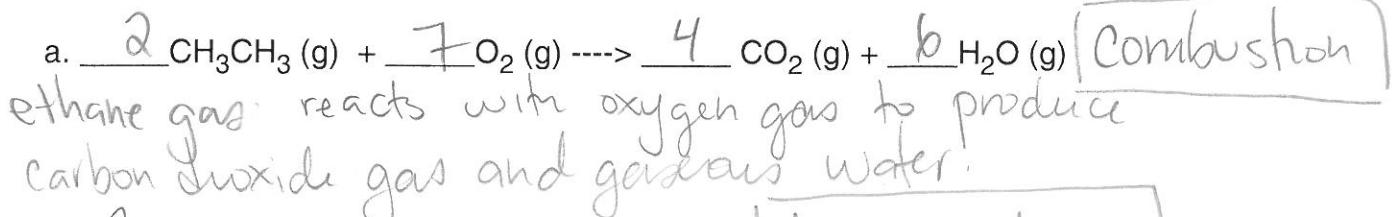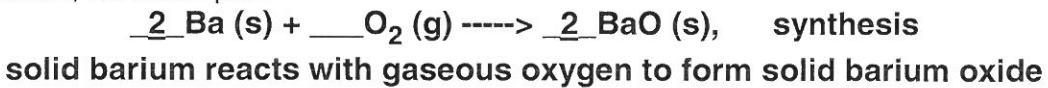
b. _2_ HI (g) ---------> ___ H_2 (g) + ___ I_2 (g) [decomposition]
Hydroiodic gas breaks down to form
hydrogen gas and iodine gas.

/20

8. Write the **dissociation/ionization** equation showing the following **solid** compounds dissolved in water:

$$NaCl (s) ---------> Na^+ (aq) + Cl^- (aq)$$

a. $Na_2NO_3 (s) \longrightarrow 2Na^+_{(aq)} + CO_3^{2-}{}_{(aq)}$

b. $Ba(OH)_2 (s) \longrightarrow Ba^{2+}_{(aq)} + 2OH^-_{(aq)}$

c. $(NH_4)_2CO_3 (s) \longrightarrow 2NH_4^+_{(aq)} + CO_3^{2-}{}_{(aq)}$
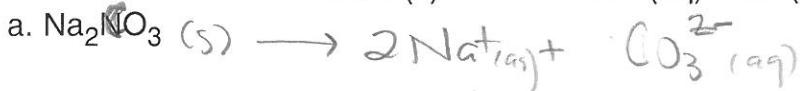
9. Calculate the resulting **ion concentrations** when the follwing solutions are mixed. Hint: first write out the dissociation equations then use $M_I V_I = M_F V_F$

a. 200.0 mL of 6.4 M AlF_3 mixed with 1.0 L of 0.20 M BaF_2

$AlF_3{}_{(s)} \longrightarrow Al^{3+} + 3F^-$
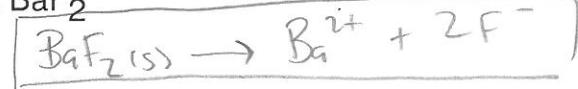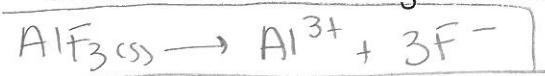
$[AlF_3]_F = \dfrac{6.4 M \cdot 0.2000 L}{1.2 L}$

$= 1.0666 M$

$\therefore [Al^{3+}] = 1.1 M$

$[F^-] = 3.2 M$
$+ 0.333$
$[F^-] = 3.5 M$

$BaF_2{}_{(s)} \longrightarrow Ba^{2+} + 2F^-$

$[BaF_2]_F = \dfrac{0.20M \cdot 1.0 L}{1.2 L}$

$= 0.1666 M$

$\therefore [Ba^{2+}] = 0.17 M$

10. Calculate the final concentration of the solute in M (mol/L) in each of the following situations using $M_I V_I = M_F V_F$

a. 100 mL of 6.4 M HCl diluted to 5.0 L

$[HCl]_F = \dfrac{6.4 M \cdot 0.1 L}{5.0 L} = \boxed{0.1 M\ HCl}$

11. What is the concentration for KOH if 15.0 mL of this base is neutralized when titrated with 25.0 mL of 0.325 M H_2SO_4?

① $H_2SO_4 + \underline{2}KOH \longrightarrow K_2SO_4 + \underline{2}H_2O$

①

$0.0250 L \times \dfrac{0.325\ mol\ H_2SO_4}{1 L} \times \boxed{\dfrac{2\ mol\ KOH}{1\ mol\ H_2SO_4}} = \dfrac{1.625 \times 10^{-2}\ mol\ KOH}{0.0150 L}$

$\therefore \boxed{[KOH] = 1.08 M}$ ①

⑫

4. Identify the number of **significant figures** in the following values:

a. 0.0200350   _____ 6 _____   d. 9.800   _____ 4 _____

b. 0.000090   _____ 2 _____   e. 0.1   _____ 1 _____

c. 4025.003   _____ 7 _____   f. 200   _____ 1 _____

2/3

5. Express the **answer** with the correct number of **significant figures**:

a. 60.3 + 12.36 + 12.0 = 84.66 → 84.7

b. 300 - 200.79 = 99.21 = 99

c. (13.26 + 9.87) - (18.458 + 0.987) = 3.685 → 3.69
     (23.13) - 19.445

6/7

d. (125.320 - 16.701) x (256.39 - 250.9) =
     (108.619) x (5.49) = 596 → 6.0×10^2

e. 121.3 x 26.39 = → 3201

f. 91.0 / 2.986 = 30.5

g. (198.0 - 29.633) / (35.96 - 11.111) =
     (4)(168.367) ÷ (24.849) = 6.776

6. Calculate the **molar mass** of the following compounds:
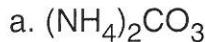
a. $(NH_4)_2CO_3$

2 N = 28.0
8 H = 8.0
1 C = 12.0
3 O = 48.0
96.0 g $(NH_4)_2CO_3$

1/2
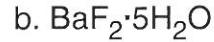
b. $BaF_2 \cdot 5H_2O$

1 Ba = 137.3
2 F = 38.0
10 H = 10.0
5 O = 80.0
265.3 g $BaF_2 \cdot 5H_2O$

7. Calculate the number of **moles** in:

a. 295.6 g K_2S

2 K = 78.2
1 S = 32.1
110.3

2/3

$295.6 \text{ g } K_2S \times \dfrac{1 \text{ mol } K_2S}{110.3 \text{ g}} = 2.680 \text{ mol } K_2S$

b. 755 mL of 0.64M $MgCl_2$

2/3

mol / 4M

$0.755 \text{ x} \times \dfrac{0.64 \text{ mol } MgCl_2}{1 \text{ x}} = 0.48 \text{ mol } MgCl_2$

13