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Name: Key
Blk:_____Date:_____

CHEMISTRY 12
CHEMISTRY 11 REVIEW QUIZ

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

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

b. S_2O_3 disulphur trioxide

c. $FeCl_2$ Iron (II) chloride

d. N_2O_5 dinitrogen pentoxide

e. $Ca(OH)_2$ Calcium hydroxide

f. CF carbon monofluoride

g. Na_2SO_4 Sodium sulphate

h. P_5O_2 pentaphosphorous dioxide

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

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a. Aluminum chloride $AlCl_3$

b. Hydrogen fluoride HF

c. Copper (I) nitrate $CuNO_3$

d. Silver chromate Ag_2CrO_4

e. carbon monochloride CCl

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

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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.

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

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

a. Na_2CO_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) $\longrightarrow$ $2NH_4^+{}_{(aq)} + CO_3^{2-}{}_{(aq)}$

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9. Calculate the resulting **ion concentrations** when the follwing solutions are mixed. Hint: first write out the dissociation equations then use $\mathbf{M_I V_I = M_F V_F}$

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

$AlF_3{}_{(s)} \longrightarrow Al^{3+} + 3F^-$

$[AlF_3]_F = \frac{6.4\,M \cdot 0.2000\,L}{1.2\,L} = 1.0666\,M$

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

$[F^-] = 3.2\,M + 0.333$

$[F^-] = 3.5\,M$

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

$[BaF_2]_F = \frac{0.20\,M \cdot 1.0\,L}{1.2\,L} = 0.1666\,M$

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

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

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

$[HCl]_F = \frac{6.4\,M \cdot 0.1\,L}{5.0\,L} = 0.1\,M\ HCl$

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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) $H_2SO_4 + 2KOH \longrightarrow K_2SO_4 + 2H_2O$

(1)

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

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$\therefore [KOH] = 1.08\,M$ (1)

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

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a. 0.0200350 ___6___ d. 9.800 ___4___

b. 0.000090 ___2___ e. 0.1 ___1___

c. 4025.003 ___7___ f. 200 ___1___

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

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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. $(NH_4)_2CO_3$

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

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

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2K = 78.2
1S = 32.1
110.3

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

b.755 mL of 0.64M $MgCl_2$

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mol / L|M

$0.755\ L \times \frac{0.64\ mol\ MgCl_2}{1\ L} = 0.48\ mol\ MgCl_2$

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