**Synthesis Reactions Data Sheet**

**Name: Quang Huynh | Period \_\_\_\_\_\_\_\_\_\_ Date lab is due\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Observations for each procedure number:**

1.)  After the universal indicator was added, the water turned a greenish color. After blowing with a straw, the color changed to yellow. Then, when universal indicator was added to the magnesium, it turned purple.

2.)  When mixing, the mixture changed homogenous. Adding a drop of universal indicator made the mixture purple.

3.) **Blue litmus paper** - The paper stayed the same color, blue.

**Universal Indicator** After dropping universal indicator, the paper remained the same color when it was dipped into the liquid. But the liquid turned purple.

4.) **Blue litmus paper** - The paper stayed the same color again.

**Universal Indicator** – The universal indicator turned the liquid purple.

\****Remember***- Blue litmus paper that stays blue means the solution is a base but if it turns red that  indicates an acid.

**Universal indicator**  -  a mixture of indicators that gives more or an approximate pH  range. The chart below indicates this.

1.   Very acidic – red color

      Acidic – orange/yellow color

      Neutral – green color

      Basic – blue color

      Very basic – purple color

**Questions:**

Write and balance the equations for the following synthesis reactions.

1.)      **magnesium         +         oxygen             →                      magnesium oxide**

2Mg +  O2→   2MgO

2.) **magnesium oxide        +           water              →                 magnesium hydroxide**

MgO +     H2O→       Mg(OH)2

3.) **sulfur              +             oxygen               →                        sulfur dioxide**

S +     O2 →     SO2

4.) **sulfur dioxide           +             water           →            sulfurous acid   (use table K )**

SO2  +      H2O →      H2SO**3**

5.) **diphosphorous pentoxide    +            water              →            phosphoric acid**

P**4**O**10** +    6H2O →   4H**3**PO**4**

6.) **calcium oxide        +              water                  →             calcium hydroxide**

CaO+   H2O   →    Ca(OH)2

1 7.) Given the balanced equations representing two chemical reactions:

**Cl2 + 2NaBr → 2NaCl + Br2**

**2NaCl → 2Na + Cl2**

Which types of chemical reactions are represented by these equations?

(1) single replacement and decomposition

(2) single replacement and double replacement

(3) synthesis and decomposition

(4) synthesis and double replacement

1 8.) Which equation represents a **decomposition** reaction?

(1) CaCO3(s) →CaO(s) + CO2(g)

(2) Cu(s) + 2AgNO3(aq) →2Ag(s) + Cu(NO3)2(aq)

(3) 2H2(g) + O2(g) →2H2O(l)

(4) KOH(aq) + HCl(aq) →KCl(aq) + H2O(l)

4 9.) Given the balanced equation representing a reaction:

**4Al(s) + 3O2(g) → 2Al2O3(s)**

Which type of chemical reaction is represented  by this equation?

(1) double replacement

(2) single replacement

(3) substitution

(4) synthesis

3 10.) Given the balanced equation representing a reaction:

**H2SO4(aq) + 2KOH(aq) → K2SO4(aq) + 2H2O(l)**

Which type of reaction is represented by this equation?

(1) decomposition      (2) single replacement

(3) neutralization       (4) synthesis