GenChem-2015 Name_____P_

The Chemistry of Compounds: *What happens to H_2O_2 over time?*

*IDENTIFYING TYPES OF REACTIONS **AND** FINDING THE PERCENTAGE COMPOSITION BY WEIGHT OF AN ELEMENT IN A COMPOUND*

Background: (On the back sheet) Define Catalyst, Percent Composition Formula, Law of Conservation of Mass

Procedure:

a. Place two 6-inch test tubes in small beaker. Place beaker on a balance. Record weight of beaker & test tubes in item 1 of table.

b. Add a very small amount (½ in.) of manganese dioxide (MnO_2) to one of the test tubes. Weigh the beaker, test tubes, and manganese dioxide on the scale. Record the weight in item 2 of the table.

c. Add 1 inch of a 3% solution of hydrogen peroxide (H_2O_2) to the other test tube. Weigh the beaker, test tubes, manganese dioxide, and hydrogen peroxide on the scale. Record the weight in item 3 of the data table.

d. Pour the hydrogen peroxide into the test tube containing the manganese dioxide. Place the emptied test tube back in the beaker.

e. After about 30 seconds, hold a glowing splint near the mouth of the test tube containing the hydrogen peroxide and manganese dioxide. 1. Explain what happens to the glowing splint:

2. What gas is at the mouth of the test tube? _____ Why?

f. After the bubbling has stopped, wait 1 minute and then weigh the beaker, test tubes, & contents. Record weight in item 5 of table.

g. From the table, determine the weight lost during the decomposition of the H_2O_2. This equals weight of the oxygen in H_2O_2. (In this reaction, O_2 is NOT released from the manganese dioOXIDE. The manganese dioxide is a *catalyst*; it merely accelerates the release of the oxygen from the hydrogen peroxide.)

#	Items	Measurement	Unit
1	Weight of beaker and test tubes		
2	Weight of beaker, test tubes, and manganese dioxide		
3	Weight of beaker, test tubes, manganese dioxide, & H_2O_2		
4	Calculate weight of H_2O_2 (item 3 minus item 2)		
5	Weight of beaker, test tubes, & contents after the reaction		
6	Calculate weight of O_2 released during reaction (item 3 minus item 5)		

h. From the results of this experiment, find the percentage of oxygen in H_2O_2, by weight, as follows:

$$\text{Oxygen (in percent)} = \frac{\text{weight of oxygen released}}{\text{weight of hydrogen peroxide}} \times 100 = \_\_\_\_\_$$

WRITE EQUATION & Circle Answer:

3. Suppose you were to repeat this experiment several times. Would you expect to get the same value for the % of O_2? ____ Explain.

4. Write the chemical statement for the reaction in the lab:

5. Reactants: Products:

6. Write the appropriate chemical word equation for the reaction in the lab:

7. Write the chemical equation for the reaction in the lab: (use appropriate symbols, see pg. 179)

8. What type of reaction occurred in this lab? (see pgs 187-195) **AND EXPLAIN WHY** this is your answer.

Combination	Decomposition	Single-Replacement	Double-Replacement	Combustion

WHY?

9. By understanding the % of O_2 in the decomposition of H_2O_2, what does it mean to the Law of Conservation of Mass?