

## Midterm Review Chem 002 – FS/06

### 1. MSDS and Safety

- Know where the safety equipment is located in your lab.
- Know the MSDS information for the first five experiments.

### 2. Statistical Analysis

- Read over Statistical Analysis of Experimental Data (PROP 353) – purple book pp. 9-13.
- Know Equations 1-5 and know the names of each equation.
  - Average or mean:  $\bar{x} = \sum x_i / n$
  - Standard Deviation:  $\sigma = \sqrt{\sum (x_i - \bar{x})^2 / n}$
  - Estimate of the Standard Deviation:  $s = \sqrt{\sum (x_i - \bar{x})^2 / (n-1)}$
  - Confidence Interval (CI) for a single value:  $CI_{\text{single}} = \pm t_s$
  - Confidence Interval (CI) for the mean:  $CI_{\text{mean}} = \pm t_s / \sqrt{n}$
- Know the differences between equations 2-3 and 4-5 and when each of these equations is applicable.

### 3. Determining the Thickness of a Coating

- Read over Determining the Thickness of Zinc on Galvanized Washers (ANAL 909) – purple book pp. 47-56
- Know how to determine the volume of a coating based on the mass and density of the coating.  
 $V = m / d$
- Know how to determine the surface area of the item, if given the SA equation for that shape.
- Know how to determine the thickness of the coating from the volume and the surface area.  
thickness = volume / surface area
- Be able to determine the percent error, if given the expected thickness of the coating.

### 4. The Empirical Formula of a Compound

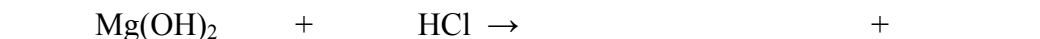
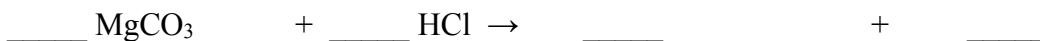
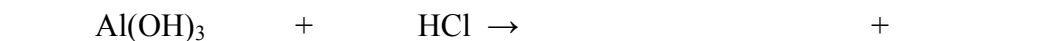
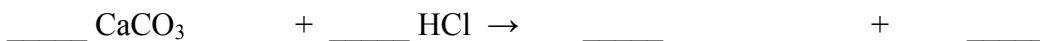
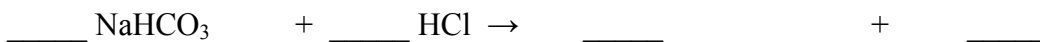
- Read over Determining the Empirical Formula of Copper Chloride (STOI 386) – purple book pp. 57-68.
- Know how to determine the percent composition of a compound, if given initial and final masses.
- Be able to determine the empirical formula of the compound by determining the formula weights and mass percents of compounds.

### 5. Separating Components of a Mixture

- Read over Separating the Components of a Ternary Mixture (PROP 375) – purple book pp. 35-46.
- Be able to make a flowchart if given a table of components in a mixture.
- Know how to determine the percent of each of the components in the mixture.
- Know how to determine the percent recovery and the percent error of the overall composition.

## 6. Antacids

- Read over green book 6-1 to 6-5.
- Know how to write balanced equations for each of the antacids and HCl:



- Given the mass of the antacid be able to calculate the number of moles of the antacid.
- Having calculated the number of moles of antacid, be able to determine the theoretical number of moles of HCl used to neutralize the antacid.
- Having calculated the number of moles of HCl used to neutralize the antacid, determine the number of grams (and/or mg) of HCl neutralized.
- Given the concentrations of HCl and NaOH and the buret readings for each, be able to calculate the actual number of moles of HCl neutralized by the antacid.
- Be able to compare and contrast the similarities and differences between the actual and theoretical amounts of HCl neutralized.