Name:_____
Blk:_____Date:_____

Chemistry 12
ACID BASE PART II Lesson # 16
ACID-BASE TITRATIONS

Recall from Chemistry 11:
A titration is a process in which a measured amount of a solution is reacted with a volume of another solution (one of the solution has a unknown concentration) until a desired EQUIVALENCE POINT is reached (generally indicated by a colour change).

The EQUIVALENCE POINT is also known as the stoichiometric point as it is reached when the mole to mole ration is equivalent to the ration in the BALANCED EQUATION!!!

All TITRATION problems have FIVE MAIN PARAMETERS:
a. known volume
b. known concentration
c. "unknown" volume
d. "unknown" concentration
e. mole : mole ratio between known & unknown ← Balanced eqtn.

Example 1. A GENERIC TITRATION PROBLEM: In the reaction between sulphuric acid and sodium hydroxide an equivalence point is reached when 23.10 mL of 0.2055 M NaOH is added to a 25.00 mL portion of H_2SO_4 . What is the $[H_2SO_4]$?

1. $1H_2SO_4(aq) + 2NaOH(aq) \rightarrow Na_2SO_4(aq) + 2H_2O(l)$

$$0.02310\,\text{K} \cdot \frac{0.2055\,\text{mol NaOH}}{1\,\text{K}} \cdot \left(\frac{1\,\text{mol } H_2SO_4}{2\,\text{mol NaOH}}\right) \cdot \left(\frac{1}{0.02500\,\text{L}}\right) =$$

$9.494 \cdot 10^{-2}$ M H_2SO_4 → 0.09494 M H_2SO_4

Experimental Note: When performing a titration in the lab it must be repeated to check for accuracy of the results. If the following volumes were collected by a student:

1st titration = 21.55 mL
2nd titration = 21.82 mL
3rd titration = 21.81 mL

The student would DISCARD the volume from the first titration and take the AVERAGE of the closest TWO values. (21.82 + 21.81) / 2 = 21.815 mL => 21.82 mL

SEATWORK/HOMEWORK: Exercises 95-107 (odd numbers) pgs 158-159
PLO's: P2-P3