

Acid-Base Stoichiometry

Practice Sheet # 40

1. A titration experiment is carried out between sodium hydroxide and hydrochloric acid.
 - a. Give the balanced chemical equation for this reaction.
 - b. The experiment required 15.00 mL of 0.20 M sodium hydroxide to titrate 10.00 mL of hydrochloric acid. Determine the concentration and pH of the hydrochloric acid.
 - c. What mass of salt will be produced in the reaction?

2. A solution is prepared by dissolving 1.80 g of oxalic acid in water. The solution is then titrated with 0.400 M sodium hydroxide.
 - a. Give the balanced chemical equation for this reaction.
 - b. What volume of sodium hydroxide is required in the experiment?

3. A titration experiment is carried out between sulfuric acid and potassium hydroxide.
 - a. Give the balanced chemical equation for this reaction.
 - b. The following data is collected:

Volume sulfuric acid = 5.00 mL
Concentration of potassium hydroxide= 0.500 M

Trial 1 Volume of KOH required=19.96 mL
Trial 2 Volume of KOH required= 20.05 mL
Trial 3 Volume of KOH required= 19.99 mL

 - i. Calculate the average volume of potassium hydroxide required in the titrated experiment.

Name: _____ Per _____

- ii. Determine the concentration of the sulfuric acid solution

- iii. Determine the mass of sulfuric acid contained in the solution (mass of solute)

- iv. From the volume of sulfuric acid used and the density of sulfuric acid (1.10 g/mL), determine the mass of the sulfuric acid solution used (mass of solution)

- v. Calculate the percent concentration of sulfuric acid in the solution.

4. A titration experiment is carried out between nitric acid and barium hydroxide.

a. Give the balanced chemical equation for this reaction.

b. The following data is collected for a titration experiment:

Concentration of nitric acid = 0.200 M	Trial 1	Trial 2	Trial 3
Initial reading of burette (mL)	0.15	15.75	1.20
Final reading of burette (mL)	15.75	31.40	16.75
Volume of nitric acid used (mL)			

Volume of barium hydroxide: 10.00 mL

- i. Determine the volume of nitric acid used in each of the trials. Calculate the average volume of nitric acid required in the titration experiment.

- ii. Determine the concentration of the barium hydroxide solution

- iii. Find the pOH and pH of the barium hydroxide solution.

- iv. Calculate the mass of the salt produced in this reaction.