

Chemical Calculations Assignment 2

Dilutions, Acids and Bases

1.
 - a) 25 mL of 1.0 mol L^{-1} oxalic acid is added to 50 mL of water. Calculate the new concentration. /2
 - b) Calculate how much 0.50 mol L^{-1} ascorbic acid needs to be diluted (added to water) to make 1.0L of 0.10 mol L^{-1} solution. /2
 - c) Calculate the original concentration of hydrogen peroxide if there was 100mL before dilution and 250mL of 0.020 mol L^{-1} afterwards. /2
 2. Write balanced equations for:
 - a) sulfuric acid plus nickel hydroxide /2
 - b) lithium bicarbonate plus nitric acid /2
 - c) hydrochloric acid plus silver carbonate /2
 3.
 - a) State, in terms of protons, what is happening during any acid-base reaction. /1
 - b) Explain the difference between a strong acid and a concentrated acid. /2
 4.
 - a) If a solution of ammonia has a hydrogen ion concentration of $6.3 \times 10^{-9} \text{ mol L}^{-1}$:
 - (i) Calculate its pH. /2
 - (ii) State whether it is acidic, neutral or basic. /1
 - b) Calculate the concentration of HNO_3 in a solution with a pH of 0.045. /1
 - c) Calculate the pH of a solution that has a hydroxide ion concentration of $4.8 \times 10^{-6} \text{ mol L}^{-1}$. /3
- TOTAL /22