

AP WORKSHEET 04E: Stoichiometry

SHOW ALL WORKING CLEARLY

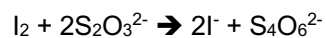
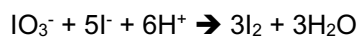
Question 1

3.47 g of the hydrated “double salt”, ammonium iron(II) sulfate hexahydrate, $\text{FeSO}_4(\text{NH}_4)_2\text{SO}_4 \cdot 6\text{H}_2\text{O}$ was dissolved in 200. mL of water. 20.0 mL of the solution had some acid added to it and then it reacted completely with 12.6 mL of KMnO_4 solution. Calculate the concentration of the KMnO_4 solution given the full REDOX equation below. (4)



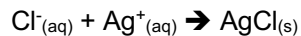
Question 2

When 25.0 mL of a solution of 0.200 M NaIO_3 was added to acidified iodide ions, the iodine produced reacted with 20.3 mL of sodium thiosulfate ($\text{Na}_2\text{S}_2\text{O}_3$). Calculate the concentration of sodium thiosulfate solution given the REDOX equations below. (4)



Question 3

3.364 g of hydrated barium chloride $\text{BaCl}_2 \cdot x\text{H}_2\text{O}$ was dissolved in water and made up to a total volume of 250.0 mL. 10.00 mL of this solution required 46.92 mL of 2.530×10^{-2} M silver nitrate for complete reaction. Calculate the value of x in the formula of hydrated barium chloride, given the net ionic equation for precipitation below. (4)



Question 4

Calculate the concentration of 45.0 mL of a phosphoric acid solution that neutralized 20.8 mL of 0.532 M sodium hydroxide. Assume complete ionization of the acid. (3)



Question 5

If 0.664 g of an acid was required to neutralize 10.0 mL of 0.800 M NaOH, calculate the Molar Mass of the acid given it reacts with sodium hydroxide in a 1:2 ratio i.e., **1 ACID : 2 NaOH**. (3)

