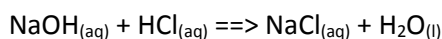


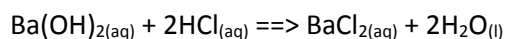
Titration Calculations

Q1 A solution of sodium hydroxide contained 0.25 mol dm^{-3} . Using phenolphthalein indicator, titration of 25.0 cm^3 of this solution required 22.5 cm^3 of a hydrochloric acid solution for complete neutralisation. The equation is:



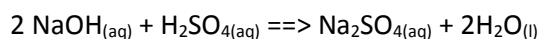
- (a) what colour does the indicator change to at the end-point?
- (b) calculate the moles of sodium hydroxide neutralised.
- (c) calculate the moles of hydrochloric acid neutralised.
- (d) calculate the concentration of the hydrochloric acid in mol/dm^3

Q2 A solution made from pure barium hydroxide contained 2.74 g in exactly 100 cm^3 of water. Using phenolphthalein indicator, titration of 20.0 cm^3 of this solution required 18.7 cm^3 of a hydrochloric acid solution for complete neutralisation [atomic masses: Ba = 137, O = 16, H = 1]



- (a) calculate the concentration of the barium hydroxide solution.
- (b) calculate the moles of barium hydroxide neutralised.
- (c) calculate the moles of hydrochloric acid neutralised.
- (d) calculate the concentration of the hydrochloric acid.

Q3 4.90g of pure sulphuric acid was dissolved in water, the resulting total volume was 200 cm^3 . 20.7 cm^3 of this solution was found on titration, to completely neutralise 10.0 cm^3 of a sodium hydroxide solution. [atomic masses: S = 32, O = 16, H = 1]



- (a) calculate the concentration of the sulphuric acid solution.
- (b) calculate the moles of sulphuric acid neutralised.
- (c) calculate the moles of sodium hydroxide neutralised.
- (d) calculate the concentration of the sodium hydroxide in mol dm^{-3}