

## CALCULATION OF NEUTRALISATION THROUGH TITRATION METHOD

### Question 1

2  mol dm<sup>-3</sup> nitric acid

25.0 cm<sup>3</sup> of nitric acid is added to 25.0 cm<sup>3</sup> of 1.0 mol dm<sup>-3</sup> sodium hydroxide to reach the end point. What is the concentration of nitric acid?

$$x ( M_A ) ( V_A ) = x ( M_B ) ( V_B )$$

25.0 cm<sup>3</sup> of 1.0 mol dm<sup>-3</sup> sodium hydroxide.

$$M_A = \frac{x ( M_B ) ( V_B )}{x}$$

### Question 2

3  cm<sup>3</sup> of 0.5 mol dm<sup>-3</sup> sulphuric acid

How much of 0.5 mol dm<sup>-3</sup> sulphuric acid is needed to neutralise 25.0 cm<sup>3</sup> of 1.0 mol dm<sup>-3</sup> sodium hydroxide?

$$x ( M_A ) ( V_A ) = x ( M_B ) ( V_B )$$

25.0 cm<sup>3</sup> of 1.0 mol dm<sup>-3</sup> sodium hydroxide.

$$V_A = \frac{x ( M_B ) ( V_B )}{x}$$

Question 3

4  cm<sup>3</sup> of 1.0 mol dm<sup>-3</sup>  
hydrochloric acid

How much of 1.0 mol dm<sup>-3</sup> hydrochloric acid is needed to neutralise 15.0 cm<sup>3</sup> of 1.0 mol dm<sup>-3</sup> barium hydroxide?

x (      )( V<sub>A</sub> ) =      x (      )(      )

15.0 cm<sup>3</sup> of 1.0 mol dm<sup>-3</sup>  
barium hydroxide

V<sub>A</sub> =  $\frac{x ( \quad )( \quad )}{x}$

Question 4

If it takes 25 mL of 0.05 M HCl to neutralize 345 mL of NaOH solution, what is the concentration of the NaOH solution?

$$x ( M_B )( \quad ) = \quad x ( \quad )( \quad )$$

$$M_B = \frac{x ( \quad )( \quad )}{x} = \quad \text{mol dm}^{-3}$$

### Question 5

If it takes 50.0 mL of 0.5 M  $\text{Ca}(\text{OH})_2$  solution to completely neutralize 125 mL of  $\text{HNO}_3$  solution, what is the concentration of the  $\text{HNO}_3$  solution?

$$\times ( \text{M}_A ) ( \quad ) = \times ( \quad ) ( \quad )$$

$$\text{M}_A = \frac{\times ( \quad ) ( \quad )}{x} = \text{mol dm}^{-3}$$

### Question 6

A 25.0 mL sample of  $\text{HCl}$  was titrated to the endpoint with 15.0 mL of 2.0 M  $\text{NaOH}$ . What is the molarity of  $\text{HCl}$  in  $\text{g dm}^{-3}$ ? [RAM: H= 1, Cl = 35.5]

$$\times ( \text{M}_A ) ( \quad ) = \times ( \quad ) ( \quad )$$

$$\text{M}_A = \frac{\times ( \quad ) ( \quad )}{x} =$$

Change to  $\text{g dm}^{-3}$ :  $\times$  =  $\text{g dm}^{-3}$

### Question 7

If it takes 75.0 mL of 1.5 M  $\text{HNO}_3$  solution to completely neutralize 125 mL of  $\text{Ca}(\text{OH})_2$  what is the concentration of the  $\text{Ca}(\text{OH})_2$  solution in  $\text{g dm}^{-3}$ ? [RAM : Ca = 40 , O = 16, H = 1]

$$\times ( \text{M}_B ) ( \quad ) = \times ( \quad ) ( \quad )$$

$$\text{M}_B = \frac{\times ( \quad ) ( \quad )}{x} =$$

Change to  $\text{g dm}^{-3}$ :  $\times$  =  $\text{g dm}^{-3}$