

Question 1

- a) What mass of silver nitrate (AgNO_3) is required to make 250 mL of 0.100 molL^{-1} solution?

$$0.250 \text{ L} \times 0.100 \text{ molL}^{-1} = 0.0250 \text{ mol}$$

$$169.9 \text{ gmol}^{-1} \times 0.0250 \text{ mol} = \underline{4.25 \text{ g}}$$

- b) What mass of sodium chloride (NaCl) is required to make 1L of 0.035 molL^{-1} solution?

$$1 \text{ L} \times 0.035 \text{ molL}^{-1} = 0.035 \text{ mol}$$

$$58.5 \text{ gmol}^{-1} \times 0.035 \text{ mol} = \underline{2.048 \text{ g}}$$

Question 2

Calculate the concentration

- a) 2.31 g of sodium carbonate in water and diluting to 250mL

$$2.31 \text{ g} \div 106 \text{ gmol}^{-1} = 0.02179... \text{ mol}$$

$$0.02179... \text{ mol} \div 0.250 \text{ L} = \underline{0.0872 \text{ molL}^{-1}}$$

- b) 46.2 g of sodium hydroxide in water and diluting to 2L

$$46.2 \text{ g} \div 40 \text{ gmol}^{-1} = 1.155 \text{ mol}$$

$$1.155 \text{ mol} \div 2 \text{ L} = \underline{0.578 \text{ molL}^{-1}}$$

- c) 1.22 g of sodium hydrogen carbonate in water and diluting to 200 mL

$$1.22 \text{ g} \div 84 \text{ gmol}^{-1} = 0.01452... \text{ mol}$$

$$0.01452... \text{ mol} \div 0.200 \text{ L} = \underline{0.726 \text{ molL}^{-1}}$$

- d) 2.52 g of copper sulphate ($\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$) in water and diluting to 100 mL

$$2.52 \text{ g} \div 249.6 \text{ gmol}^{-1} = 0.010096... \text{ mol}$$

$$0.010096... \text{ mol} \div 0.100 \text{ L} = \underline{0.101 \text{ molL}^{-1}}$$

Question 3

Copy and complete the following table

Concentration (molL^{-1})	Volume	Amount (mol)
0.1	0.0257	2.57×10^{-3}
0.053	250 mL	0.0133
0.911	3 L	2.732
0.457	0.560 L	0.256
0.107	20.7 mL	0.00221
0.0399	0.0132 L	5.27×10^{-4}