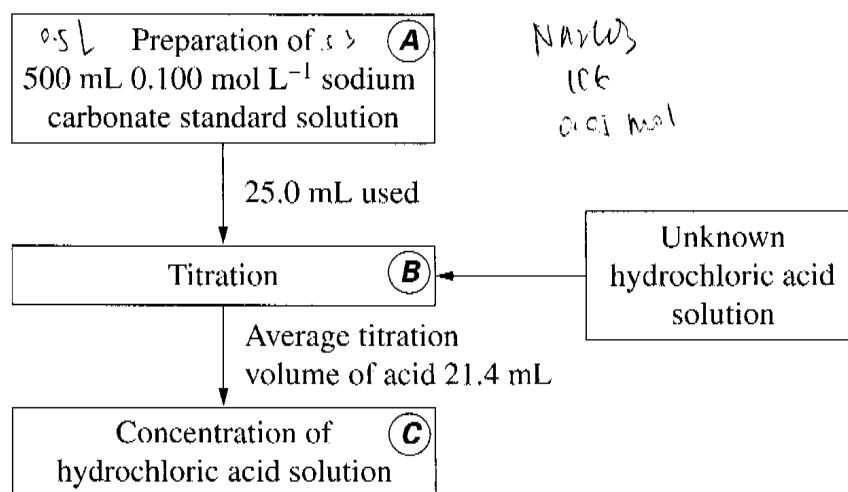


Question 28 (8 marks)

The flowchart shown outlines the sequence of steps used to determine the concentration of an unknown hydrochloric acid solution. 8



Describe steps **A**, **B** and **C** including correct techniques, equipment and appropriate calculations. Determine the concentration of the hydrochloric acid.

A. preparation of Na_2CO_3 standard solution by calculation. Molar $M(\text{Na}_2\text{CO}_3) = 106$.
 $n(\text{Na}_2\text{CO}_3) = 0.5 \text{ L} \times \frac{0.1 \text{ mol}}{\text{L}} = 0.05 \text{ mol}$
 $\therefore M(\text{Na}_2\text{CO}_3) = 106 \times 0.05 = 5.3 \text{ g}$
 1 - Prepare 5.3 g sodium carbonate powder by using a electronic ~~but~~ scale to weigh.
 2 - dissolve the 5.3 g sodium carbonate powder completely using a ~~but~~ dry and clean beaker with small amount of distilled water
 3 - transfer the solution into a volumetric flask

Question 28 continues on page 18