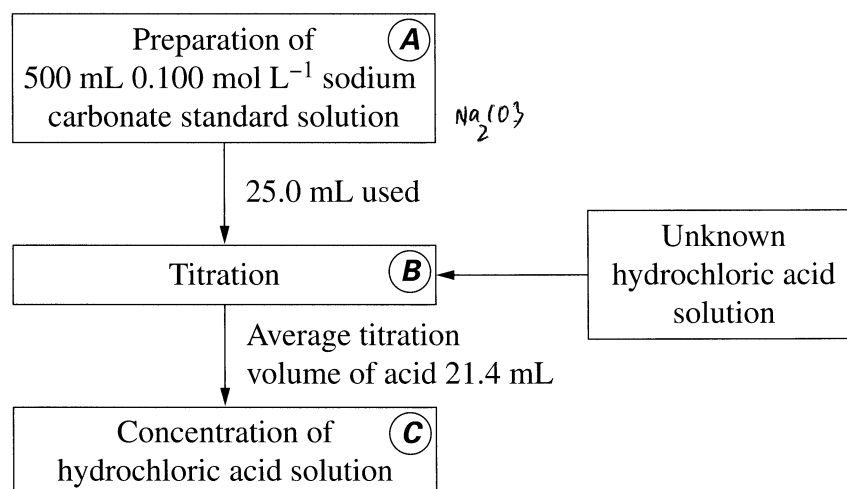


Question 28 (8 marks)

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.

Number of moles of sodium carbonate $n = CV = 0.1 \times \frac{500}{1000} = 0.05 \text{ (mol)}$
 mass required to make standard solution $= nM = 0.05 \times (22.99 \times 2 + 12.01 + 16 \times 3)$
 $= 5.5495 = 5.55 \text{ (g)}$

Step 1 making standard solution

- Weigh exactly 5.55 (g) of anhydrous sodium carbonate and transfer it to a clean beaker (use desiccator if necessary to remove all the moisture in the substance).
- Add 100 mL of distilled water and to dissolve the sodium carbonate.
- Transfer the solution slowly into a clean volumetric flask (500 mL).
- Use wash bottle to wash all the remaining solutes into the flask.

Question 28 continues on page 18