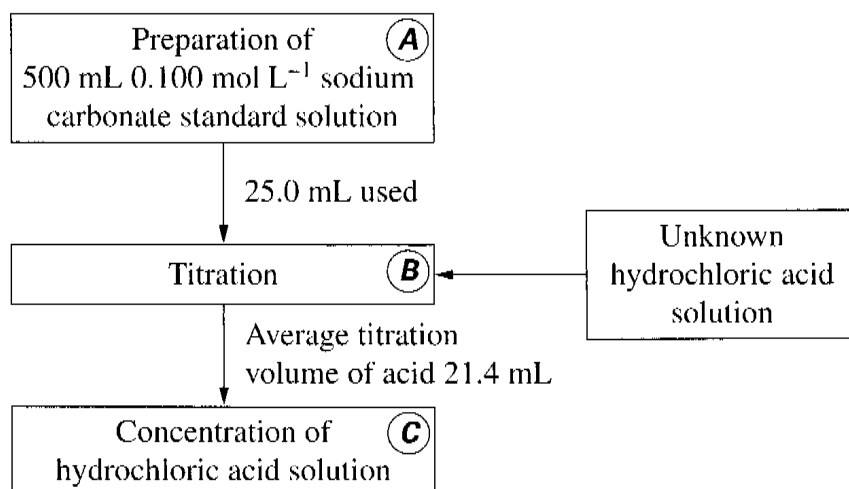


**Question 28** (8 marks)

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.

Step A is the preparation of a primary standard solution of sodium carbonate. This process involves accurately measuring out a mass of dry solute of Na<sub>2</sub>CO<sub>3</sub> and diluting the solute with <sup>(100 mL)</sup> distilled water in a beaker, until the solute has completely dissolved. Using a funnel, carefully transfer the solution of Na<sub>2</sub>CO<sub>3</sub> into a 500 mL volumetric flask. Then continuously rinse the ~~beaker~~ with distilled

Question 28 continues on page 18

Q28

3/4

Sample 2

SCHOOL CERTIFICATE EXAMINATION

Part B (continued)

2	0			
---	---	--	--	--

Centre Number

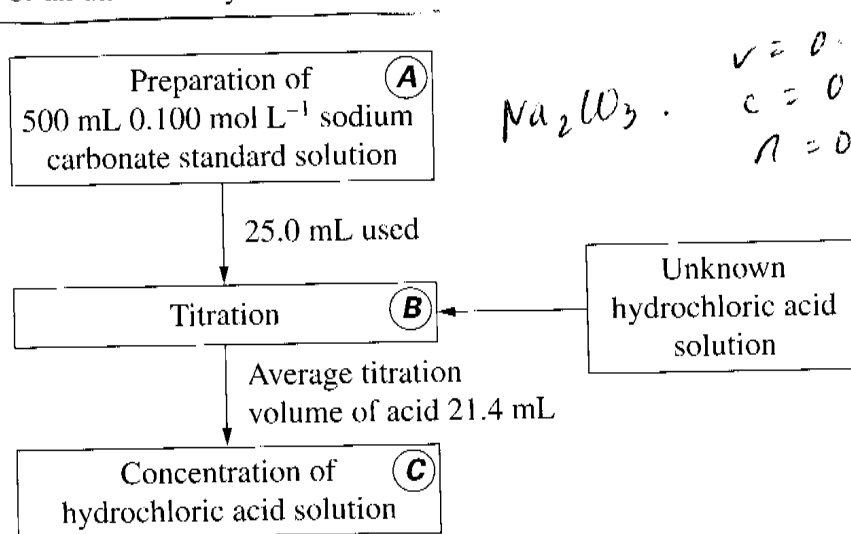
2	0	7	3	1	4	5	1	
---	---	---	---	---	---	---	---	--

Student Number

Question 28 (8 marks)

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

8



$\text{Na}_2\text{CO}_3$

$v = 0.5 \text{ L}$   
 $c = 0.100$   
 $n = 0.05$

$M = n \times M_{\text{molar}}$   
 $= 0.05 \times 105$   
 $= 5.299 \text{ g}$

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

Step A - Preparation of Standard solution.

- ① Measure approximate 5.30 g of powder sodium carbonate on electronic balance in a 250 ml beaker. Tare the electronic balance before with beaker on before placing  $\text{Na}_2\text{CO}_3$ .
- ② Dissolve sodium carbonate in small amount of distilled water and stir with a spatula.
- ③ Collect a measuring cylinder and funnel, and add the sodium carbonate solution into the round flask. Wash the beaker into the flask.

Question 28 continues on page 18