

Name:
 Lab. Instructor

Section
 Date

5025

Pre-Laboratory Questions

(اگر بعضی چیزیں ہیں)

1. Write a balanced equation for the reaction of HCl and NaHCO_3 .



2. How many moles of HCl are needed to react with 0.47 g of NaHCO_3 ?
 (mass)

..... $n(\text{HCl}) = n(\text{NaHCO}_3)$

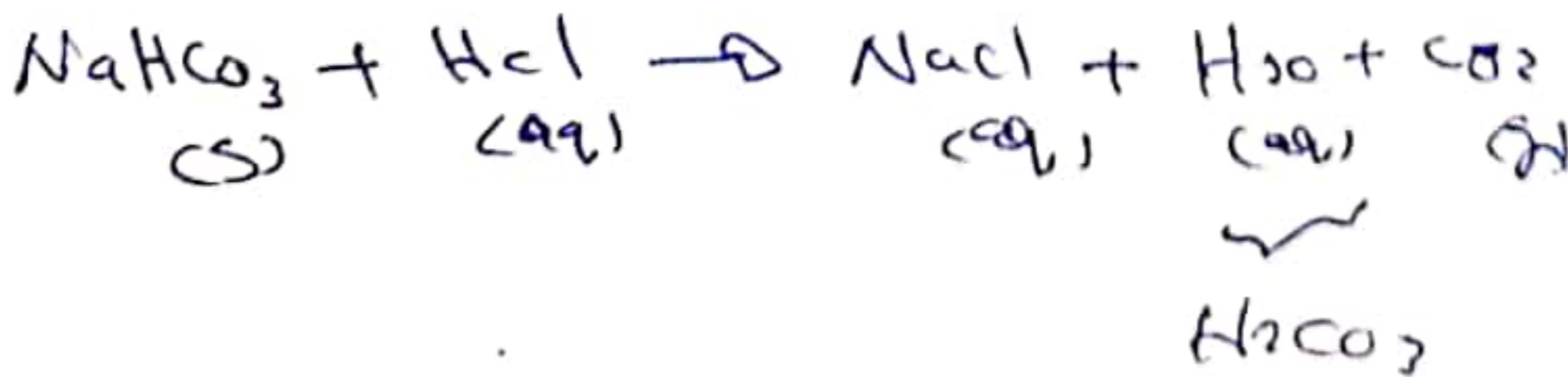
..... $m \cdot m(\text{NaHCO}_3) = 84.008 \text{ g/mol} \rightarrow n(\text{NaHCO}_3) = \frac{0.47}{84.008} = 5.6 \times 10^{-3}$

..... $n(\text{HCl}) = 5.6 \times 10^{-3} \text{ mol}$

3. Why we do not use strong bases as active ingredients of antacid tablet?

..... Because the strong base is corrosive material

..... So, we use weak bases



6 The Neutralizing Capacity of Antacid Tablets

Name: Section
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Results and Calculations

Name of antacid tablet:
 Ingredients:.....

	Trial (I)	Trial (II)
Mass of antacid sample	0.190 g	g
Volume of 0.150 M HCl solution	40.0 mL	mL
Moles of HCl (used to dissolve antacid)	6.40×10^{-3} mol	mol
Initial buret reading	26.00 mL	mL
Final buret reading	43.00 mL	mL
Volume of NaOH added	17.00 mL	mL
Moles of NaOH (used to titrate the excess acid)	2.55×10^{-3} mol	2.6×10^{-3} mol
Moles of excess HCl	2.55×10^{-3} mol	2.6×10^{-3} mol
Moles of HCl (needed to neutralize the antacid tablet)	3.85×10^{-3} mol	3.8×10^{-3} mol
Neutralizing capacity of antacid	0.0203 mol HCl/g	0.020 mol HCl/g
Average (mol HCl/g antacid)	2.55×10^{-3} 0.020	mol HCl/g antacid

105 4.5

QUESTIONS

1. Assume the concentration of stomach acid is 0.10M and the neutralizing capacity of the acid is 0.013 mol/g, calculate the volume of stomach acid needed to neutralize 1.0 g antacid tablet.

$$n = 0.013 \times 1.0 = 0.013 \text{ mol}$$

$$V = \frac{n \text{ (mol)}}{M} = \frac{0.013}{0.10} = 0.13 \text{ L}$$

2. A 0.333 g-sample of antacid was dissolved in 40.00 mL of 0.135 M HCl solution, then back-titrated to the end-point with 9.28 mL of a 0.0203 M NaOH solution.

a) Calculate number of moles of acid in the original 40.00 mL of HCl?

$$n = 40 \times 10^{-3} \times 0.135$$

$$= 5.40 \times 10^{-3} \text{ mol}$$

b) How many moles of base were used in the back titration of excess HCl?

$$n = 0.0203 \times 9.28 \times 10^{-3}$$

$$= 1.88 \times 10^{-4} \text{ mol}$$

c) How many moles of excess HCl?

$$1.88 \times 10^{-4} \text{ mol}$$

d) How many moles of HCl reacted with the antacid sample?

$$n \text{ (HCl reacted with antacid)} = n_A - n_B$$

$$= 5.21 \times 10^{-3} \text{ mol}$$