C 141 (Expt. No. 8)

NAME : _____ BATCH : _____
ROLL No. : _____
SIGNATURE : _____ DATE : _____

Determination of Acid-Neutralizing Power of Antacids

AIM

To determine the acid-neutralizing power of antacids.

THEORY

MATERIALS REQUIRED

Antacid solution, HCl solution, sodium hydroxide solution (~ 0.1 N), phenolphthalein, burette, pipettes, conical flasks.

PROCEDURE

PART - I. Standardization of HCl solution

You are provided with a solution of **NaOH**, of known strength.
Use this NaOH solution to determine the strength of the supplied HCl solution (**use 10 ml of HCl for titration**).
The indicator to be used is **phenolphthalein** (2 - 3 drops) .
Titrate this solution till **appearance of pink** colour

Record your results in Table 1.

Table 1. **Standardization of HCl solution**

Strength of NaOH solution = ……. N

Volume of HCl used = 10 ml

Sl. No.	Initial Reading (ml)	Final Reading (ml)	Titre Value (ml)
1.			
2.			
3.			

Strength of HCl = $\frac{V_{NaOH} \times S_{NaOH}}{V_{HCl}}$ =

Strength of HCl = …….. N

PART - II. Estimation of the strength of the given Antacid solution

1. Pipette out **10 ml of the given antacid solution** into a 250 ml conical flask. Add **20 ml** of distilled water, and 2 – 3 drops of phenolphthalein indicator. The solution will be **pink** in color.
2. Add **20 ml** of the given HCl solution from the burette.
   The solution should turn **colorless**.
3. Mix thoroughly, and warm the mixture carefully on a hot plate.
   Bubbling may occur because of the liberation of CO_2 gas.
   If the red color returns, cool the flask.
   [Caution : The flask will be hot; use gloves].
4. Add **1.0 ml** of HCl, at a time, **until the color disappears**.
   Boil the solution for 2 minutes.
5. If the solution remains colorless, proceed as follows:
   Cool the flask under the tap (**Be careful**).
   Rinse the inside walls of the flask with distilled water.
   Back titrate the excess HCl against NaOH solution (taken in the burette), whose strength is known.
   The **first appearance** of the **pink color** will give the **end point**.

6. Repeat this procedure (Steps 1 to 5 above) with 10 ml of the antacid solution.

Record your results in Table 2.

Table 2. Determination of strength of Antacid solution (S_A)

Volume of antacid solution used = 10 ml

Sl. No.	Initial Reading (ml)	Final Reading (ml)	Titre Value (**v**) (ml)
1.			
2.			
3.			

$$(10 \times S_A) + (v \times S_{NaOH}) = (20 \times S_{HCl})$$

Strength of antacid (S_A) =

RESULTS

Strength of HCl = ... N

Strength of Antacid solution = ... N