Chemistry Lab Manuel-For STD XI Science

[As per Goa Board pattern]

[This Lab manual is designed in the interest of the students of STD Xi Science for Chemistry Practicals.]

Published by Department of Chemistry
[Higher Sec Section]

INORGANIC VOLUMETRIC ANALYSIS

Acid-Base titration

Experiment No-1 **Date: _____**

Aim: You are provided with two solutions as follows

Flask X - HCl

Flask Y - (0. 1050N) NaOH

Titrating these solutions determine Normality and strength in terms of g/litre. of HCI solution.

Requirements:

(i). Apparatus: Burette. Stand Pipette. Conical flask. White tile

(ii) Chemicals: NaOH (0. 1050 N). HCl and Phenolphthalein

Theory: This is a titration of strong acid HCl and strong base NaOH, where they react with each other and fonn salt and water. The process is called neutralization. Using the normality of NaOH. The strength of HCl can be calculated in terms of normality and grams/litre

Procedure: **(i)** Wash all the apparatus with water.

(ii) Rinse the pipette with HCl solution. Pipette out 10 ml of HCl solution in conical flask. Add a drop of phenolphthalein indicator.

(iii) Rinse the burette with NaOH solution and fill it with NaOH. Remove the air bubble if any. Adjust zero mark with lower meniscus.

(iv) Titrate HCl solution against NaOH by adding NaOH from burette one ml at a time till the solution becomes light pink by constant stirring. Note this reading as pilot reading.

(v) Repeat the titration to get constant reading.

Result:

Solution	Normality	g/Litre.
HCl	---------N	.....
NaOH	0.1050 N	

Observations and Calculations.

Given: **0.1050N** NaOH solution

To find : **Normality & strength of** HCI solution in terms of grams/litre

(i) **Solution in Burette**: NaOH (0. 1050N)

(ii) **Solution in Pipette**: HCI Solution

(iii) **Solution in conical flask**:10 ml of HCI + two drops of indicator

(iv) **Indicator**: Phenolphthalein

(v) **End point**: Colourless to light pink

Equation: $NaOH + HCl \rightarrow NaCl + H_20$

Observation Table:

Pilot Reading --------ml to ---------ml

Burette Reading	**I**	**II**	**III**	**Constant Burette Reading (C.B.R.)**
Final	... mL	.... mL	..... mL	..... mL
Initial	0mL	0mL	0mL	
Difference	.... mL	..... mL	..... mL	

Calculations:

1.To calculate Normality of HCI Solution

(NaOH) (HCI)

$N_I V_I = N_2 V_2$

N_I = Normality of NaOH
V_I = Volume of NaOH (i.e. C.B.R)
N_2 = Normality of HCI
V_2 = Volume of HCI

$0.1050 \times C.B.R = N_2? \times 10$

$N_2 = \frac{0.1050 \times C.B.R.}{10}$

=-------'N

Normality of HCI =--------- N

(Show log calculations in pencil)

2.To calculate g/L of HCI

= Normality **of** HCI x Eq.wt. **of** HCI

----------N x 36.5

= ---------- g/L