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Aim: Determination of strength of Acid or Base by conductometer.

Principle: Solution of electrolytes conducts electricity due to the presence of ions. ine specific conductance of a solution is proportional to the concentration of ions in it The reaction between HCl and NaOH may be represented as,

$$HCl + NaOH \longrightarrow NaCl + H_2O$$

When a solution of hydrochloric acid is titrated with NaOH, the fast moving hydrogen ions are progressively repleced by slow moving sodium ions. its a result conductance of the solution decreses, this decrease in conductance will have place until the point is reached. Further addition of alkali raises the conductance sharply, as there is an excess of hydroxide ions. A graph is drawn between Volume of NaOH added and the conductance of solution. The exact end point intersection of the two lines.

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pH meter

Acid

Aim: To determine unknown concentration of acid by pH meter

Given data: Normality of NaOH = 0.1N volume of HCl = 10ml titration

X N HCl → 0.1N NaOH

Pilot reading			micro reading.				
Vml	pH	ΔpH	Vml	pH	ΔpH	ΔV	ΔpH/ΔV
0	1.1	0.12	0	2.15	0.05	1	0.05
1	1.22	0.07	1	2.2	0.15	1	0.15
2	1.29	0.22	2	2.35	0.13	1	0.13
3	1.52	0.08	3	2.48	0.18	1	0.18
4	1.59	0.07	4	2.66	0.32	1	0.32
5	1.66	0.15	5	2.98	0.27	1	0.27
6	1.81	0.09	6	3.25	0.43	1	0.43
7	1.90	0.09	7	3.68	1.24	1	1.24
8	2.25	0.26	7.2	4.52	0.06	0.2	0.3
9	9.55	7.30	7.4	4.68	0.14	0.2	0.7
10	9.65	0.10	7.6	5.12	0.23	0.2	1.15
11	9.82	0.17	7.8	5.35	0.13	0.2	0.65
12	10.09	0.27	8	5.48	0.20	0.2	1
13	10.14	0.20	8.2	5.68	2.34	0.2	11.7
14	10.34	0.09	8.4	8.02	0.19	0.2	0.95
15	10.43	-	8.6	8.21	0.14	0.2	0.7
			8.8	8.35	0.10	0.2	0.5
			9	8.45	0.07	1	0.07
			10	8.52	0.03	1	0.03
			11	8.55	0.13	1	0.13
			12	8.65	0.07	1	0.07
			13	8.75	0.40	1	0.40
			14	9.15	0.13	1	0.13
			15	9.3	-	-	-

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Result: The strength of the given strong acid is found to be = 0.0823 N

The strength of the given strong base is found to be 0.08547 N

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between a reference electrode and an electrode sensitive to the hydrogen ion activity when they are both immersed in the same aqueous solution. The reference electrode may be a Silver chloride electrode or a Calomel electrode. The hydrogen-ion selective electrode is a standard hydrogen electrode.

Procedure :- X N HCl → 0.1N NaOH

X N NaOH → 0.1N HCl

you have been given an unknown conc^{n} of a 100ml of volumetric flush.

Dilute the given sol^{n} to 100ml with distilled water

Take 10ml of this sol^{n} in glass beaker and 20 ml of water into it.

Fill the burette with unknown concentration of HCl and NaOH.

Note down the reading by one ml interval.

Graph plot a graph between.

(1) p^{H} → Vml of titrate added

(2) $\Delta p^{H} / \Delta V$ → V ml of titrate added

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Date :
Time :

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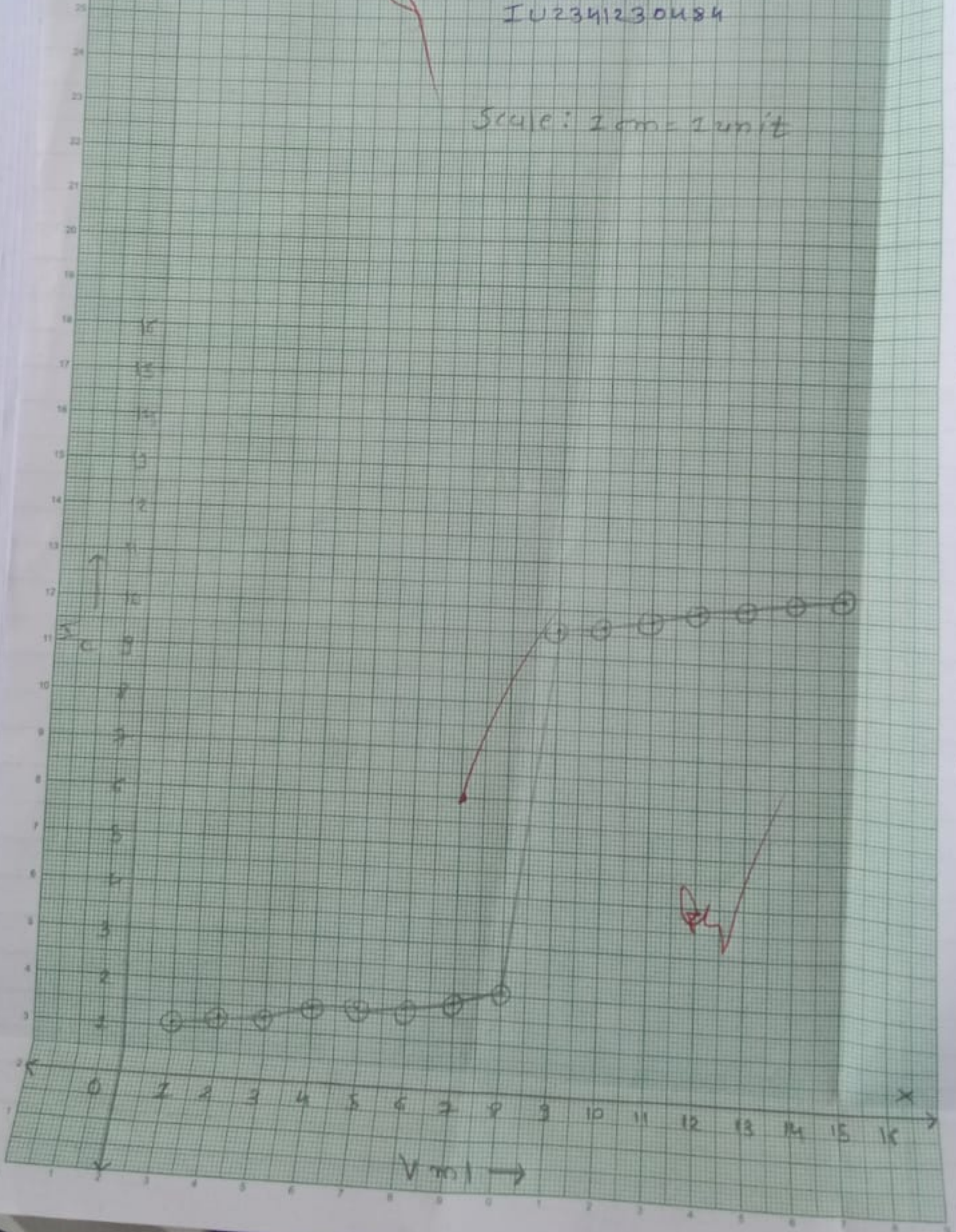
Scale: 1 cm = 1 unit



→ calculation :

1] X N HCl ⟶ 0.1 N NaOH

Volume of sodium hydroxide V_1 = 10 ml

Normality of sodium hydroxide N_1 = 0.1 N

Volume of HCl V_2 = 8 ml

Normality of HCl $N_2 = \frac{V_1 \times N_1}{V_2}$

$= \frac{10 \times 0.1}{8}$

$= 0.125\ N$

2] X N NaOH ⟶ 0.1 N HCl

Volume of ~~8~~ ~~HCl~~ hydrochloric acid V_1 = 10 ml

Normality of ~~My~~ HCl N_1 = 0.1 N

Volume of NaOH V_2 = 8

Normality of NaOH $N_2 = \frac{V_1 \times N_1}{V_2}$

$= \frac{10 \times 0.1}{8}$

$= 0.125\ N$