COURSE TITLE :		**PHYSICAL CHEMISTRY PRACTICALS**
COURSE CODE :		**15U6PRCHE06**
UNIT 1	**:**	**PHYSICAL CHEMISTRY PRACTICALS**

SESSION 2	**:**	**Conductometric Titrations**

CONDUCTOMETRIC TITRATIONS

- **Conductometric titration is quantitative analysis used to estimate the concentration of a given analyte solution.**
- **Conductometric titration involves the continuous addition of a titrant to an analyte solution and measuring the conductance of the solution.**
- **The conductance of the solution depends on the number of free ions and the mobility of ions.**
- **The conductance of a solution can be measured with the help of a conductivity meter and conductivity cell.**
- **The end point in a conductometric titration is obtained by plotting a conductance *vs* volume of titrant graph.**

STRONG ACID Vs STRONG BASE TITRATION

AIM:

To determine the strength of a given solution of HCl by conductometric titration with the given standard NaOH solution.

PRINCIPLE

Reaction between NaOH and HCl:

$$H^+ + Cl^- + Na^+ + OH^- \rightarrow Na^+ + Cl^- + H_2O$$

Conductance of acid soln	–	Prominently due to H^+ ions
Addition of alkali	–	Removes H^+ **ions as undisscociated** H_2O
	-	Conductance decreases
After equivalence point	-	Conductance increases due to free OH^- ions

MATERIALS REQUIRED:

1. Conductivity Meter and Conductivity Cell

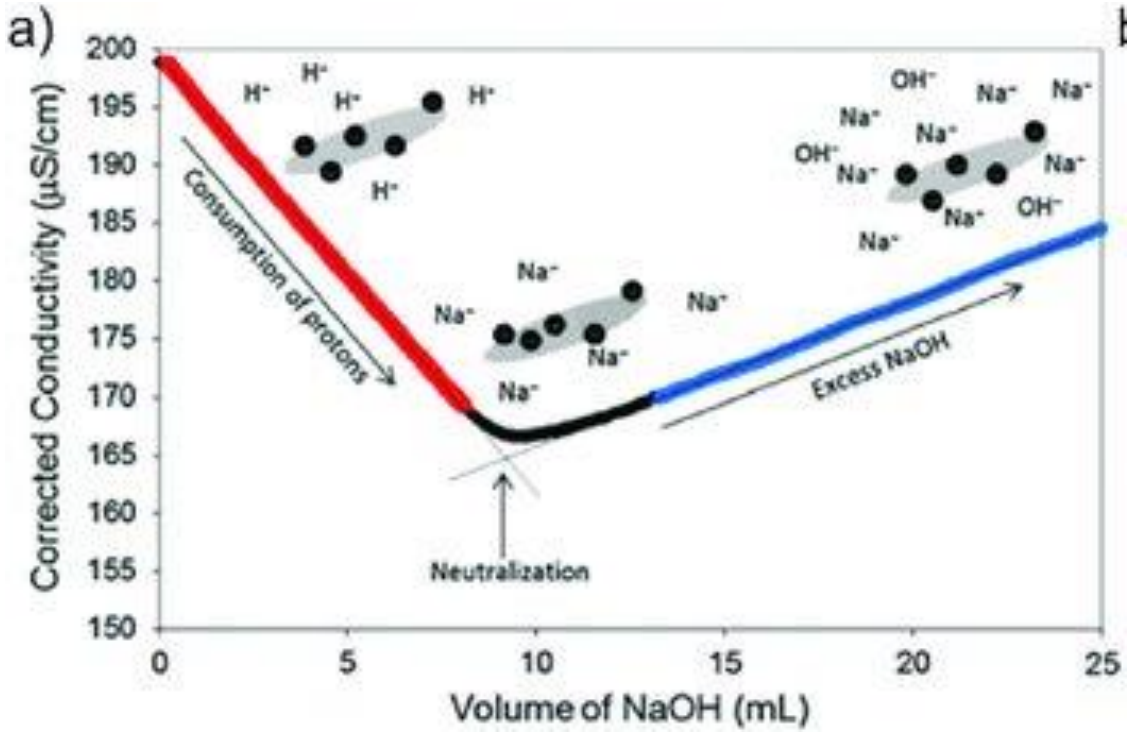
2. 0.1 M NaOH
3. Unknown HCl
4. Beaker – 250 mL
5. Burette
6. Pipette – 10 mL
7. Standard Flasks – 100 mL (2 Nos)

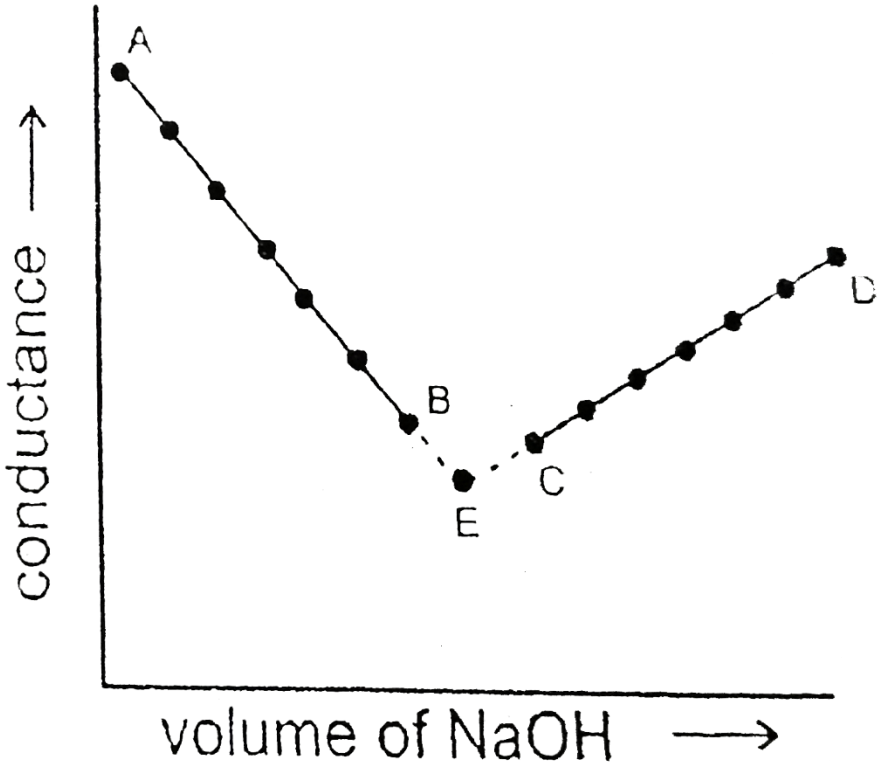
PROCEDURE:

- ❑ The titrant (Standard NaOH solution) is filled in the burette.
- ❑ Pipette out 10 mL of unknown HCl solution into a 250 mL beaker and dilute to 50 mL.
- ❑ Dip the conductivity cell in the solution and note the conductance of the solution.
- ❑ Add 1 mL of standard NaOH solution from the burette, stir the solution and note the conductance.
- ❑ The addition of titrant is repeated in amounts of 1 mL and the conductance is measured each time.

GRAPH

Conductance (*y-axis*) and Volume of titrant added (*x-axis*).





CALCULATION

Volume of unknown HCl (V1) = 10 mL

Molarity of NaOH (M2) = 0.1 M

Volume of NaOH (V2) = -------- mL (determined from graph)

Molarity of HCl (M_1) = $\frac{M_2 \times V_2}{V_1} = \frac{0.1 \times V_2}{10}$