Name of Experiment: Titration
Experiment No.: 1
Date:
Experiment Result:
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Object :- To prepare and Standardize the Solution of NaOH ($\frac{N}{10}$) against Solution of Oxalic Acid (N/5).

Apparatus / Chemicals used :- Burette, Pipette, Conical flask, Measuring Cylinder, NaOH Solution, Phenolphthalein indicator (Internal Indicator), Oxalic Acid (N/5)

Theory :- Standard Solution is one in which exact amount of a substance is present in a definite volume of the Solution whose concentration (Strength) is known to us is also called as Standard Solution.

Volumetric Solutions are classified into following two types:

(i) Primary Standard Solution.
(ii) Secondary Standard Solution.

Primary Standard Solution :- The Substance whose Standard Solution is prepared by dissolving directly its known amount in a definite Volume of Solvent is called Secondary Standard Substance & the Solution is called as Secondary Standard Solution. The Solution of this type of Substance firstly prepared is of approximate Strength which is then Standardized with a Standard Solution of a primary Standard Substance. The Common Secondary Standard Substances are

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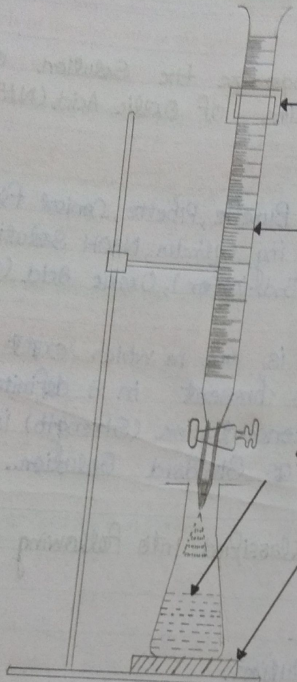

Fig. A1

"(Procedure of titration)"

alkali hydroxides, inorganic acids and $KMnO_4$ etc.

Then Strength can be determined as:

$$\text{Strength of NaOH (in gms/L)} = (\text{Normality of NaOH} \times \text{Eq. wt.})$$

Classification of Methods of Volumetric Analysis:- Volumetric analyses are of following types

(i) Neutralization titrations or Acid Base titrations.
(ii) Oxidation-reduction titrations.
(iii) Precipitation titrations.
(iv) Complexometric titrations.

Secondary Standard Solution:- The substance whose solution cannot be prepared directly by weighing its definite amount and then dissolving in definite volume of solvent is called Secondary Standard Substance & the solution is called as Secondary Standard Solution. The solution of this type of substance firstly prepared is of approximate strength which is then Standardized with a Standard Solution of a primary Standard Substance. The common Secondary Standard Substances are alkali hydroxides, inorganic acids and $KMnO_4$ etc.

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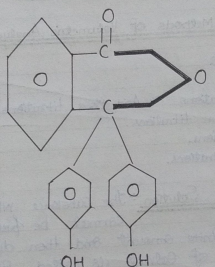
"STRUCTURE OF PHENOLPHTHALEIN"



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Name of Experiment ..... Date ..... Page No. 3

Experiment No. ..... Experiment Result .....

Normality (N):- The normality of a solution is the number of gram-equivalents of the solute per litre of the solution.

$$N = \frac{\text{No. of grams equivalent of Solute}}{\text{Volume of the Solution in 1000ml}}$$

$$\begin{matrix} COOH \\ | \\ COOH \end{matrix} \cdot 2H_2O + 2NaOH \longrightarrow \begin{matrix} COONa \\ | \\ COONa \end{matrix} + H_2O$$

(Oxalic Acid) (Sodium hydroxide) (Sodium Oxalate)

Observations and Calculations :-

Wt of the empty weighing tube (W_1) = gm

Wt of the weighing tube with Substance (W_2) = gm

Wt of the Substance ($W_2 - W_1$) = gm

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