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Aim :-

To prepare and standardization of 0.1N of Sodium carbonate.

Reference :-

Requirement :-

(a) Glassware :- Beaker, Measuring cylinder, Burette, Conical flask, stirring rod, funnel etc.

(b) Chemicals :- Na_2CO_3 (Sodium carbonate),
HCl (Hydrochloric acid),
Methyl red.

(c) Apparatus :- Analytical weight Machine
Burette Stand
Spatulla

Theory :

Hydrochloric acid solution may be titrated against sodium carbonate solution using methyl orange indicator. When weak base is titrated with a strong acid solution is slightly acidic at end point. If a

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Observations

S.No.	Initial reading	Final reading	Volume consumed
1.	0	13.8	13.8
2.	13.8	28.6	14.8
3.	28.6	43.0	14.4

Average :- $\frac{13.8 + 14.8 + 14.4}{3} = \frac{43.0}{3} = 14.3$ ml.

Weak acid is titrated with a strong base the solution is slightly basic because the salt formed will be hydrolysed to a certain extent.

The chemical reactions involved in this titration is given below:

$$Na_2CO_3(aq) + 2HCl(aq) \rightarrow 2NaCl(aq) + CO_2(g) + H_2O(l)$$

$$CO_3^{2-}(aq) + 2H^+(aq) \rightarrow CO_2(g) + H_2O(l)$$

In acid base titration at the end point the amount of the acid becomes chemically equivalent to the amount of base present. In case of a strong acid and a strong base titration at the end point of solution the solution becomes neutral.

Procedure :-

→ Weigh 0.26 gm of Na_2CO_3 with the help of weighing scale.

→ Then take 50 ml of distilled water in beaker and to this add 0.26 gm of Na_2CO_3.

→ Mix the contents well by using a stirrer.

→ Now, for standard solution, take 4.45 ml of HCl in 500 ml of distilled water.

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- Put the 50 ml of dil. HCl solution in burette.
- Take 10 ml of Na_2CO_3 in a conical flask and add 2-3 drops of methyl red.
- Titrate the Na_2CO_3 solution with HCl and calculate the result.

Result :-

Preparation and standardization of 0.1 N of sodium carbonate performed successfully in laboratory.

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