Aim – To Prepare & standardize Sulphuric acid (0.1 N)

Glasswares & apparatus required – Volumetric flask, burette, burette stand, pipette, conical flask, digital balance, heating mantle.

Chemicals required – standard 0.1 N sodium carbonate solution (prepared by dissolving 530 mg of sodium carbonate in 100 ml of distilled water), conc. Sulphuric acid, methyl orange solution

Theory – Sulphuric acid is a diprotic acid and 1 N solution contains 98.08/2 = 49.04 g H_2SO_4. Taking into consideration the specific gravity (1.83) of sulphuric acid about 49.0 ml of conc. Sulphuric acid is required to prepare 1000 ml solution.

It is an example of alkalimetry. When a strong acid is titrated with a strong base, the salt produced in the reaction is not hydrolyzed, and therefore, the pH of the resultant solution at the end point is exactly 7.0. sulphuric acid is a strong acid standardized by titrating with a strong base, i.e., sodium carbonate (primary standard). The following reaction takes place when sodium carbonate is titrated with sulphuric acid. End-point detection is carried out in this titration using a methyl orange indicator.

Procedure – In a volumetric flask, 4.9 ml of conc. Sulphuric acid was taken, 900 ml of water was slowly added, cooled and then the volume was made up to 1000 ml with water.
Standardization –

• 10 ml of 0.1 N Sodium carbonate solution was pipette out into a clean and dried conical flask.

• 2 drops of methyl orange indicator were added to it.

• The contents of the flask were now titrated with sulphuric acid until a red color was obtained.

• Burette reading was taken.

Observation table –

		Burrette Reading (ml)				
Sl. NO	**Content of the Flask**	**Initial reading**	**Final reading**	**Difference**	**Precision**	**Indicator**
1	10 ml of 0.1 n sod.	0.0	12	12		Methyl orange

	Carbonate solution					
2	10 ml of 0.1 n sod. Carbonate solution	0.0	11.9	11.9	12	Methyl orange
3	10 ml of 0.1 n sod. Carbonate solution	0.0	12	12		Methyl orange

Calculation – The normality of H2SO4 is calculated by

N1V1 = N2V2

N1 = 0.1 N = Normality of Na2CO3 Solution, N2 = ? = Normality of H2SO4 V1 = 10 ml = Volume of Na2CO3 Solution, V2 = 30 ml = Volume of H2SO4

0.1 X 10 = N2 X 12

Or

N2 = 1 / 12 = 0.08 N

Result – Sulphuric acid (0.1 N) was prepared and standardized. The exact normality was found to be 0.08 N