**Experiment No. (1)**

**Experiment name:** Prepare a standard solution of anhydrous sodium carbonate by the direct method.

**Purpose of experiment:** Prepare a standard solution of sodium carbonate at a concentration of 0.1 molar and a capacity of 100 milliliters.

**Materials and tools:**

• volumetric flask (capacity = 100 ml)

• Sensitive scale

• watch bottle

• Small funnel

• Distilled water

**Calculations:**

Look at the container that contains the solid sodium carbonate and you will find the name of the compound and its formula, molecular weight and purity, and to prepare the required solution, the following calculations must be performed:

**1-** Calculation of the molecular weight of sodium carbonate Na2CO3.

**M.W = (Na\*2)+(C\*1)+(O\*3) = g/mol**

**2-** Calculation the mass (weight) of Na2CO3 required to prepare 100ml of Sodium Carbonate with concentration of 0.1 mol/L.

* **M =** $\frac{Weight \* 1000}{M.W \* volume }$ **(when use Molary)**
* **N =** $\frac{Wt}{eq.Wt}\* \frac{1000}{V}$ **(when use Normaly)**
* **Eq. Wt =** $\frac{M.W}{n}$

**Experimental Work:**

1. Weigh 1.065 g of solid anhydrous sodium carbonate in a clean, dry watch bottle using a sensitive analytical balance.
2. Place the clean, dry funnel on the clean 100ml volumetric flask and carefully transfer the entire amount of sodium carbonate.
3. Wash with distilled water the remaining traces of sodium carbonate in the hour bottle and also on the inner walls.
4. Repeat the previous step several times until you are sure that all the sodium carbonate and the resulting solution have been recovered.
5. Lift the funnel and add a quantity of distilled water to the solution until it fills three quarters of the inner volume of the volumetric flask. Mix in rotation until the sodium carbonate crystals are completely dissolved.
6. Fill the volume with distilled water until the bottom of the concavity of the solution comes into contact with the standard circle on the neck of the volumetric flask.
7. Close the flask with its stopper and mix its contents well by turning it upside down several times until the solution is completely homogeneous and then the resulting solution is the standard solution.
8. Save this solution for the next experiment session.