**وزارة التعليم العالي والبحث العلمي**

**كلية المستقبل الجامعة**

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**مختبر الكيمياء التحليلية / الكورس الاول**

**EX.2**

# Determination of the percentage of acetic acid

## Purpose of this experiment

Determination percentage of Acetic acid in commercial vinegar sample

## Chemicals and tools

Vinegar samples, NaOH, phenolphthalein indicator, distilled water, burette, pipette, stand, clump, brush, conical flask, spatula, funnel, volumetric flask, washing bottle, beaker, dropper, balance, watch glass.

## Experimental work

### 1*: preparation of (0.1) N NaOH*

$$N = \frac{Weight}{equivalent\ weight} \times \frac{1000}{volume\ (ml)}$$

$$eq.wt\ (NaOH) = \frac{M.wt}{n}$$

$$= \frac{(23) + (16) + (1)}{1} = \frac{40}{1} = 40$$

$$0.1 = \frac{wt}{40} \times \frac{1000}{1000} \qquad wt = 4\ g$$

Then dissolved in water and transfer this solution to a (1000) ml volumetric flask. Dilute to the mark with D.W and mix thoroughly. Make a label.

***2- Preparation of vinegar solution:***

1- Take (10) ml of vinegar solution.
2- Add D.W to (10) ml until (100) ml (dilute).

## *3- <u>Determination of the percentage of acetic acid :</u>*

1- Wash the burette with distilled water and small amount of (0.1) N of NaOH.
2- Fill the burette with (0.1) N of NaOH.
3- Take (5) ml of dilute vinegar sample by pipette and put it in a conical flask.
4- Add (2) drops of phenolphthalein indicator to the to the conical
5- Titrate with NaOH until the color change from colorless to pink.
6- Repeat the titration 3 times and take the average.

- Calculate the concentration of acetic acid in normality by using the law:

$$(N \times V)_{NaOH} = (N \times V)_{CH_3COOH}$$

(Average = V1 + V2 + V3 /3)

- Calculate the weight of acetic acid in (5) ml of solution:

$$N = \frac{Weight}{equivalent\ weight} \times \frac{1000}{volume\ (ml)}$$

- Then calculate the percentage of acetic acid w/v%

$$\boldsymbol{w/_v = \frac{\text{weight of acetic acid}}{volume\ of\ solution} \times 100\%}$$

- The equation of this reaction

$$CH_3COOH + NaOH \rightarrow CH_3COONa + H_2O$$