EXPERIMENT No.: 3

Date: 4/1/14

TO PREPARE 100ml OF 0.1N HYDROCHLORIC ACID.

OBSERVATIONS:

No.	Initial Burette Reading	Final Burette Reading	DIFFERENCE (Volume used)
1.	0ml	13ml	13ml
2.	13 ml	25.4ml	12.4ml
3.	25.4ml	39.3ml	13.9ml
		Mean Volume Used =	13.1 ml

CALCULATIONS:

FORMULA 1:- $N_1V_1 = N_2V_2$

$N_2 = \frac{N_1V_1}{V_2} = \frac{0.1 \times 13.1}{10} = 0.131N.$

N_1 = normality of base NaOH = 0.1N.

V_1 = volume of base = 13.1ml

N_2 = Normality of acid = ?

V_2 = volume of acid = 10mL.

Dilution Solution:- $N_SV_S = N_AV_A$

$V_S = \frac{0.1 \times 100}{0.131} = 76.35mL.$

N_S = observed (acid) normality = 0.131N

V_S = volume of prepared solution = ? (acid)

N_A = Normality of required solution = 0.1N

V_A = Volume of (base) solution of required normality = 100mL. (base)

V. Good

Volume of distilled water required to make 0.1N hydrochloric acid solution =

100 - 76.35 = 23.65 mL

4/1/14

3. PREPARATION OF 100ml OF 0.1N HYDROCHLORIC ACID.

METHOD:

Titration method.

PRINCIPLE:

Concentrated hydrochloric acid solution is titrated against 0.1N sodium hydroxide solution and the normality of the hydrochloric acid is determined. The hydrochloric acid solution is then diluted to get the desired normal solution.

APPARATUS:

Beaker, volumetric flask, conical flask, burette, burette stand, pipettes

REAGENTS:

1. Hydrochloric acid (concentrated) [HCl],
2. 0.1N Sodium hydroxide solution,
3. Phenolphthalein (indicator).

PROCEDURE:

To 1 to 2ml of concentrated HCl in a 100ml volumetric flask add distilled water up to the 100ml mark. Mix well. Fill the burette with 0.1N NaOH solution.

Pipette 10ml of HCl solution prepared, in a titration flask and add 1 to 2 drops of phenolphthalein as an indicator. Titrate the contents of the titration flask with 0.1N NaOH solution in the burette until a persistent faint pink colour appears.

CALCULATIONS:

(1) $N_1V_1 = N_2V_2$

N_1 is *normality of the base*, 0.1N NaOH
V_1 is *volume of the base*, □
N_2 is *normality of the acid*, and
V_2 is *volume of the acid*. 10ml

$N_2 = \frac{N_1V_1}{V_2} = \frac{0.1 \times \square}{10} = \square$

By applying the equation $N_1V_1 = N_2V_2$ find out the value for N_2.

(2) Use the value for N_2 in place of N_S in the equation $N_SV_S = N_RV_R$, and calculate the volume required (V_R) for dilution

Where:

N_S stands for *"observed normality"*, □ formula (1)
V_S is *"volume of prepared solution"* and ?
N_R stands for *"normality of required solution"*, and 0.1N
V_R is the *"volume of the solution of required normality"*. 100ml.

$V_S = \frac{0.1 \times 100}{\square} = \square$

Now dilute the volume required with distilled water to make 100ml of NaOH solution of the desired normality.

For 2
100 - □ = □ of distilled water to be added for 0.1N acetic acid