S.no.	Volume of NaOH added (ml)	Conductance (Ω^{-1})
01	0	5.6
02	0.5	5.0
03	1.0	4.3
04	1.5	3.5
05	2.0	2.9
06	2.5	2.4
07	3.0	2.2
08	3.5	2.4
09	4.0	2.5
10	4.5	2.7
11	5.0	2.8
12	5.5	3.0
13	6.0	3.2
14	6.5	3.6
15	7.0	4.0
16	7.5	4.5
17	8.0	4.9
18	8.5	5.4
19	9.0	5.8
20	9.5	6.3
21	10.0	6.7
22	10.5	7.1
23	11.0	7.5
24	11.5	8.0
25	12.0	8.4
26	12.5	8.8
27	13.0	9.2
28	13.5	9.6
29	14.0	10.0
30	14.5	10.4
31	15.0	10.7

Exp 7

Aim: To estimate the strength of mixture of acetic acid and hydrochloric acid by conductivity

Principle:

Conductivity of a ~~sta~~ solution is related to size of and mobility of iron present when a mixture of strong acid (HCl) and weak acid (CH_3COOH) is titrated against a strong base (NaOH), HCl reacts first followed by CH_3COOH, when titration of strong acid and strong base is carried out, there is a decrease in conductivity as highly motile H^+ ion are replaced by Na^+.

$$NaOH + HCl \longrightarrow NaCl + H_2O$$

when the whole strong acid is consumed, base reacts with weak acid and conductivity increases as unionized weak acid becomes ionized salt.

$$CH_3COOH + Na^+ + OH^- \longrightarrow CH_3COOH$$

After both the acids are consumed, there is a ~~stop~~ increased in conductivity which gives end point and this increase in conductivity is due to fast moving OH^- ion from NaOH solution

By the amount of based consumed, amount of acid present in calculated.

Procedure:

The solution is diluted to 100ml. 20 ml of which is pipetted out into a clean beaker and 50ml of distilled water is added. Conductivity cell is dipped into the test solution and titrated against NaOH with stirring conductance is measured for each

addition of 0.5ml NaOH.
After neutralization, amount of acid present is determined by amount of NaOH consumption for strong acid and weak acid, volume of base consumed for strong acid and weak acid are determined by plotting a graph beta conductance and volume of base added. First end point corresponds to strong acid while the other is for weak acid

Calculation:

Strength of HCl

Volume of mixture = 20ml
Normality of HCl = ? = N_1
Vol. of NaOH = 2.7ml = V_1
normality of NaOH = 0.5N
Strength of HCl = $\frac{V_1 \times 0.5}{20}$ = 0.0675N.

Strength of CH_3COOH.

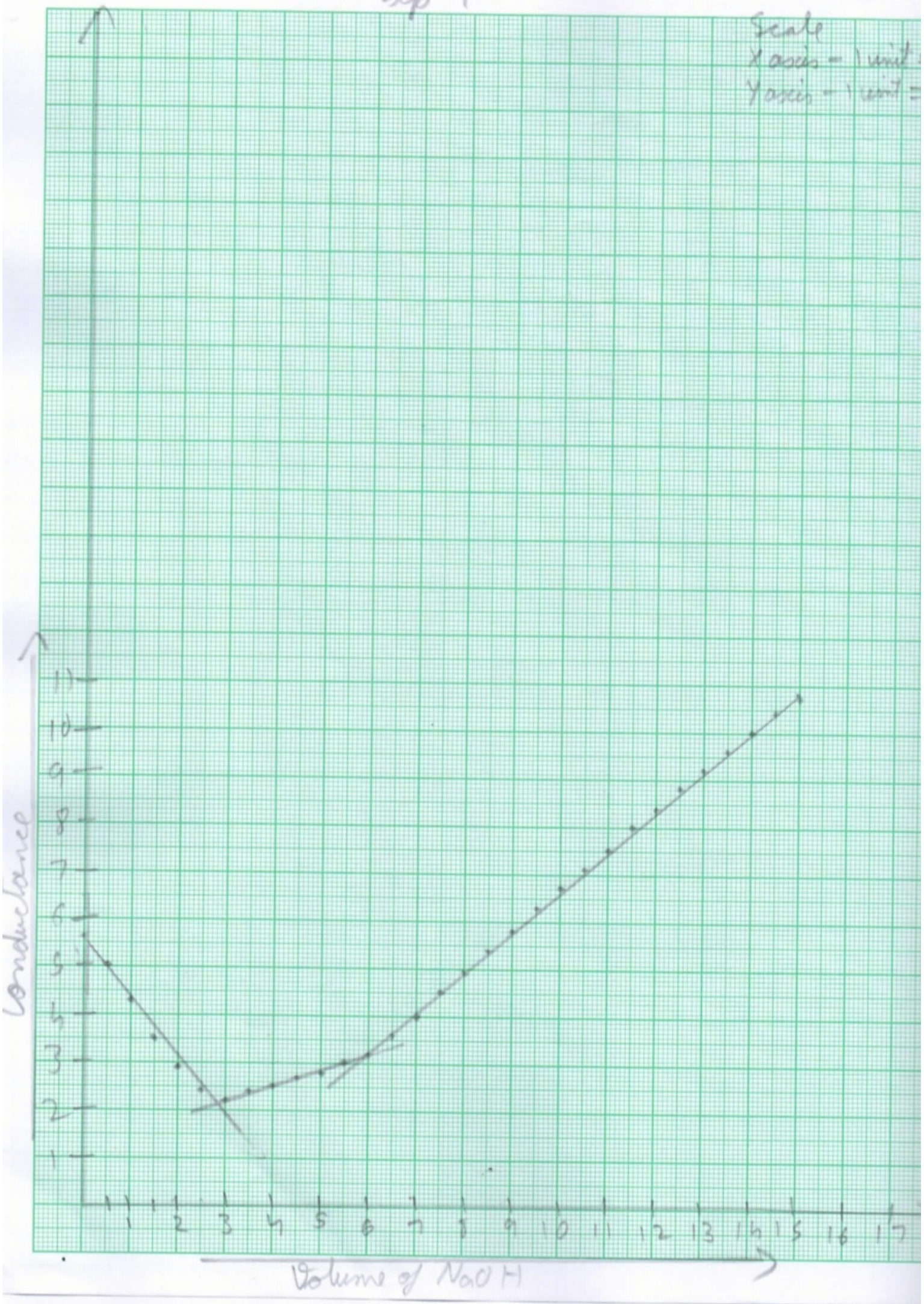
volume of mixture = 20ml
normality of CH_3COOH = ? = N_1
Volume of NaOH = 3.3ml = $V_2 - V_1$
normality of NaOH = 0.5N
Strength of CH_3COOH = $\frac{0.5 \times (V_2 - V_1)}{20}$ = $\frac{0.5 \times 3.3}{20}$

= 0.0825 N.

Result:

The strength of HCl present in given soln = 0.0675N
The strength of CH_3COOH present in given soln = 0.0825N

Exp 7


Scale
X axis = 1 unit
Y axis = 1 unit
Conductance
Volume of NaOH
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17