Experiment 6 pH Metric titration - PowerPoint

File Home Insert Design Transitions Animations Slide Show Review View Nitro Pro 10 Tell me what you want to do... Sign in Share

Cut Copy Format Painter Paste Clipboard

New Slide Layout Reset Section Slides

Font

Text Direction Align Text Convert to SmartArt Paragraph

Arrange Quick Styles Shape Fill Shape Outline Shape Effects Drawing

Find Replace Select Editing

1 EXPERIMENT NO 6 To perform acid base titration pH metrically

2

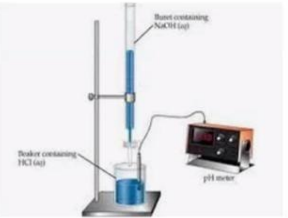
3 EXPERIMENT NO 2 To perform acid base titration pH metrically Literature: Procedure:

4 EXPERIMENT NO 6 To perform acid base titration pH metrically

5 EXPERIMENT NO 6 To perform acid base titration pH metrically

6 EXPERIMENT NO 6 To perform acid base titration pH metrically

pH Meter Setup



Slide 2 of 13 English (India) Notes Comments 73%

anil.powar (External)

25°C 15:53 02-08-2021

EXPERIMENT NO 6

To perform acid base titration pH metrically

- **AIM**: To perform Strong acid Vs Strong base titration pH metrically
- **APPARATUS**: Glass electrode, beaker, pH meter etc.
- **REAGENTS**: Given HCl acid (Bottle A) and 0.1N NaOH (Bottle B)

EXPERIMENT NO 6

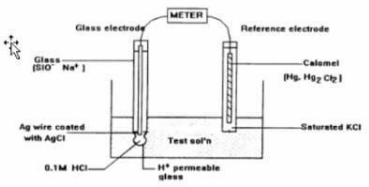
To perform acid base titration pH metrically

- **THEORY:** The modern pH meter is an electronic digital voltmeter scaled to read pH directly and may range from a comparatively simple handy instrument suitable for use in the field also. It is useful technique to find out
- **1.** Equivalent point of any type of Acid – Base titrations
- **2.** To carry out above titrations in presence of strong oxidant, reductants, viscous protein mediums, as well as colored, colloidal, complex, poisonous solutions.
- **3.** To carry out weak acid weak base titrations or for dilute solutions.
- **4.** To carry out equivalent point of mixtures of two or more acids or bases in single titration.
- **5.** To find out equivalence point of di & tri basic or acidic substances in single titrations.
- **6.** To find out equivalence point of acid base titration in non aqueous medium.

EXPERIMENT NO 6

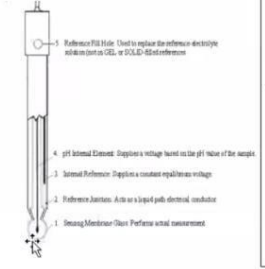
To perform acid base titration pH metrically

SCHEMATIC DIAGRAM OF pH METER



EXPERIMENT NO 6

To perform acid base titration pH metrically



- Glass electrode: Lower bulb of glass electrode is highly sensitive to H^+ ion concentration. It is made up of Corning glass. Thickness of the walls of glass bulb varies from 0.001 – 0.05 mm. It possesses low M.P. & high electrical conductivity. It is filled with 0.1M HCl solution and Ag wire coated with AgCl immerse in it. It is represented as Pt or Ag/ AgCl / 0.1 N HCl / Glass bulb/ Test solution.
- When glass electrode immersed in unknown solution, due to variation in concentration of H^+ ions inside & out side of the bulb potential is developed on inner & outer wall of glass bulb due to exchange of H^+ & free Na^+ present in crystal lattice of glass bulb, denoted by E1 & E2 potential. Difference between this two potential is called boundry potential. This potential difference is measured with potentiometer. This is displayed as pH on display of digital pH meter

EXPERIMENT NO 6

To perform acid base titration pH metrically

- **Procedure for pH- metric titration:-**
- 1) Clean the electrode by distilled water & Calibrate equipment.
- 2) Take 25 ml of given acid solution by pipette in a 50 ml beaker and immerse the electrode. Note down the pH meter reading for zero ml base addition.
- 3) Fill the burette with standard base solution (0.1N NaOH).Remove air bubble and adjust zero level.
- 4) Add Standard base solution gradually from the burette i.e. 0.5 ml at a time to acid solution, stir the same for 1 minute. Note the corresponding value of pH. Record readings in table given

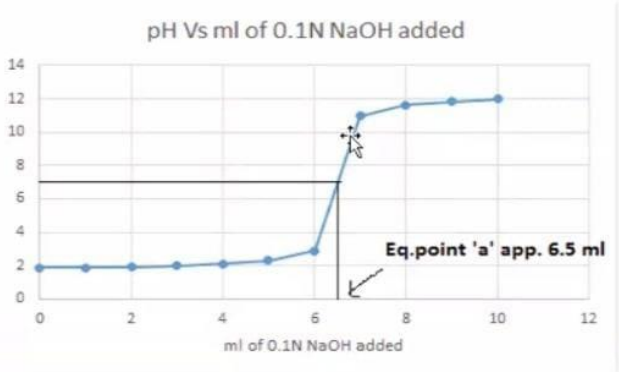
EXPERIMENT NO 6: To perform acid base titration pH metrically

Volume of 0.1N NaOH added in ml	Observed pH	Δv	ΔpH	ΔpH/ Δv	Δ2pH/ Δv²
0	1.87	---	-----	-----	----
1	1.88	1.0 (1-0=1)	0.01 (1.88-1.87=0.01)	0.01 (0.01/1.0)	0.04 (0.05-0.01=0.04)
2	1.93	1.0	0.05 (1.93-1.88=0.05)	0.05	0.01
3	1.99	1.0	0.06	0.06	0.05
4	2.10	1.0	0.11	0.11	0.09
5	2.31	1.0	0.20	0.20	0.33
6	2.88	1.0	0.53	0.53	7.57
7	10.98	1.0	8.10	8.10	-7.46
8	11.62	1.0	0.64	0.64	-0.42
9	11.84	1.0	0.22	0.22	-0.08
10	11.98	1.0	0.14	0.14	

EXPERIMENT NO 6

To perform acid base titration pH metrically

Volume of 0.1N NaOH added in ml	Observed pH
0	1.87
1	1.88
2	1.93
3	1.99
4	2.1
5	2.31
6	2.88
7	10.98
8	11.62
9	11.84
10	11.98

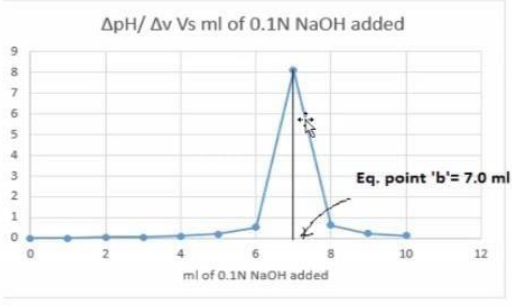


8
9
10
11
12
13

EXPERIMENT NO 6

To perform acid base titration pH metrically

Volume of 0.1N NaOH added in ml	ΔpH/ Δv
0	0
1	0.01
2	0.05
3	0.06
4	0.11
5	0.2
6	0.53
7	8.1
8	0.64
9	0.22
10	0.14



EXPERIMENT NO 6

To perform acid base titration pH metrically

CALCULATION:

Equivalence point from graph. a) = 6.5 ml b)= 7.0 ml c)= 6.5 ml

Normality of Acid = N1V1 = N2V2 = 0.1 x 6.5 / 25

= 0.026 N

Result: 1) Normality of Acid 0.026 N

2) pH range at equivalence point 2.88 to 10.98

3) Type of acid base titration Strong Acid Vs Strong Base