Class 7 Covid Chem

1) pH scale

2) titration lab redo

3) naming of acids

make assignment

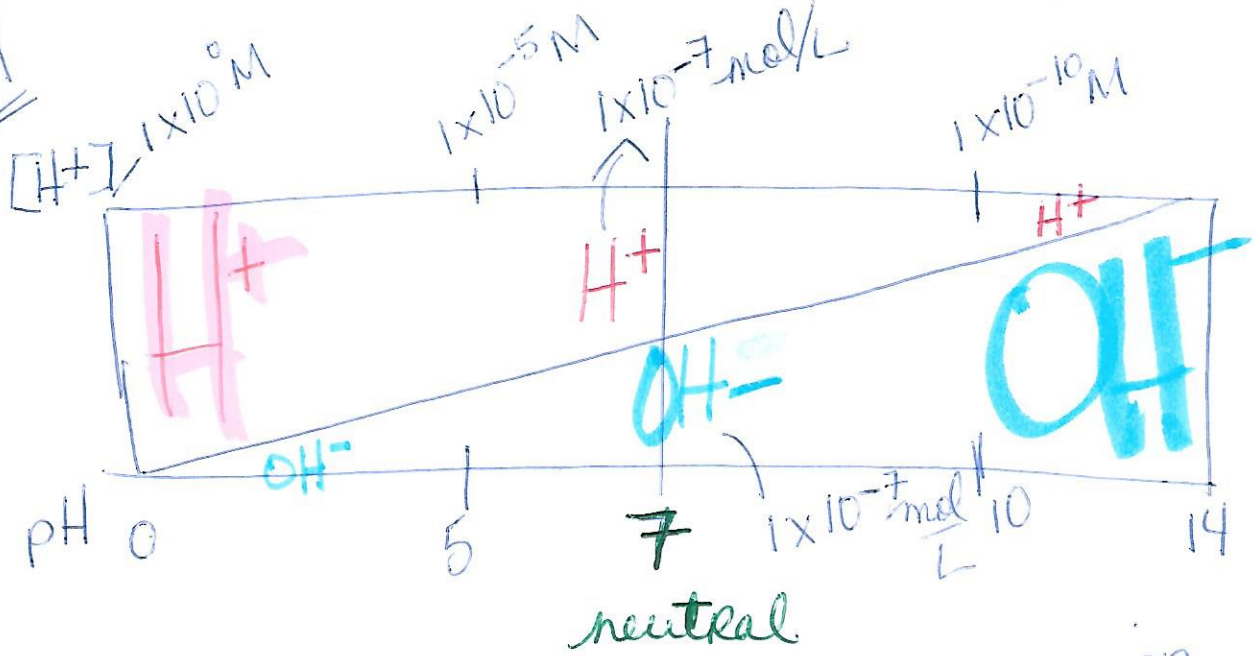
Ksp lab
Friday
POA

ABS

$K_A \times K_B = K_{eq}$

RICE

pH

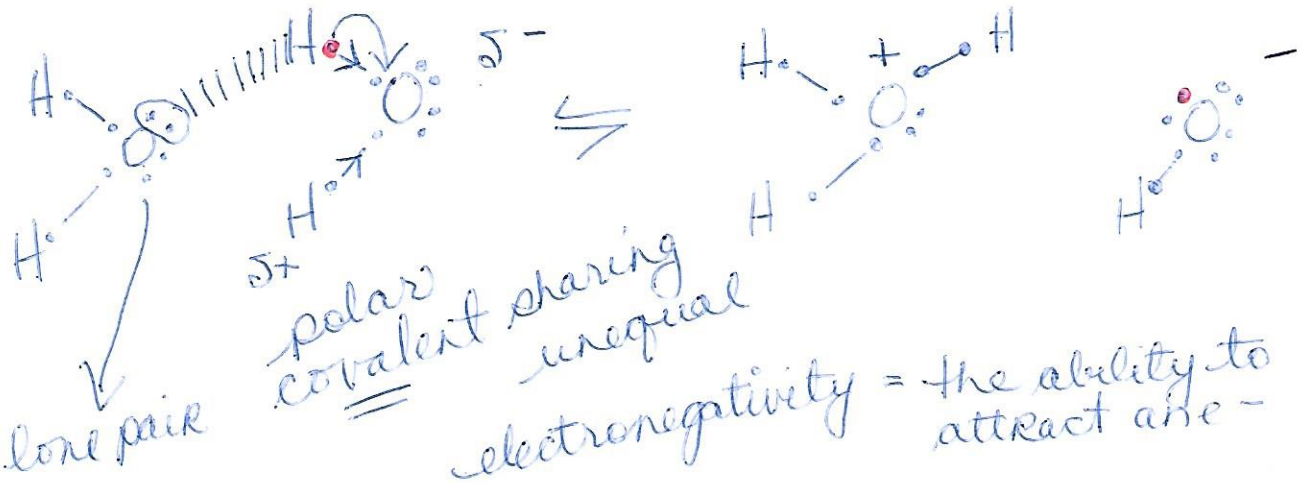


$H_2O_{(l)} \rightleftharpoons H^+_{(aq)} + OH^-_{(aq)}$

hydrogen ion — hydroxide

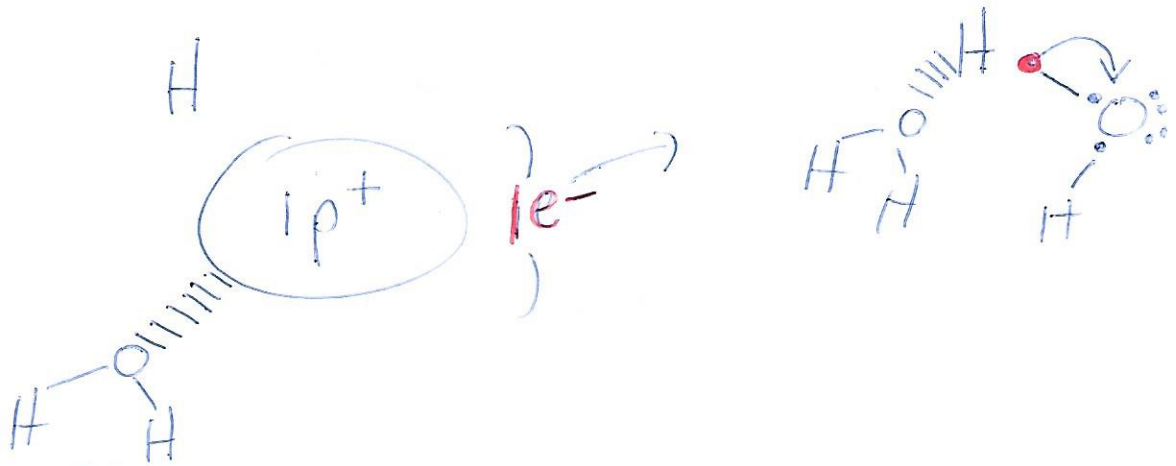
$2H_2O_{(l)} \rightleftharpoons H_3O^+_{(aq)} + OH^-_{(aq)}$

hydronium ion



polar covalent sharing unequal

electronegativity = the ability to attract an e-


H
H
O
H
H
1p+
1e-
H
O
H
H
O
H

Titration Lab

What is the point of titration?

What does a titration determine?

the conc of an unknown.

Purpose:

- To determine the concentration of hydrochloric acid (aq)

Materials:

- 0.180 mol/L
- Buret with NaOHsolution
- Buret with HCl
- Erlenmeyer flask
- White paper
- BTB or PHTH
- Funnel
- Beaker of NaOH

C_B

Procedure:

- Add NaOH to a buret using a funnel—remove air from the buret
- Add 10.00 mL of HCl into an Erlenmeyer flask
- Add 2 drops of indicator to the HCl
- Add drops of NaOH from the buret
- Swirl
- Continue until indicator changes colour

Observations:

HCl

10.00 mL = V_1

20.00 mL = V_2

∴ 10.00 mL acid V_A

BTB yellow in acid

blue in base

15.40 mL = V_1 NaOH

30.80 mL = V_2

15.40 mL NaOH

V_B

Calculations:

vol B on its own

vol used of C_1

$C_1V_1 = C_2V_2$ — C_2V_2: final sol vol

C_1: old conc; C_2: new conc

$n_B C_A V_A = C_B V_B n_A$

$HCl_{(aq)} + NaOH_{(aq)} \longrightarrow NaCl_{(aq)} + H_2O_{(l)}$

$n_A = 1$ $\quad n_B = 1$

$V_2 = V_1 + H_2O$

C_A

DA

Conclusion:

What is the **endpoint** of a titration?

What is the **equivalence point** of a titration?

HW

H^+ and OH^- and pH and pOH

$pH = -\log [H^+]$ mol/L

$pOH = -\log [OH^-]$ mol/L

$pH + pOH = 14$

$K_w = [H^+] \cdot [OH^-] = 1 \times 10^{-14}$

↑ multiplication

$H_2O(\ell) \rightleftharpoons H^+_{(aq)} + OH^-_{(aq)}$

$K_{eq} = [H^+][OH^-] = K_W$

Solution (aq)	$[H^+] = H^+$ in mol/L	$[OH^-] = OH^-$ in mol/L	pH	pOH
0.1 mol/L HCl				
0.1 mol/L NaOH				
1×10^{-2} M HCl				
1×10^{-2} M NaOH				
1×10^{-3} M HCl				
1×10^{-3} M NaOH				
1×10^{-4} M HCl				
1×10^{-5} M NaOH				
1×10^{-6} HCl				