

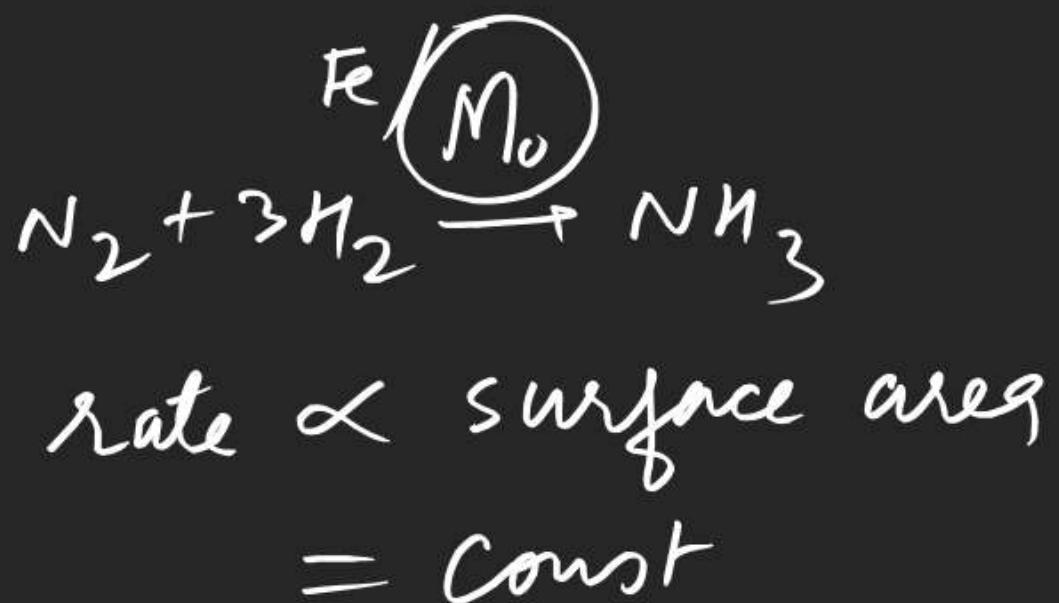
(27)



① Rate \propto no. of photons striking/sec
 \propto photo intensity
 $\propto I$

Rate = const

Zero order



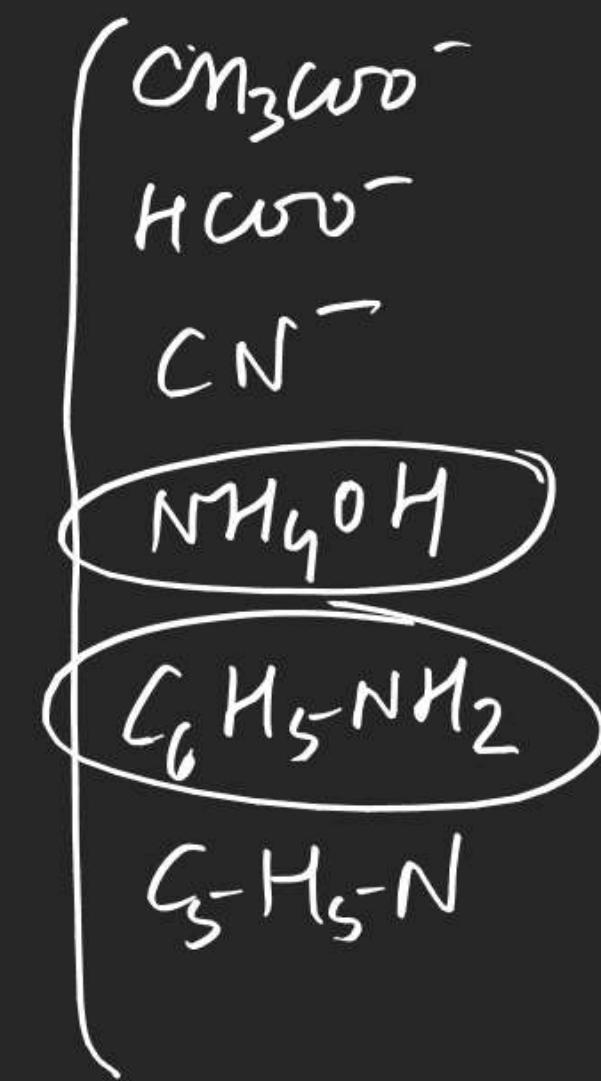
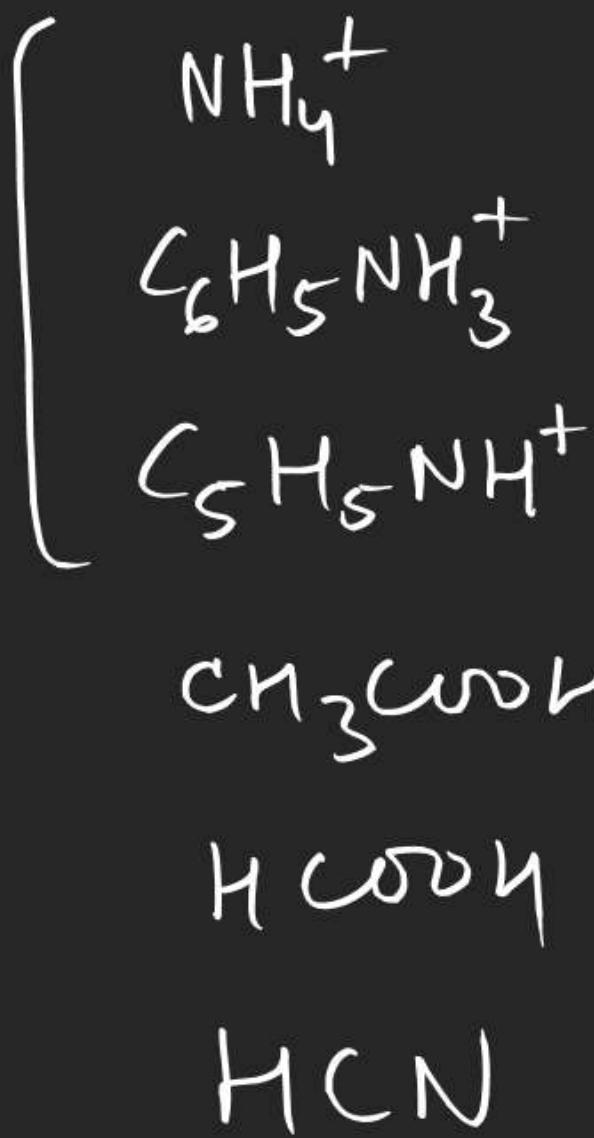
Zero order

- zero order
- ① enzyme catalysed Rxn
 - ② photochemical
 - ③ surface catalysed Rxn



⑧ Rate = $Z_{1,2} \times e^{-E_a/RT} \times P$

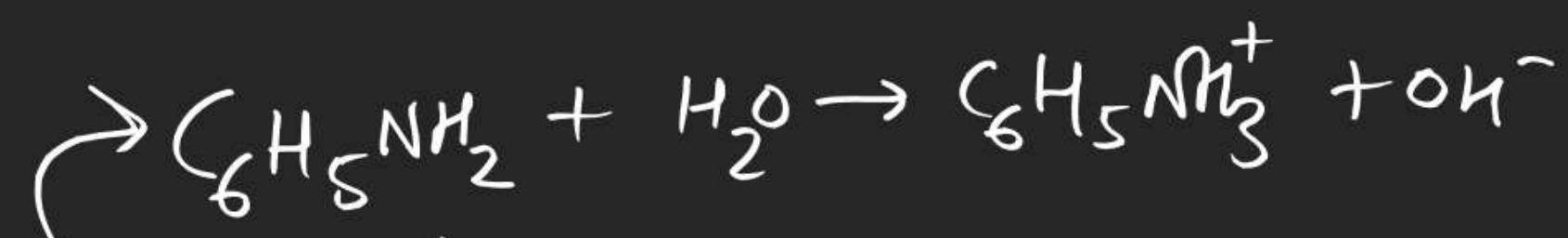
= $Z_{1,2} \times P \times e^{-E_a/RT}$



$$\text{CH}_3\text{COO}^- \quad \text{CH}_3\text{COO}^- \\ K_a \quad \times \quad K_b = K_w$$

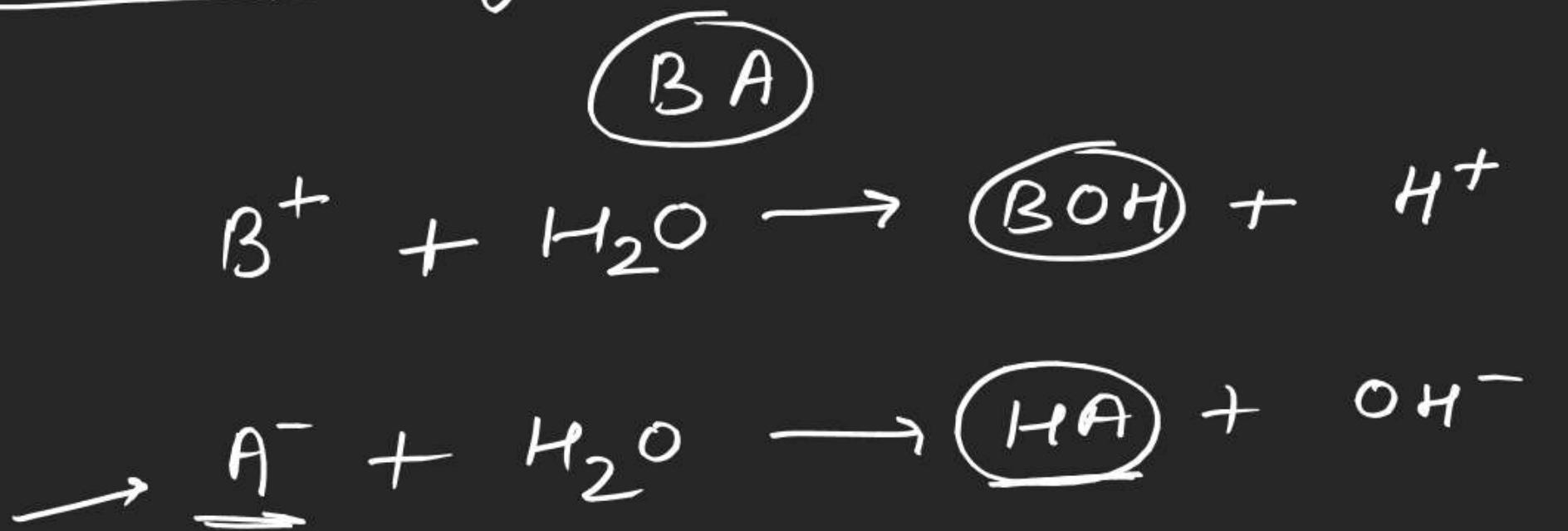
$$\text{HCN} \quad \text{CN}^- \\ K_a \quad \times \quad K_b = K_w$$

$$\text{C}_6\text{H}_5\text{NH}_2 \quad \text{C}_6\text{H}_5\text{NH}_3^+ \\ K_b \quad \times \quad K_a = K_w$$



$$K_b = \frac{K_w}{K_a}$$

Nishant Jindal
Salt hydrolysis : → Salts are considered to be strong electrolyte.



Case-I salt formed by SA + SB

e.g. NaCl, KNO₃, KI



NaOH SB Na⁺
V.V weak acid

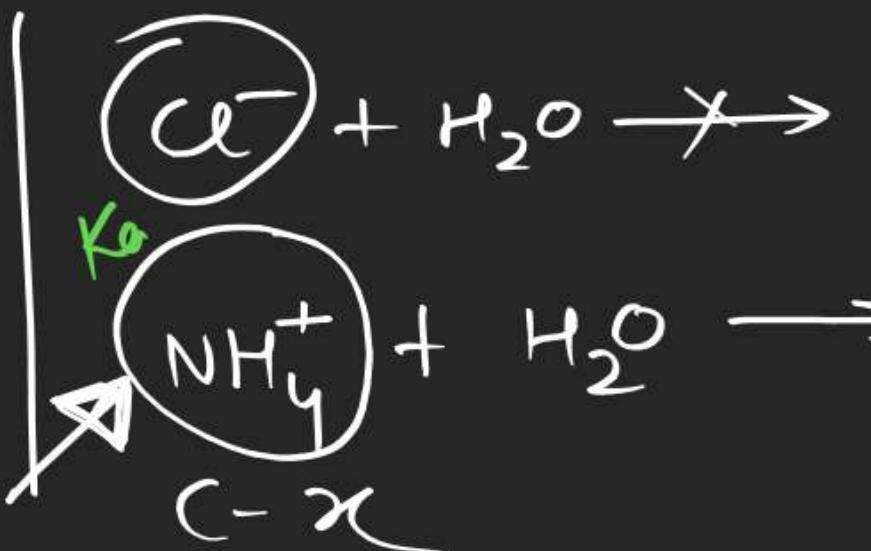
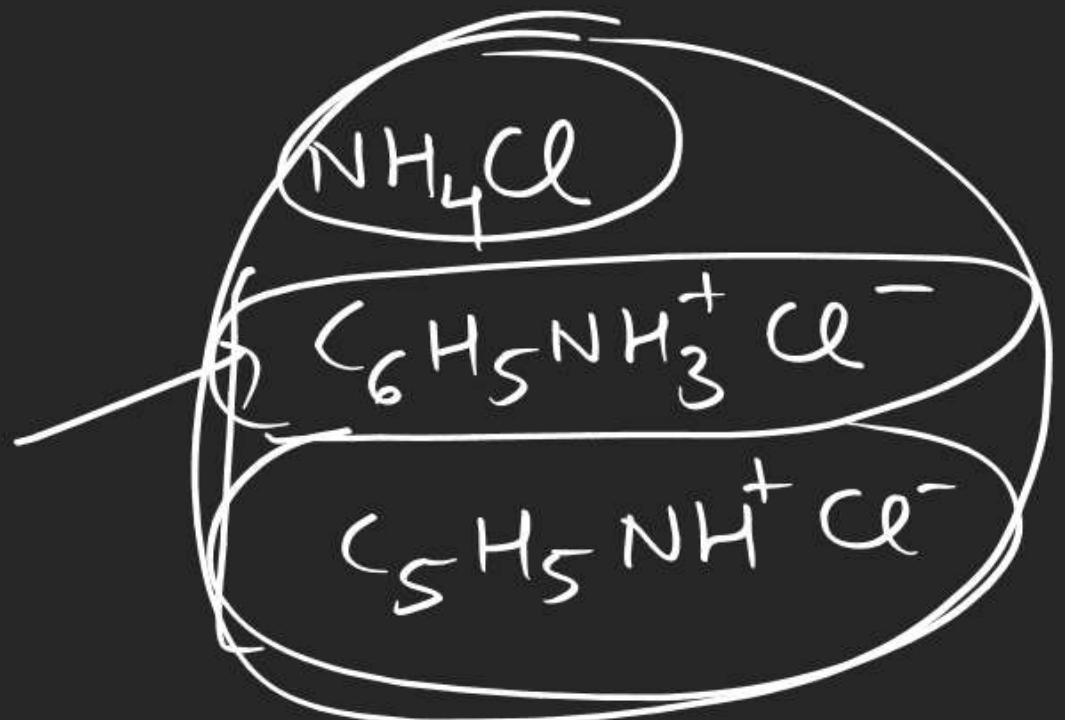


$$\underline{\underline{\text{pH}=7}}$$

Case-II

Salt formed by SA + wB (Acidic salt)

HCl



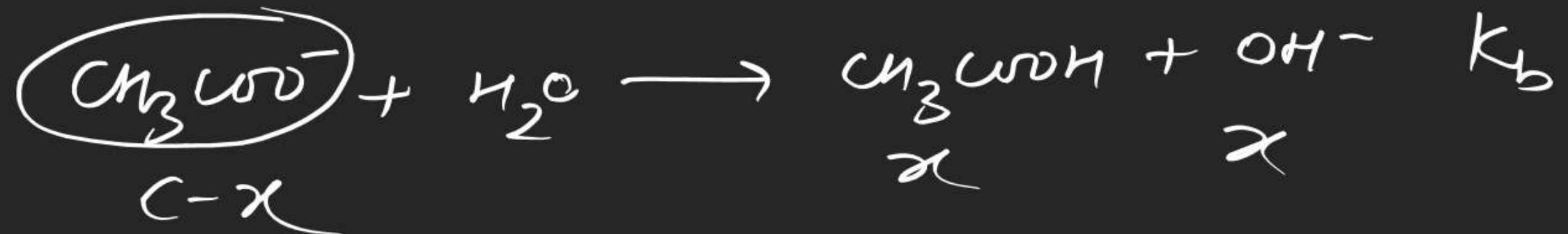
$$K_h = \frac{K_w}{K_b} = K_a = \frac{x^2}{c-x} = \frac{ch^2}{1-h}$$

hydrolysis const

h = degree of
hydrolysis

Case-II Salt formed $\underline{WA + SB}$ (Basic salt)

CH_3COONa , $HCOONa$, $NaCN$



$$K_h = \frac{K_w}{K_a} = K_b = \frac{x^2}{C-x}$$

e.g. find pH, $[OH^-]$, h & K_h of 0.25M KCN soln?

Given $\underline{K_a(HCN)} = 10^{-10}$ M.



$$K_h = K_b = \frac{10^{-14}}{10^{-10}} = \frac{x^2}{0.25-x}$$

$$10^{-4} = \frac{x^2}{0.25}$$

$$[OH^-] = x = 5 \times 10^{-3}$$

$$pOH = -\log 5 = 2.3$$

$$\begin{aligned} pH &= 14 - 2.3 \\ &= 11.7 \end{aligned}$$

$$K_h = 10^{-4}$$

$$\begin{aligned} [OH^-] &= ch \\ 5 \times 10^{-3} &= \frac{1}{4} \times h \\ 2 \times 10^{-2} &= h \end{aligned}$$

Q. find pH of 10^{-2} M $C_6H_5NH_3Cl$. Given $K_b(C_6H_5NH_2) = 10^{-8}$ M.



$$10^{-2} - x$$

$$10^{-6} = \frac{10^{-14}}{10^{-8}} = \frac{x^2}{10^{-2} - x}$$

$$x^2 = 10^{-8}$$

$$[H^+] = x = 10^{-4}$$

$$pH = 4$$

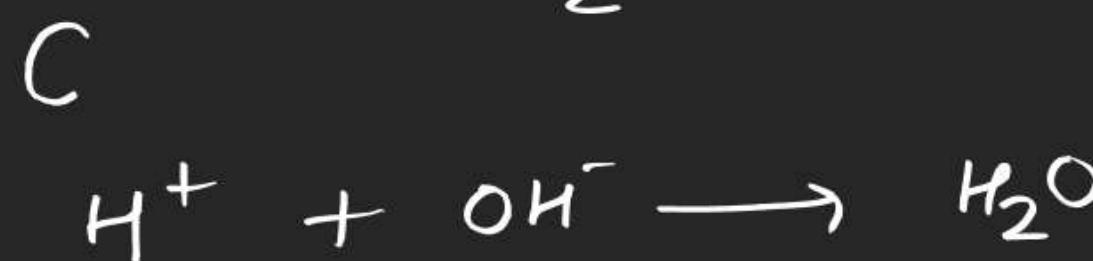
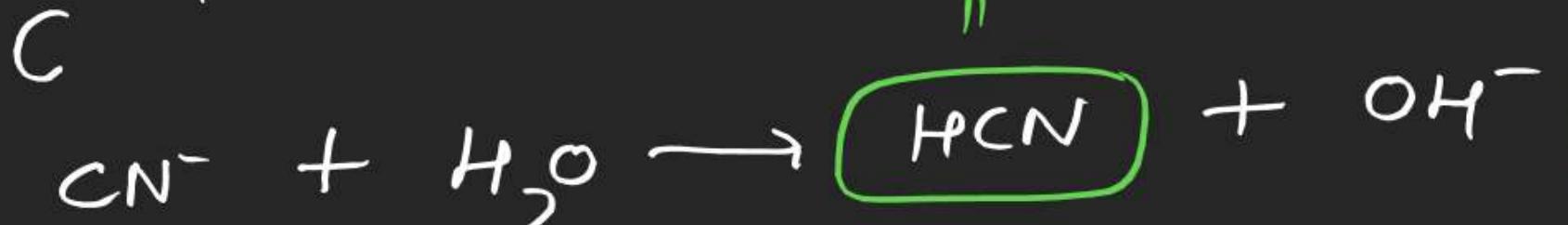
3

4

9

10

Case-IV Salt formed by wA + wB



CH₃COONH₄, NH₄CN

$$\frac{K_w}{K_b} = \frac{[\text{NH}_4\text{OH}][\text{H}^+]}{[\text{NH}_4^+]}$$

$$\frac{K_w}{K_a} = \frac{[\text{HCN}][\text{OH}^-]}{[\text{CN}^-]}$$

$$\frac{K_a}{K_b} = \frac{[\text{H}^+]}{[\text{OH}^-]} = \frac{[\text{H}^+]^2}{K_w}$$

$$[\text{H}^+] = \sqrt{\frac{K_w K_a}{K_b}}$$

$$\text{PH} = \frac{1}{2}(\text{PK}_w + \text{PK}_a - \text{PK}_b)$$

D-I upto 32

Ionic eq/10^m