Solutions/Answers to NCERT/CBSE CHEMISTRY Class 11(Class XI)textbook

CHAPTER SEVEN

EQUILIBRIUM

7.62 A 0.02M solution of pyridinium hydrochloride has pH = 3.44. Calculate the ionization constant of pyridine.

1. **Solution:**

Let the ionisation constant of pyridine be K_b.

Using the formulae for pH calculation of a salt of weak base and strong acid:

$$pH=\frac{-1}{2}(\log K_w - \log K_b + \log c)$$

$$3.44=\frac{-1}{2}(-14 - \log K_b + \log(2\times10^{-2}))$$

$$\Rightarrow \log K_b = -8.82$$

$$\Rightarrow K_b = 10^{-8.82} = \text{Antilog}(\bar{9}.18)=1.5\times10^{-9}$$