

NCERT/CBSE CHEMISTRY CLASS 11 textbook

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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:

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

$$3.44 = \frac{-1}{2} (-14 - \log K_b + \log(2 \times 10^{-2}))$$

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

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