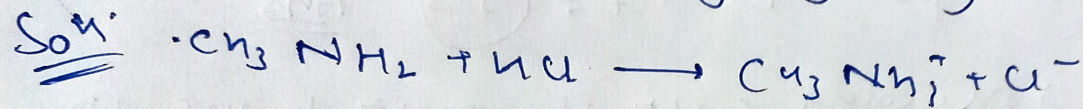Q.] $CH_3 NH_2$ (0.1 M . $K_b = 5 \times 10^{-4}$) is added in 0.08 mole of HCl & Soln is diluted to one litre, resulting hydrogen ion conc. is?

Soln: $CH_3 NH_2 + HCl \longrightarrow CH_3 NH_3^+ + Cl^-$

| $t = 0$ | 0.10 | 0.08 | 0 | 0 |
| $t = t$ | 0.02 | 0 | 0.08 | 0.08 |

$$pOH = pK_b + \log \frac{Salt}{Base} \qquad (Using \ Buffer)$$

$$= -\log(5 \times 10^{-4}) + \log \frac{0.08}{0.02} = 3.9$$

$$pH = 14 - pOH = 14 - 3.9 = 10.1$$

$$[OH^+]^{\circ} = 10^{-pOH} = \boxed{8 \times 10^{-11}} \quad \underline{Ans}$$