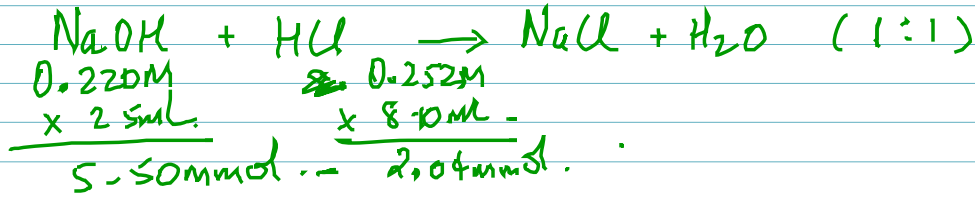


Sapnabupta - -

Acid-Base Eq (12) Titration ^① SA/SB and WA/SB.

- ① What is the pH of a solution of 25.00 mL, 0.220 M NaOH, after 8.10 mL 0.252 M HCl has been added.

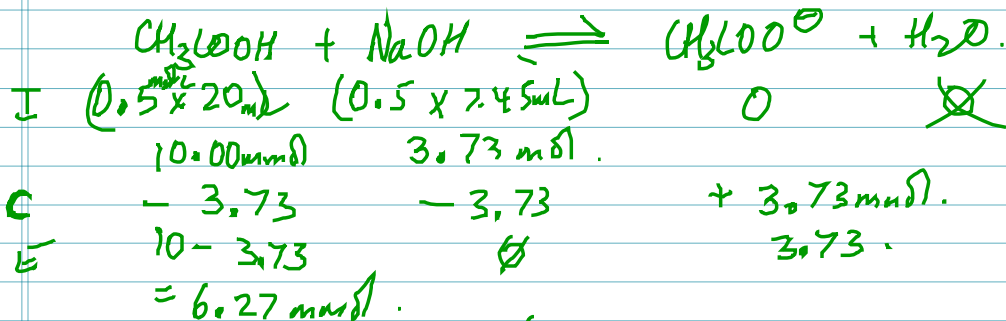


$$\begin{aligned}
 5.50 - 2.04 &= 3.46\text{mmol of NaOH} \\
 \text{total vol} &= 25 + 8.10 = 33.10\text{mL} \leftarrow \\
 [\text{OH}^-] &= \frac{3.46\text{mmol}}{33.10\text{mL}} = 0.105\text{M}
 \end{aligned}$$

$$\text{pOH} = -\log 0.105 = 0.981$$

$$\text{pH} = 14 - 0.981 = \boxed{13.02}$$

- ② Calculate the pH when 20.00 mL of 0.500 M CH_3COOH is titrated with 7.45 mL of 0.500 M NaOH.
 $K_a \text{ CH}_3\text{COOH} = 1.8 \times 10^{-5}$



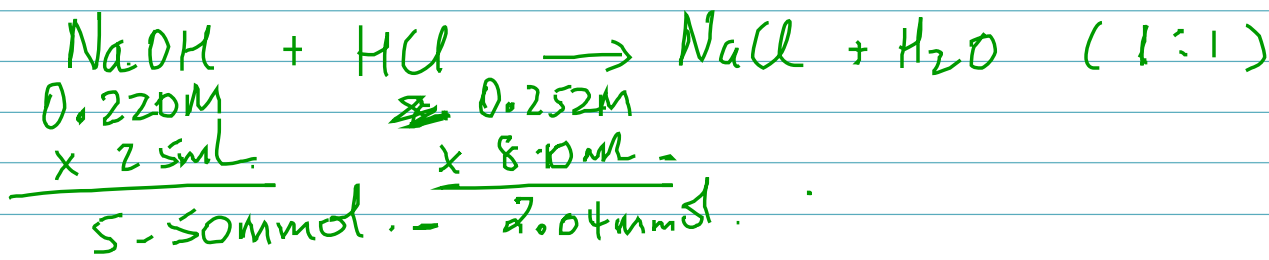
$$\begin{aligned}
 [\text{H}_3\text{O}^+] &= K_a \times \frac{\text{acid}}{\text{base}} = 1.8 \times 10^{-5} \times \frac{6.27}{3.73} \\
 &= 3.03 \times 10^{-5}\text{M}
 \end{aligned}$$

$$\boxed{\text{pH} = 4.52}$$

Saprahypta - -

Acid-Base Eq (12) Titration SA/SB and WA/SB.

* ① What is the pH of a solution of 25.00 mL, 0.220 M NaOH, after 8.10 mL 0.252 M HCl has been added.



$$5.50 - 2.04 = 3.46\text{mmol of NaOH}$$

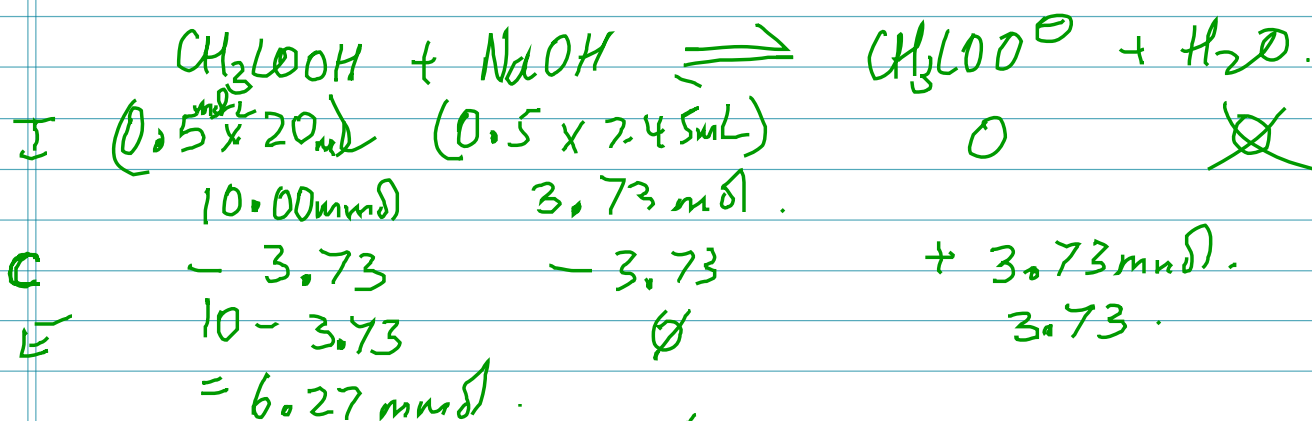
$$\text{total vol} = 25 + 8.10 = 33.10\text{mL} \leftarrow$$

$$[\text{OH}^-] = \frac{3.46\text{mmol}}{33.10\text{mL}} = 0.105\text{M}$$

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$$= 3.03 \times 10^{-5}\text{M}$$

$$\boxed{\text{pH} = 4.52}$$