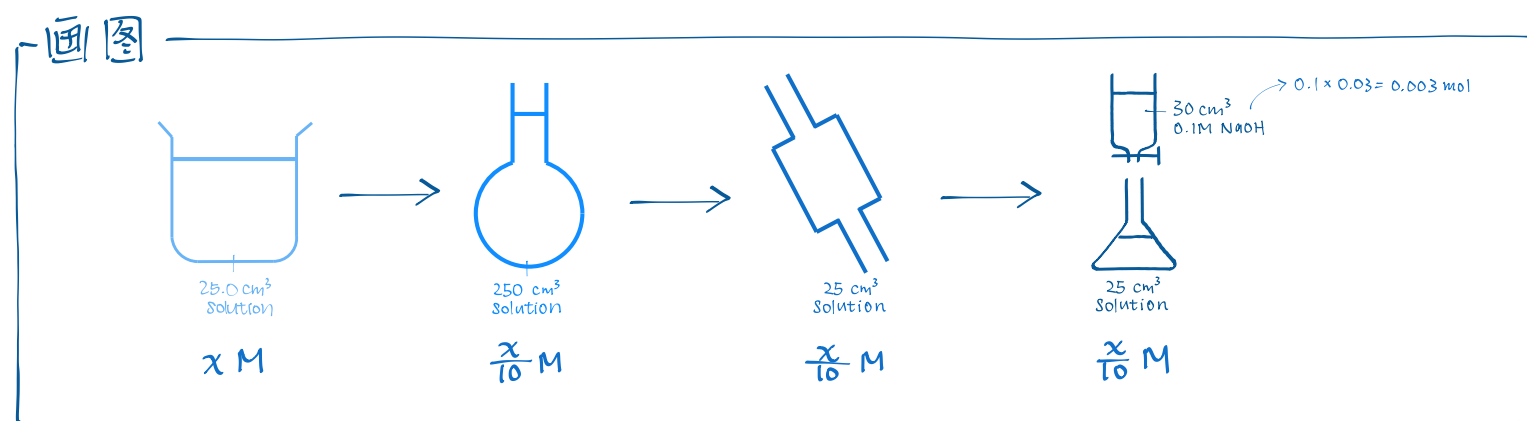


Titration questions

I Questions

LEVEL I

25.0 cm³ CH₃COOH is withdrawn to 250.0 cm³ v-flask.
Sol. in v-flask is withdrawn by 25.0 cm³ pipette to conical flask, and titrated against 0.1M NaOH. 30 cm³ NaOH is needed for complete reaction.
Find stock CH₃COOH concentration.

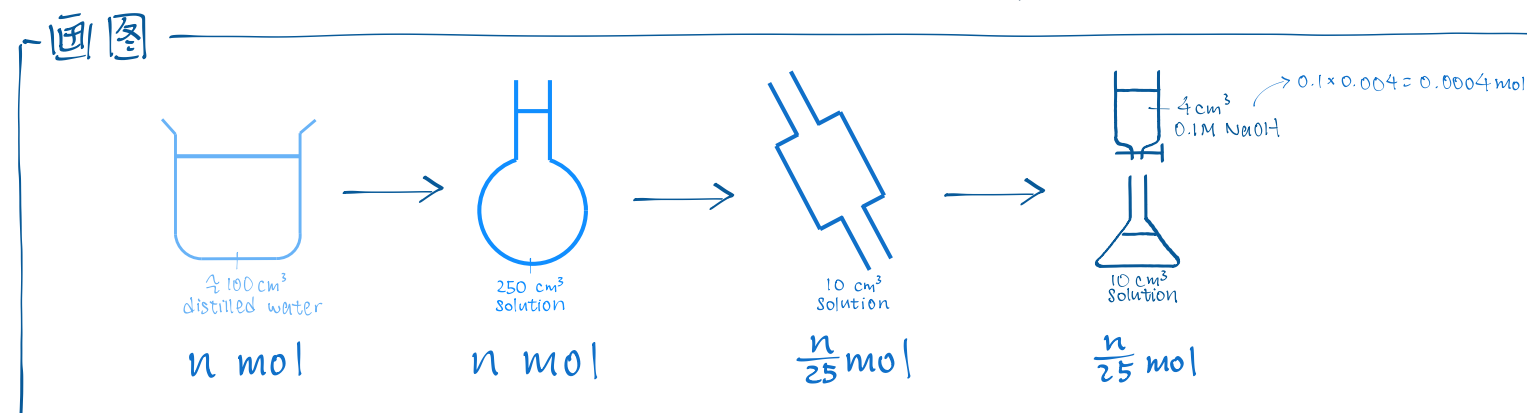


算数

$$\begin{aligned} \text{CH}_3\text{COOH } n : \text{NaOH } n &= 1 : 1 = n : 0.003 \\ n &= 0.003 \quad \text{CH}_3\text{COOH used in titration} \\ \frac{x}{10} &= \frac{0.003}{0.025} \\ x &= 1.2 \text{ mol dm}^{-3} \end{aligned}$$

LEVEL II

0.6g monobasic acid is dissolved completely in a beaker w/ 100 cm³ distilled water.
The sol. in beaker is then poured into 250.0 cm³ v-flask. Distilled water is added until the graduation mark is reached. 10.0 cm³ of solution in v-flask is pipetted into conical flask. 4 cm³ 0.1M NaOH is required for complete reaction. Find acid Mr.



算数

$$\begin{aligned} \text{acid } n : \text{NaOH } n &= 1 : 1 = \frac{n}{25} : 0.0004 \\ n &= 0.01 \\ \frac{0.6g}{Mr} &= 0.01 \\ Mr &= 60.0 \text{ g mol}^{-1} \end{aligned}$$

LEVEL III

0.75g of solid mixture (KOH & K₂CO₃) is dissolved in distilled water completely. It requires 0.1M 120cm³ HCl for complete reaction. Find KOH % by mass.



Let x g be KOH mass, (0.75-x)g be K₂CO₃ mass.

HCl in KOH rx + HCl in K₂CO₃ rx = 0.1 x 0.12

$$\frac{x}{39.1+16+1} + \frac{0.75-x}{39.1 \times 2 + 12+16 \times 3} \cdot 2 = 0.012$$

$$\frac{x}{56.1} + \frac{0.75-x}{69.1} = 0.012$$

$$\frac{69.1x + 42.075 - 56.1x}{3876.51} = 0.012$$

$$13x = 46.51812 - 42.075$$

$$x = 0.342$$

$$\text{KOH \% by mass} = \frac{0.342}{0.75} \cdot 100\% = 45.6\%$$