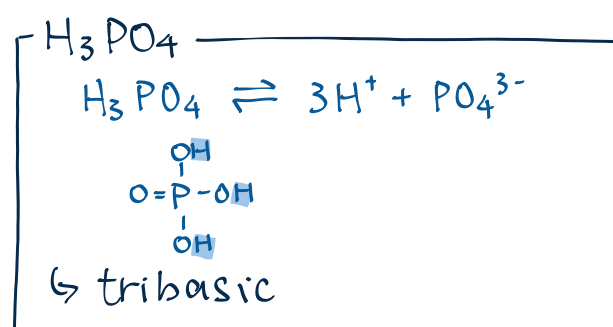
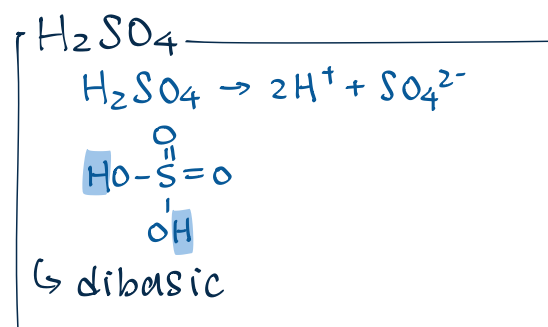
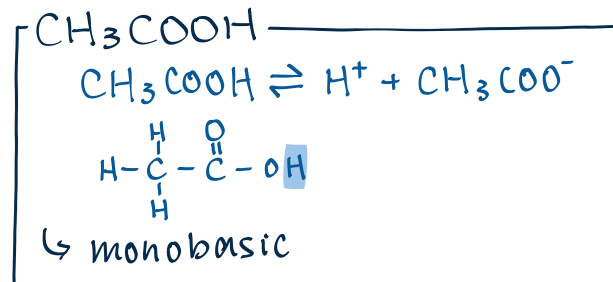
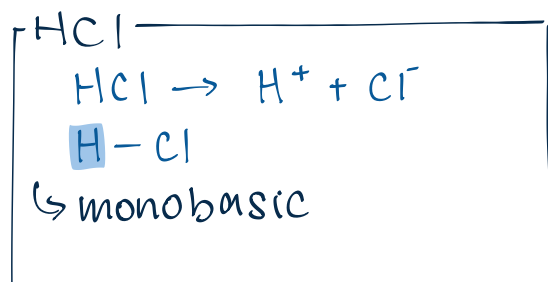


Bacidity

1 Definition

- max. no. of ionizable hydrogen atoms in an acid molecule



2 Question types

WHICH IS MORE ACIDIC?

$\left\{ \begin{array}{l} 0.1\text{M CH}_3\text{COOH} \\ 0.1\text{M HCl} \end{array} \right\} \rightarrow \text{fair test}$ $\left\{ \begin{array}{l} \text{conc./dilute 一样} \\ \text{basicity 一样} \\ \text{strong/weak 不一样} \end{array} \right.$

$\left\{ \begin{array}{l} 0.1\text{M H}_2\text{CO}_3 \\ 0.1\text{M HCl} \end{array} \right\} \rightarrow \text{理论上不可能知道 (x fair test)}$ $\left\{ \begin{array}{l} \text{conc./dilute 一样} \\ \text{basicity 不一样} \\ \text{strong/weak 不一样} \end{array} \right. \rightarrow \text{可是实际上 strength 影响更大}$ $\leftarrow \text{在 weak acid 里, 只有 \% 的 ionizable H atom 会 ionize}$

MOLE RATIO OF ACID-BASE REACTIONS

知识点:

- 从 acid 的 basicity 和 base anion 的 charge 判断 mole ratio
- 把两个数字调转, 再约简

$\rightarrow \text{HCl} + \text{NaOH}$, basicity = 1, anion charge = -1 $\rightarrow 1:1$
 $\rightarrow \text{H}_2\text{SO}_4 + \text{NaOH}$, basicity = 2, anion charge = -1 $\rightarrow 1:2$
 $\rightarrow \text{H}_3\text{PO}_4 + \text{Na}_2\text{CO}_3$, basicity = 3, anion charge = -2 $\rightarrow 2:3$

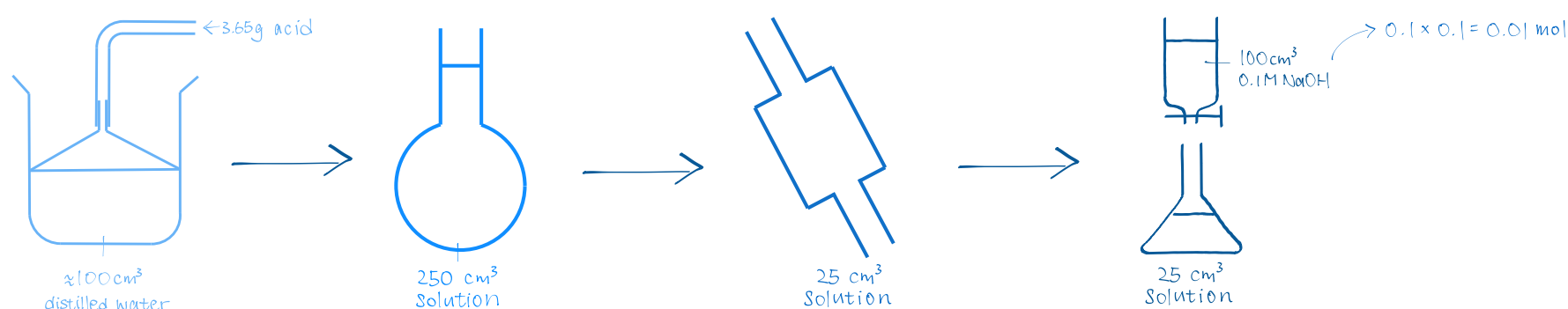
2g dibasic acid requires 30cm³ of 2.15M NaOH for complete neutralisation.
Find its molar mass.

$$\begin{array}{l} \text{acid mole} : \text{NaOH mole} = 1 : 2 \\ n : \frac{2.15 \times 0.03}{1000} = 1 : 2 \\ \text{mole} = \text{molarity} \times \text{volume} \quad n = 0.0325 \\ \frac{\text{mass}}{M_r} = \text{mole} \\ \frac{2}{M_r} = 0.0325 \\ M_r = 62.0 \end{array}$$

3.65g acid in gas state w/ M_r 36.5 is dissolved completely into 100cm³ distilled water.
The sol. is poured into 250 cm³ volumetric flask for dilution.

25 cm³ of the sol. is pipetted out to a conical flask and titrated against 0.1M NaOH.

If 100 cm³ of 0.1M NaOH is needed for complete neutralisation, find the basicity of the acid.



$$\frac{3.65}{36.5} = 0.1 \text{ mol}$$

$$0.1 \text{ mol} \quad (\text{加水 mol 不变})$$

$$0.01 \text{ mol} \quad (\text{独自倍 sol., mol 减至原本六倍})$$

$$0.01 \text{ mol}$$

$$\begin{array}{l} \text{mole of acid} : \text{mole of alkali} \\ = 0.01 : 0.01 \\ = 1 : 1 \end{array}$$

\therefore monobasic