

3-1. Diket : % E = 99,9% $n = 5$

$$V_a = 50 \text{ mL} \quad W_a = 100\% - 99,9\% = 0,1\%$$

$$V_0 = 50 \text{ mL} \quad W_0 = 1 \text{ gr} = 0,01 \text{ gr}$$

Ditanya : K_D ?

Jawab :

$$W_a = W_0 \left(\frac{V_a}{V_a + K_D V_0} \right)^n$$

$$0,001 \text{ gr} = 1 \text{ gr} \left(\frac{50 \text{ mL}}{50 \text{ mL} + K_D \cdot 50 \text{ mL}} \right)^5$$

$$\left(0,001 \text{ gr} = 1 \text{ gr} \left(\frac{50 \text{ mL}}{50 \text{ mL} + K_D \cdot 50 \text{ mL}} \right)^5 \right)^{1/5}$$

$$0,25 (1 + K_D) = 1$$

$$0,25 + 0,25 K_D = 1$$

$$0,25 K_D = 0,75$$

$$K_D = 3$$

3-2. Diket : % E = 90%

$$V_a = 100 \text{ mL}$$

$$n = 5$$

$$V_o = 90 \text{ mL}$$

$$W_o = 1 \text{ gram}$$

$$W_a = 100\% - 90\% = 10\% \times 1 \text{ gr} = 0,1 \text{ gr}$$

Ditanya : % E untuk 10 kali

Jawab :

$$\left[W_a = W_o \left(\frac{V_a}{V_a + V_o \cdot K_D} \right)^n \right]^{1/n}$$

$$(W_a)^{1/n} = 1 \left(\frac{V_a}{V_a + V_o \cdot K_D} \right)$$

$$K_D = \left(\frac{\frac{V_a}{W_a^{1/n}} - V_a}{V_o} \right)$$

$$K_D = \left(\frac{\frac{100}{0,1^{1/5}} - 100}{90} \right)$$

$$K_D = \frac{158,47 - 100}{90}$$

$$K_D = 0,63$$

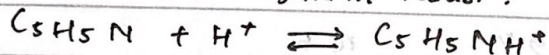
% E untuk 10 kali, maka

$$\% E = 1 - \left(\frac{V_a}{V_a + K_D \cdot V_o} \right)^n$$

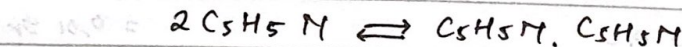
$$\% E = 1 - (0,63)^n$$

$$\% E = 99\%$$

3-3. Pridin dalam air mengalami reaksi :



Benzene akan mengalami dimerisasi :



Maka,

$$D = \frac{K_D (1 + 2 \cdot K_D \cdot [H^+]_{org})}{1 + \frac{K_D}{[H^+]}}$$