

2021

B3-1

$$1) C_{B0} = \frac{2.0}{2} = 1.0 \text{ mol/dm}^3, \quad C_{A0} = \frac{3.0}{2} = 1.5 \text{ mol/dm}^3$$

$$C_B = C_{B0}(1 - X_B) = \underline{0.25 \text{ mol/dm}^3}$$

2) 量論比, 流量比例

$$C_A - C_{A0} = 0.25 \text{ mol/dm}^3 = C_{A0} X_A$$

$$\therefore X_A = \frac{0.25}{1.5} = \underline{0.1667}, \quad C_A = C_{A0}(1 - X_A) = \underline{0.75 \text{ mol/dm}^3}$$

$$3) -r_A = k C_A C_B$$

$$= 10 \times 0.75 \times 0.25 = 1.875 \text{ mol/dm}^3 \cdot \text{min}$$

$$4) \tau = -\frac{dC_A}{r_A} = \frac{C_{A0} X_A}{r_A} = \frac{1.5 \times 0.5}{1.875} = \underline{0.4 \text{ min}}$$

$$5) 2\theta = \frac{V}{\tau} = \frac{100}{0.4} = 250$$

$$\therefore \theta = 125 \text{ dm}^3/\text{min}$$