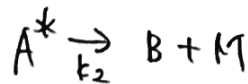
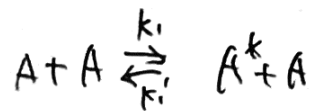


B3-3

(a) $\frac{dC_{A^*}}{dt} = 0$



(b) 定常状態

(c) $\frac{dC_{A^*}}{dt} = \underbrace{k_1 C_A^2}_{\text{生成}} - \underbrace{k_i' C_A^* C_A}_{\text{逆反応}} - \underbrace{k_2 C_A^*}_{\text{消費}} = k_1 C_A^2 - C_A^* (k_i' C_A + k_2) = 0$

$$C_{A^*} = \frac{k_1 C_A^2}{k_i' C_A + k_2}$$

$$r_B = k_2 C_{A^*} \quad r_B = -r_A = \frac{k_1 k_2 C_A^2}{k_i' C_A + k_2}$$

$k_i' C_A \gg k_2$ の時. $r_A \approx -\frac{k_1 k_2 C_A^2}{k_i' C_A} = -\frac{k_1 k_2}{k_i'} C_A = -k_3 C_A$

$$k_3 = \frac{k_1 k_2}{k_i'}$$

1) $A \rightarrow B + M$ 全 A 10 mol 存在するとして反応率 0.1 と 0.4
反応率 0.1 9 1 1 11 之比は 1:3 と

0.4 6 4 4 14 $\frac{14 \text{ mol}}{11 \text{ mol}} = 1.27 \approx 1.3 \frac{1}{10}$

2) $r_A = \frac{dC_A}{dt} = -k_3 C_A$

$$\frac{dC_A}{C_A} = -k_3 dt \rightarrow \ln \frac{C_A}{C_{A0}} = -k_3 t \rightarrow t = \frac{1}{k_3} \ln \frac{C_{A0}}{C_A} = \frac{1}{k_3} \ln \frac{1}{1-x} = 7.13 \text{ min}$$

3) $C_B = 2.0 \text{ mol/(m}^3 \cdot \text{s)}$ 反応率は 0.4

$$k_2 = \frac{1}{t} \ln \frac{C_{A0}}{C_A} = \frac{1}{t} \ln \frac{1}{1-x} = 0.17 \text{ min}^{-1}$$