B3-2

(a) $\tau = -\frac{\Delta C_A}{r_A} = \frac{C_{A0}-C_A}{(k_1+k_2)C_A} = \frac{V_T}{u_0}$

$C_{A0}-C_A = (k_1+k_2)C_A \cdot \frac{V_T}{u_0}$ より $C_A - C_{A0} = \underline{-(k_1+k_2)C_A \cdot \frac{V_T}{u_0}}$

(b) $C_R - C_{R0} = k_1 C_A \frac{V_T}{u_0}$

$\frac{C_R - C_{R0}}{C_A - C_{A0}} = \underline{-\frac{k_1}{k_1+k_2}}$

(c) $C_A = \underline{C_{A0}(1-\chi_A)}$

(d) $\frac{C_R-C_{R0}}{C_A-C_{A0}} = -\frac{k_1}{k_1+k_2} = \frac{C_R-C_{R0}}{-C_{A0}\chi_A}$

より $C_R = C_{R0} + \underline{\frac{k_1}{k_1+k_2} C_{A0}\chi_A}$

(e) $C_R - C_{R0} = k_1 C_A \frac{V_T}{u_0} = k_1 C_{A0}(1-\chi_A)\frac{V_T}{u_0}$

$C_R - C_{R0} = \frac{k_1}{k_1+k_2} C_{A0}\chi_A$

より $\frac{k_1}{k_1+k_2} C_{A0}\chi_A = k_1 C_{A0}(1-\chi_A)\frac{V_T}{u_0}$ より $V_T = \underline{\frac{u_0\chi_A}{(k_1+k_2)(1-\chi_A)}}$

(f) $u_0 \propto V_T$ より 3倍

(g) $\frac{V_T(0.6)}{V_T(0.3)} = \frac{u_0\times 0.6}{(k_1+k_2)(1-0.6)} \times \frac{(k_1+k_2)(1-0.3)}{u_0\times 0.3} = \frac{0.6}{0.3}\times\frac{(1-0.3)}{(1-0.6)} = \underline{3.5}$ 倍