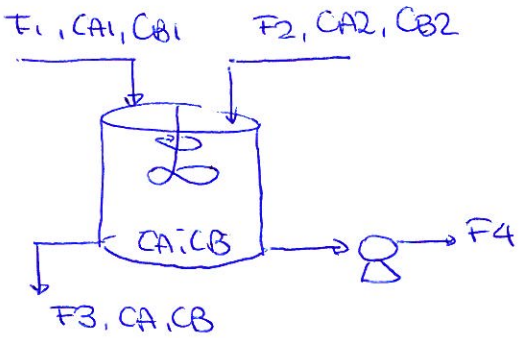
EJERCICIO 4



** Balance de materia de CA

$E + \cancel{G} = S + A$

No hay reacción química

$$F_1 C_{A1} + F_2 \cdot C_{A2} = V \cdot \frac{dCA}{dt} + F3 \cdot CA + F4 \cdot CA$$

ENTRADA — ACUMULACIÓN — SALIDA

$$V \cdot \frac{dCA}{dt} + (F3 + F4)\, CA = F_1 C_{A1} + F_2 \cdot C_{A2}$$

modelo de 1er orden $\quad 2 \cdot \frac{dy}{dt} + y = k \cdot x$

$$\frac{V}{F3 + F4} \cdot \frac{dCA}{dt} + CA = \frac{F_1 \cdot C_{A1}}{F3 + F4} + \frac{F_2}{F3 + F4} \cdot C_{A2}$$

$\frac{V}{F3+F4} = \tau_A$ $\quad \frac{F_1}{F3+F4} = K_{1A}$ $\quad \frac{F_2}{F3+F4} = K_{2A}$

$$G_{1A} = \frac{CA}{C_{A1}} = \frac{\frac{F_1}{F3+F4}}{\frac{V}{F3+F4} \cdot s + 1}$$

$$G_{2A} = \frac{CA}{C_{A2}} = \frac{\frac{F_2}{F3+F4}}{\frac{V}{F3+F4} \cdot s + 1}$$

$$\frac{V}{F3+F4} \cdot CA(s) \cdot s + CA(s) = \frac{F1}{F3+F4} \cdot CA1 + \frac{F2}{F3+F4} \cdot CA2$$

$$CA(s) \cdot \left(\frac{V \cdot s}{F3+F4} + 1 \right) = \frac{F1}{F3+F4} \cdot CA1 + \frac{F2}{F3+F4} \cdot CA2$$

$$G1(s) = \frac{CA(s)}{CA1} = \frac{\frac{F1}{F3+F4}}{\frac{V}{F3+F4} \cdot s + 1}$$

$$G2(s) = \frac{CA(s)}{CA2} = \frac{\frac{F2}{F3+F4}}{\frac{V}{F3+F4} \cdot s + 1}$$