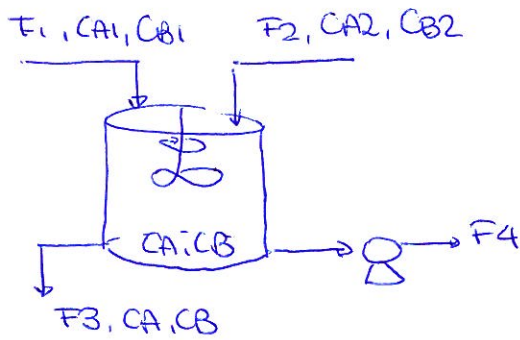


EJERCICIO 4



* Balance de materia de CA

$$E + V = S + A$$

NO hay reacción química

$$\underbrace{F_1 \cdot CA_1 + F_2 \cdot CA_2}_{\text{ENTRADA}} = \underbrace{V \cdot \frac{dCA}{dt}}_{\text{ACUMULACIÓN}} + \underbrace{F_3 \cdot CA + F_4 \cdot CA}_{\text{SALIDA}}$$

$$V \cdot \frac{dCA}{dt} + (F_3 + F_4) CA = F_1 \cdot CA_1 + F_2 \cdot CA_2$$

Modelo de 1er orden

$$Z \cdot \frac{dy}{dt} + y = k \cdot x$$

$$\underbrace{\frac{V}{F_3 + F_4}}_{Z_A} \frac{dCA}{dt} + CA = \underbrace{\frac{F_1 \cdot CA_1}{F_3 + F_4}}_{K_{1A}} + \underbrace{\frac{F_2}{F_3 + F_4} \cdot CA_2}_{K_{2A}}$$

$$G_{1A} = \frac{CA}{CA_1} = \frac{\frac{F_1}{F_3 + F_4}}{\frac{V}{F_3 + F_4} \cdot s + 1}$$

$$G_{2A} = \frac{CA}{CA_2} = \frac{\frac{F_2}{F_3 + F_4}}{\frac{V}{F_3 + F_4} \cdot s + 1}$$

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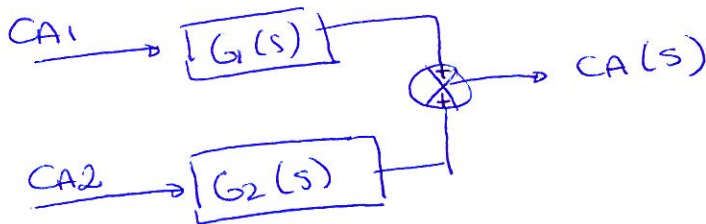
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$$CA(s) = \frac{V}{F_3 + F_4} \cdot CA(s) \cdot s + CA(s) = \frac{F_1}{F_3 + F_4} \cdot CA_1 + \frac{F_2}{F_3 + F_4} \cdot CA_2$$

$$CA(s) \cdot \left(\frac{V \cdot s}{F_3 + F_4} + 1 \right) = \frac{F_1}{F_3 + F_4} \cdot CA_1 + \frac{F_2}{F_3 + F_4} \cdot CA_2$$

$$G_1(s) = \frac{CA(s)}{CA_1} = \frac{\frac{F_1}{F_3 + F_4}}{\frac{V}{F_3 + F_4} \cdot s + 1}$$

$$G_2(s) = \frac{CA(s)}{CA_2} = \frac{\frac{F_2}{F_3 + F_4}}{\frac{V}{F_3 + F_4} \cdot s + 1}$$



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