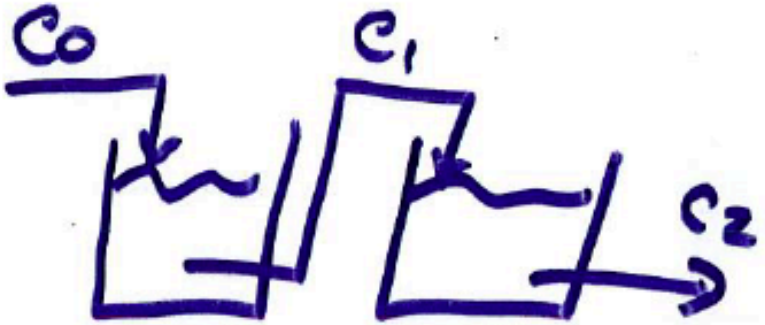
2 MFR in series,

$\tau = 5.3$

$k = 0.07 \frac{L}{mol\text{-}hr}$

$C_0 = 18\ mol/L$



What is final conversion?

What are intermediate concentrations?

You are VP of technology for TCO. You have a 500 L MFR (ideal) in which you can make either product B or product C, from raw material A.

$A \rightarrow 2B$ or $2A \rightarrow C$

$k = 0.3\ min^{-1}$ $\quad$ $k = 0.2\ min^{-1}$

Data: $C_{A_0} = 0.5\ mol/L$

$v = 50\ L/min$

A costs \$5/mol

B sells for \$15/mol

C sells for \$40/mol

Which product would you make to maximize profits?

Bio medical Modeling

Comparison of enzymatic protein digestion in stomach vs colon.

$V = 4.71\ L$

$\upsilon = 0.2\ L/hr$

$r = 1\ cm$

$L = 15\ m$

$$r = -\frac{V_m [P]}{K_m + [P]}$$

$V_m = 0.1\ \frac{gm}{L \cdot hr}$

$K_m = 0.5\ gm/L$

$[P_0] = 19\ gm/L$

Model stomach as MFR

colon as PFR

Calc. conversion

Comparison of MFR vs PFR

1) You have a PFR, τ_p, $X = 0.90$, 1st order rxn.
How large of MFR to get same X? (q, K same)

2) 2nd order rxn, $X = 0.90$ for PFR.
How large should MFR be?