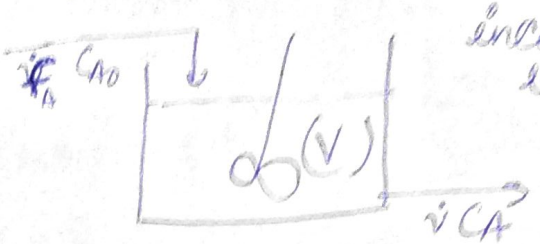
Q) 4 A - pdt



incompressible liq {V is = const}

(CSTR)

So Assuming

- V = constant
- well mixed tank {conc^n is same throughout}

$\dot{F}_A$ = flowvemetric flowrate
C_A = conc^n in the tank at time (t)

$$In - out + Gen = Acc$$

$\{-r_A = kC_A\}$ following the rate law

$$M_{in} - M_{out} + (-r_A) = \frac{d(m)}{dt}$$

{mass}

$$F_{in} C_{Ain} - F_{out} C_{Aout} + kC_{Aout} = \frac{d(\rho V)}{dt}$$

For the rate law
$r_A = -kC_A$

$\tau_{rxn} = 1/k$ τ_{rxn} = (time of rxn)

$\tau_n = \left(\frac{V}{F}\right)$ $V = vol^m$
F = flowrate

↳ (residence time)

$C_A = C_{A0}(1 - x(t))$

$x(t)$ is conversion rate