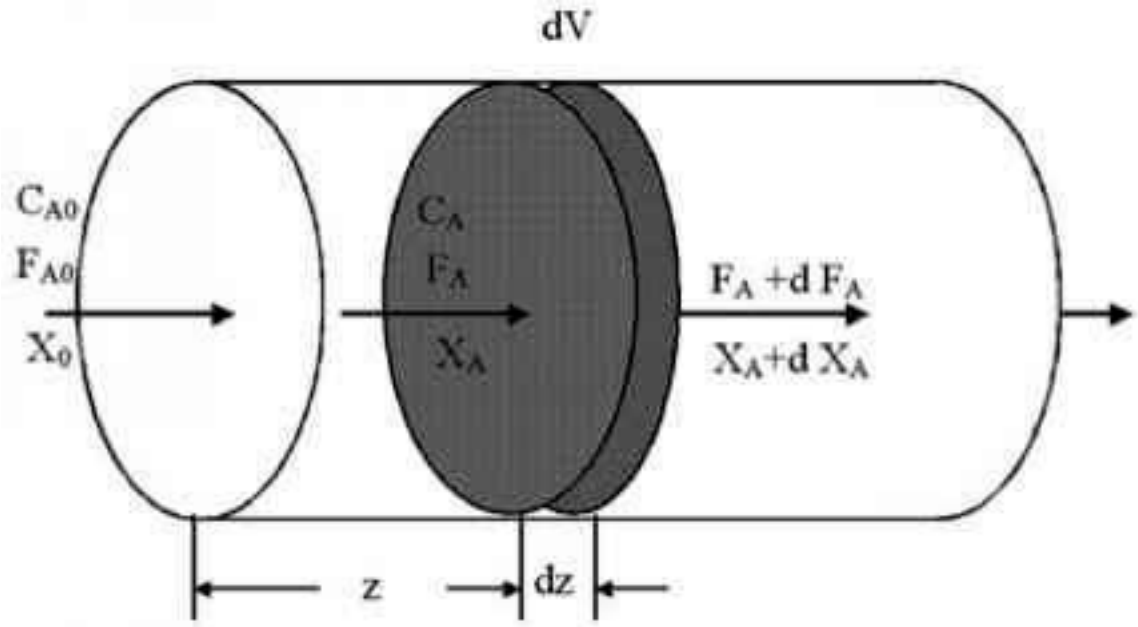
CLL:113-Tut-8(18.12.20)



In the plug flow reactor

$$V = \frac{F_{A0}}{kC_{A0}^{n}} \int_{0}^{X_{A\_EXIT}} \frac{dx_A}{(1-x_A)^n}$$

Where the value of the pre-factor before the integral has value 2 m^3 and value of n=1.25

Q1. Find the Volume required for 90% conversion
Use (i) Trapezoidal Rule, (ii) Simpsons 1/3rd and (iii) Simpsons 3/8th Rule
and find the value of N(subdomains) required in each case to reach convergence (tol=0.001).
You can use Excel or C programming to do this.