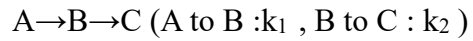


The elementary liquid-phase series reaction is carried out in a batch reactor:



In this reaction, A is decomposed to the desired product B. The flow rate of the feed containing A is **40 L/min**. The initial concentrations of A, B, and C are  $C_{A0}=6\text{mol/L}$ ,  $C_{B0}=C_{C0}=0$ . Assume isothermal conditions.

I. Determine the maximum concentration of B and the time when the concentration of B reaches the maximum value.

The reaction rate constants are  $k_1=0.5 \text{ min}^{-1}$ ,  $k_2=0.15 \text{ min}^{-1}$ .

II. Find the reactor volume when  $C_B$  is at its maximum concentration (use the feed rate given).