

ENG 304

Final Kehinde Practice

17/ENG021005

Q

$$C_1 = 1.5 \times 10^{-3} \times 4 = 6 \times 10^{-3} \text{ kg mol/m}^3$$

$$C_2 = 1.5 \times 10^{-3} \times 1 = 1.5 \times 10^{-3} \text{ kg mol/m}^3$$

Considering plane wall condition

$$A = \frac{L}{DA} = \frac{0.0005}{8.7 \times 10^{-8} \times 1}$$

$$\begin{aligned} \text{Mole flux} &= (6 \times 10^{-3} - 1.5 \times 10^{-3}) \times \frac{8.7 \times 10^{-8} \times 1}{0.0005} \\ &= 7.83 \times 10^{-7} \text{ kg mol/m}^2 \text{ s,} \end{aligned}$$

$$\therefore \text{Mass flux} = 2 \times 7.83 \times 10^{-7} \text{ kg/m}^2 \text{ s} = 1.566 \times 10^{-6} \text{ kg/m}^2 \text{ s}$$