

$$t_0 = 0.78 \text{ min}$$

$$t_A = 4.58$$

$$t_B = 4.77$$

$$k'_A = \frac{t_{rA} - t_0}{t_0}$$

$$= \frac{4.58 \text{ min} - 0.78 \text{ min}}{0.78 \text{ min}}$$

$$= 4.87$$

$$k'_B = \frac{t_{rB} - t_0}{t_0}$$

$$k'_B = \frac{4.77 \text{ min} - 0.78 \text{ min}}{0.78 \text{ min}}$$

$$k'_B = 5.11$$

$$\alpha = \frac{K'B}{K'A} = \frac{5.11}{4.87} = 1.049$$

$$N = 16 \left(\frac{t_{rB}}{w_b} \right)^2 = 16 \left(\frac{4.77 \text{ m/s}}{0.07 \text{ m/s}} \right)^2$$

$$= 74295$$

$$H = \frac{L}{N} = \frac{20 \text{ m}}{74295}$$

$$= \frac{2.69 \times 10^{-4} \text{ m} \times 10^7 \text{ cm}}{1 \text{ m}}$$

$$= 2.69 \times 10^3 \text{ cm} = 0.0269 \text{ cm}$$

$$u = \frac{L}{t_0} = \frac{20 \text{ m}}{0.78 \text{ min}}$$

$$= \frac{25.69 \text{ M}}{\text{min}} \times \frac{10^2 \text{ cm}}{1 \text{ m}}$$

$$= \frac{2.569 \times 10^3 \text{ cm}}{\text{min}}$$

$$R = \frac{2(t_{VB} - t_{VA})}{W_{BA} + W_{BA}} = 2 \left[\frac{4.77 - 4.58 \text{ min}}{(0.07 + 0.07) \text{ min}} \right]$$

$$= 2.71$$

$$\begin{aligned}
 V_0 &= F \times t_0 \\
 &= \left(\frac{1.4 \text{ mL}}{\cancel{\text{min}}} \right) \times (0.78 \cancel{\text{min}}) \\
 &= \underline{1.092 \text{ mL}}
 \end{aligned}$$

$$I = 100 \left[\frac{(\log t_R - \log t_{Rz})}{\log t_R(z+1) - \log t_{Rz}} \right] + z$$

$$385.82 = 100 [\quad] + 300$$

$$\frac{385.82 - 300}{100} = [\quad]$$

$$0.8582 = \left[\frac{\log t_R - \log (4.78)}{\log (6.84) - \log (4.78)} \right]$$

$$0.8582 (0.137) = \log t_R - 0.679$$

$$0.135 + 0.679 = \log t_R$$

$$\log_{10} t_R = \frac{0.814}{10}$$

$$t_R = 10^{0.814}$$
$$= 6.516$$