

7.6

$$q = 125 \text{ ci}$$

$$K_A = 82 \text{ h}^{-1}$$

$$x = L = 20 \text{ cm}$$

$$v = 40 \text{ cm/h}$$

$$\phi = \frac{c_i}{c_F} = 0.05$$

LINEAR ISOTHERM

NOTE: ACCORDING TO DUPONT TECHNICAL FACT SHEET
ON ION EXCHANGE RESINS $\Sigma = 0.35 - 0.40$,
WE WILL USE $\Sigma = 0.35$.

$$\Sigma = \frac{K_A x}{v} (1 - \Sigma)$$

$$\Sigma = \frac{(82)(20)}{(40)} (1 - 0.35) = 26.6$$

FROM FIGURE 7.4 FOR $\phi = 0.05$ AND $\Sigma = 26.6$

$$\tau = 16.5 = \frac{K_A}{K_{EQ}} \left(t - \frac{x \Sigma}{v} \right)$$

$$16.5 = \frac{82}{125} \left(t - \frac{(20)(0.35)}{(40)} \right)$$

$$t = 25.15 + 0.175$$

$$= \underline{\underline{25.3 \text{ h}}}$$

COMMENT: FIGURE 7.4 IS VERY POOR IN
THAT RANGE OF DATA!

