

NAME	DATE

NOTES

#4-17

$$L_1 = 0.3 \text{ m} \quad K_1 = 1.5 \text{ W/m}\cdot\text{C}^\circ$$

$$L_2 = 0.2 \text{ m} \quad K_2 = 0.01 \text{ W/m}\cdot\text{C}^\circ$$

$$h = 15 \text{ W/m}\cdot\text{C}^\circ \quad T_{\infty} = 30^\circ \quad T_c = 600 \text{ C}^\circ$$

$$R_{\text{tot}}'' = \frac{L_1}{K_1} + \frac{L_2}{K_2} + \frac{1}{h}$$

$$R_{\text{tot}}'' = \left(\frac{0.3}{1.5} \right) + \left(\frac{0.2}{0.01} \right) + \left(\frac{1}{15} \right) = 20.2667 \text{ W/m}\cdot\text{C}^\circ$$

$$q'' = \frac{T_c - T_{\infty}}{R_{\text{tot}}''} = \frac{600 - 30}{20.2667} = 28.125 \text{ W/m}^2$$

outer surface $\rightarrow q'' = \frac{T_c - T_{\text{as}}}{R_1''}$

$$28.125 = \frac{600 - T_{\text{as}}}{0.2} = 594.38 \text{ C}^\circ$$

#4-23

no values? 2?

#4-35

$$A_k = (3.5)(6) = 21 \text{ m}^2$$

$$h_c = 0.285 \quad f_b = \left(\frac{0.245}{0.285} \right) = 0.8596$$

$$f_s = \left(\frac{0.04}{0.285} \right) = 0.1404$$

$$R = \frac{L}{K \cdot A_k} \rightarrow R_{\text{brass}} = \frac{0.032}{(0.2)(21)} = 0.0076$$

$$R_{\text{plaster in}} = \frac{0.022}{(0.22)(21)} = 0.0048$$

$$R_{\text{plaster out}} = \frac{0.022}{(0.22)(21)} = 0.0048$$

$$\frac{1}{R_{\text{comp}}} = \frac{1}{R_{\text{brass}}} + \frac{1}{R_{\text{plaster in}}} + \frac{1}{R_{\text{plaster out}}} + \frac{1}{R_{\text{steel}}}$$

$$\frac{1}{R_{\text{comp}}} = \frac{1}{0.0076} + \frac{1}{0.0048} + \frac{1}{0.0048} + \frac{1}{0.0048} = 63.85$$

$$R_{\text{conv 1}} = \frac{1}{h_c A_k} = 0.0015$$

$$R_{\text{conv 2}} = \frac{1}{h_s A_k} = 0.0015$$

$$R_{\text{comp}} = 0.0157 \text{ C/W}$$