

70. The heat conducted is

$$\begin{aligned} Q &= P_{\text{cond}} t = \frac{k A t \Delta T}{L} \\ &= \frac{(67 \text{ W/m}\cdot\text{K})(\pi/4)(1.7 \text{ m})^2(5.0 \text{ min})(60 \text{ s/min})(2.3 \text{ C}^\circ)}{5.2 \times 10^{-3} \text{ m}} \\ &= 2.0 \times 10^7 \text{ J} . \end{aligned}$$