Conduction

· Heat transfer is an exchange of energy, it happens between a molecule of matter containing a temperature difference, which occurs in a gas,Liquid or solid with different tempreature.

Question:

L= 0.4 m, A= 20 m2, DeltaT= 25, and k=0.78 W/mK , find the rate of heat transfer through the wall

Solution:

$$\dot{Q} = kA\frac{\Delta T}{L} = 0.78\frac{W}{mK} * 20m^2 * \frac{25}{0.4m} = 975W$$

$$R_{Wall} = \frac{L}{kA} = \frac{0.4m}{0.78W/mK * 20m^2} \approx 0.0256℃/W$$

$$\dot{Q} = \frac{\Delta T}{R_{Wall}} = \frac{25}{0.0256℃/W} \approx 976.56W$$