Conductive Heat Transfer - Glen Carlo Canlas

Conductive heat transfer is basically the transfer of heat energy within a body, may it be solid, liquid, or gas. Generally, the heat transfer will be from the hotter body into the cooler body. The energy transfer rate is the temperature difference between the two bodies. The study of conductive heat transfer is used for designing the design fabric of a structure and the necessary design strategies, passive and/or active, in order to achieve the thermal comfort inside the structure. The difference in temperature is particularly higher during the winter rather than during the summer.

Exercise

Given
L = 0.4m
A = 20 sqm
ΔT = 25
K = 0.78 W/m K

Simple Method
$\dot{Q}$= kA ΔT/L
= (0.78)(20)(25)/0.4
= 975 W

Resistance Concept
Rwall = L/kA
= 0.4/(0.78)(20)
= 0.02564

$\dot{Q}$= ΔT/Rwall
= 25/0.02564
= 975.039 W