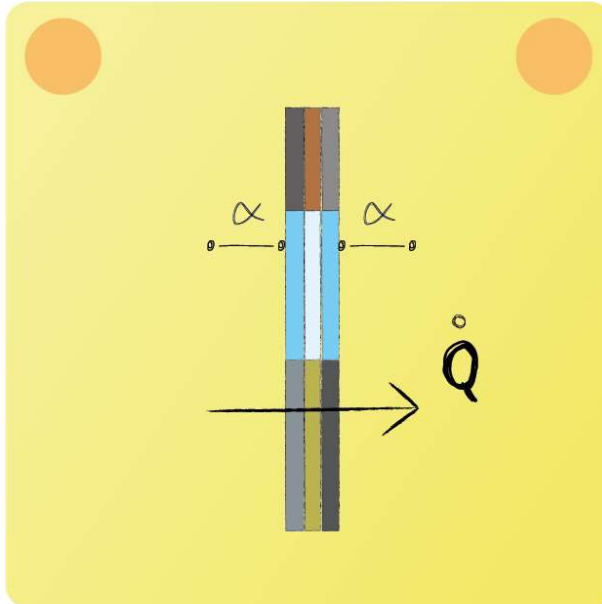# Lecture 7 - Question 3

A cross section of the wall of a train cabin can be seen in the figure. The wall consists out of a part that exists out of three layers and double insulation glass. The double glass has stagnant argon gas in between. The constant indoor and outdoor temperatures are T_i and T_∞. Assume one-dimensional steady-state heat transfer. When determining the rate of heat transfer, which network of resistors is correct for the situation described. Note that no simplifications have been made by simplifying series or parallel networks.

Conduction will occur through the top part, the middle part (double glass) and the bottom part. The serial networks the top, middle and bottom parts will be connected in parallel. Since on the in- and outside convective heat transfer plays a role, the parallel network will be connected to two additional resistors. One on the right side and one on the left side. Eventually resulting in the resistor network in the figure below.