

First name:

Last name:

Homework n°03

Exercise

A **3-m-high** and **5-m-wide** wall consists of long **16-cm x 22-cm** cross section horizontal bricks ($k = 0.72 \text{ W/m}\cdot^\circ\text{C}$) separated by **3-cm-thick** plaster layers ($k = 0.22 \text{ W/m}\cdot^\circ\text{C}$). There are also **2-cm-thick** plaster layers on each side of the brick and a **3-cm-thick** rigid foam ($k = 0.026 \text{ W/m}\cdot^\circ\text{C}$) on the inner side of the wall, as shown in **Fig. 2–6**. The indoor and the outdoor temperatures are **20°C** and **-10°C**, and the convection heat transfer coefficients on the inner and the outer sides are $h_1 = 10 \text{ W/m}^2\cdot^\circ\text{C}$ and $h_2 = 25 \text{ W/m}^2\cdot^\circ\text{C}$, respectively.

Obtain a general relation for the temperature distribution inside the pipe under steady conditions, and determine the rate of heat loss from the steam through the pipe.

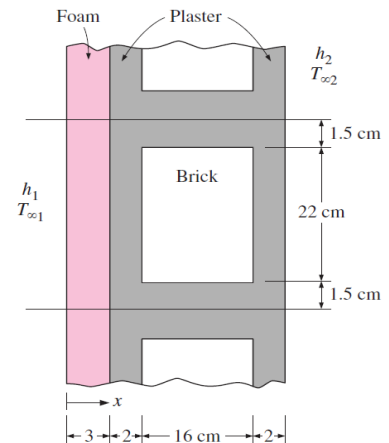
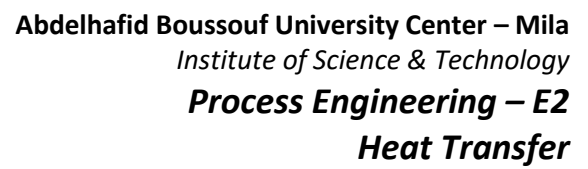


Figure 1

Academic year: **2024-2025**

Instructor: **Dr. Mohamed BOUTI**

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