

AE331 HEAT TRANSFER
Online Quiz, No 5
December 2, 2020
(open notes and books)

Rules for the quiz

1. Your camera and microphone should be open during the quiz (you can reduce your speaker's volume if the voice is bothering you but you should not reduce the volume of your microphone)
2. You should not communicate with anybody during the quiz.
3. You should sit in front of your computer where the assistants can clearly see you even if you finish the quiz earlier.
4. You should be alone during the quiz.
5. Please sign the following statements and upload this page with your solution papers.

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I affirm that all the work done on this quiz is my own; have obeyed the rules indicated above and I have not given or received any help during this quiz. I understand that any indication of violation of this word of honor may lead to a zero grade on this quiz and to a disciplinary action.

Name: _____

ID number: _____

Date/Signature: _____

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Question

Duration: 15 min for solution + 10 min for uploading

Assume that a plane wall has a thickness of $0.8b$ [m]. The initial temperature of the wall is $3ab$ [K]. Both sides of the wall are suddenly exposed to a gas flow at $7ab$ [K]. The thermal conductivity of the wall is $5b$ [kW/mK]. The density of the wall is $22ab$ [kg/m³]. The specific heat of the wall is $1.b$ [kJ/kgK]. The convective heat transfer coefficients in both sides are $3b$ [kW/m²K]. After 20 hours, calculate

- a) The surface temperature of the wall
- b) The temperature at the mid-plane of the wall.
- c) Heat flux from the surface of the wall to the gas.

