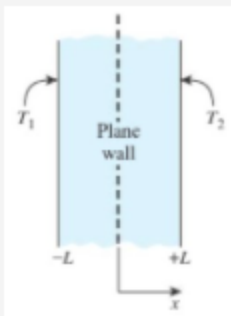


Question 5

Assuming 1-D heat conduction in a large plane wall with steady and uniform heat generation as shown below, which of the following statements is/are true?



- i. The maximum temperature will be at the centre midline if there are the same rates of convective heat losses on both sides (+L and -L)
- ii. The maximum temperature will be to the left of centre midline if the rate of convective heat loss at -L is more than at +L.
- iii. The maximum temperature will be to the right of centre midline if the rate of convective heat loss at -L is more than at +L.

Selected Answer: i and iii only

Question 1

The rate of heat transfer is dependent on temperature differences for conduction, convection but not radiation.

Selected Answer: False

Question 2

For an electrical cylindrical wire with uniform heat generation, a higher thermal conductivity will result in a higher surface heat flux.

Selected Answer: False

Response Feedback: The higher the thermal conductivity k , the better is the heat transfer to the surface by conduction.

Question 3

Which of the following statements are false?

- i. Liquids and gases are not able to conduct heat.
- ii. Forced convection is more effective than natural convection.
- iii. The volume of the solid does not affect the rate of convection heat transfer at its surface.
- iv. Rate of radiation heat transfer is affected by the medium through which it is transmitted.
- v. Convection heat transfer coefficient is a material property of the fluid medium.

Selected Answer: i, iv and v

Question 4

Heat transfer in practical applications must always involve all three mechanisms of heat transfer

Selected Answer: False

Question 1

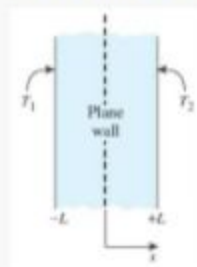
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- v. Convection heat transfer coefficient is a material property of the fluid medium.

Selected Answer: i, iv and v

Question 2

Assuming 1-D heat conduction in a large plane wall with steady and uniform heat generation as shown below, which of the following statements is/are true?



- i. The maximum temperature will be at the centre midline if there are the same rates of convective heat losses on both sides ($+L$ and $-L$)
- ii. The maximum temperature will be to the left of centre midline if the rate of convective heat loss at $-L$ is more than at $+L$.
- iii. The maximum temperature will be to the right of centre midline if the rate of convective heat loss at $-L$ is more than at $+L$.

Selected Answer: i and iii only

Question 3

The rate of heat transfer is dependent on temperature differences for conduction, convection but not radiation.

Selected Answer: True

Response Feedback: Temperature difference is important for all heat transfer mechanisms.

Question 4

Heat transfer in practical applications must always involve all three mechanisms of heat transfer

Selected Answer: False

Question 5

What is the unit for volumetric heat generation rate?

Selected Answer: W/m^3

Question 1

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Selected Answer: False

Question 2

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- v. Convection heat transfer coefficient is a material property of the fluid medium.

Selected Answer: i, iv and v

Question 5

Which of the following statement is false?

Selected Answer: The body cannot reach steady state temperature distribution if there is any internal heat generation

Question 1

Heat transfer in practical applications must always involve all three mechanisms of heat transfer

Selected Answer: False

Question 2

The rate of heat transfer is dependent on temperature differences for conduction, convection but not radiation.

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Question 3

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- v. Convection heat transfer coefficient is a material property of the fluid medium.

Selected Answer: i, iv and v

Question 4

Which of the following statement is true?

Selected Answer: Thermal conductivity increases with temperature for gases.

Question 5

Which of the following statement is false?

Selected Answer: The body cannot reach steady state temperature distribution if there is any internal heat generation

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