

Thermodynamics: Heat Transfer

⚠ This is a preview of the draft version of the quiz

Started: Nov 4 at 9:32am

Quiz Instructions

Question 1

1 pts

Which of the following are true?

- Plunging an aluminum can full of hot vapor into a cold water bath causes the can to expand.
- Styrofoam conducts heat better than Silver does.
- Shorter objects can conduct more heat in a given amount of time than longer objects [related to 'L'].
- There is net heat flow between two objects at the same temperature.

Question 2

1 pts

Consider a rectangular slab of an unknown material. For the situation, choose:

A if the change will cause the thermal resistance of the slab to increase.

B if the change will cause the thermal resistance of the slab to decrease.

C if the change will not change the thermal resistance of the slab.

The length of the slab is increased.

b

a

c

Question 3

1 pts

Consider a rectangular slab of an unknown material. For the situation, choose:

A if the change will cause the thermal resistance of the slab to increase.

B if the change will cause the thermal resistance of the slab to decrease.

C if the change will not change the thermal resistance of the slab.

The cross sectional area of the slab is increased.

C

A

B

Question 4**1 pts**

Consider a rectangular slab of an unknown material. For the situation, choose:

A if the change will cause the thermal resistance of the slab to increase.

B if the change will cause the thermal resistance of the slab to decrease.

C if the change will not change the thermal resistance of the slab.

The thermal conductivity of the slab is increased.

A

B

C

Question 5**1 pts**

Consider the situation. Choose:

A if the heat is transferred primarily by conduction.

B if the heat is transferred primarily by convection.

C if the heat is transferred primarily by radiation.

A pancake is being cooked on the surface of a skillet.

B C A**Question 6****1 pts**

Consider the situation. Choose:

A if the heat is transferred primarily by conduction.

B if the heat is transferred primarily by convection.

C if the heat is transferred primarily by radiation.

You cool off under a ceiling fan after being outside all afternoon.

 B C A**Question 7****1 pts**

Consider the situation. Choose:

A if the heat is transferred primarily by conduction.

B if the heat is transferred primarily by convection.

C if the heat is transferred primarily by radiation.

The sun warms your face.

C

A

B

Question 8

1 pts

A window in a house is 0.75m wide, 1.25m high, and 5cm thick. If the temperature outside the house is 32°C and the temperature inside the house is 24°C, how much heat in kilojoules flows through the window in 1 hour? The thermal conductivity of glass is 1.05W/mK.

Question 9

1 pts

A window in a house is 0.75m wide, 1.25m high, and 5cm thick. If the temperature outside the house is 32°C and the temperature inside the house is 24°C.

If the window was made of silver instead of glass, how long in seconds would it take to transfer the same amount of thermal energy? The thermal conductivity of silver is 420W/mK

Question 10**1 pts**

Carson is designing the length of a stainless steel frying pan handle which is 4.0cm in diameter. He wants the rate of heat transfer from a 100°C pan to a 25°C atmosphere to be 4.3Watts . How long in meters should the handle be? The thermal conductivity of stainless steel is 16W/mK .

Not saved