Assignment 5

The due date for submitting this assignment has passed.

As per our records you have not submitted this assignment.

1) On heat transfer surface, fins are provided to increase temperature gradient as an enhancement heat transfer to increase surface area to promote the rate of heat transfer to decrease the pressure drop of the fluid

No, the answer is incorrect.

Assisted Answer: To increase surface area to promote the rate of heat transfer

2) The use of fin in a particular application is justified when the convection coefficient is small the convection coefficient is large velocity of fluid is high none of the above

No, the answer is incorrect.

Assisted Answer: Convection coefficient is small

3) The fin efficiency is defined as the ratio of the actual heat transfer from the fin to the heat transfer from the same fin with an adiabatic tip the heat transfer through the base area of the same fin the heat transfer from an equivalent fin which is infinitely long the heat transfer from the same fin if the temperature along the entire length of the fin is the same as the base temperature

No, the answer is incorrect.

Assisted Answer: The heat transfer from the same fin if the temperature along the entire length of the fin is the same as the base temperature

4) Addition of fin is the surface increases the heat transfer if is equal to one less than one greater than one but less than two

No, the answer is incorrect.

Assisted Answer: Greater than one but less than two

5) Films are made as thin as possible to reduce the total weight accommodate more number of fins increase the width of the same profile area improve flow of coolant around the fin

No, the answer is incorrect.

Assisted Answer: Accommodate more number of fins

6) The efficiency of a pin-fin with insulated tip is

No, the answer is incorrect.

Assisted Answer: Open Range [0.5, 0.9]

7) A fin has 5 mm diameter and 100 mm length. The thermal conductivity of fin material is 400 W/mK. One end of the fin is maintained at 120°C and its remaining surface is exposed to ambient air at 30°C. If the convective heat transfer coefficient is 10 W/m²K, the heat loss (Q) from the fin is

No, the answer is incorrect.

Assisted Answer: Open Range [400, 500]

8) A long circular aluminum rod of thermal conductivity 240 W/mK is attached at one end to a heated wall and transfers heat by convection to a coolant. If the diameter of the rod is 50 mm, the rate of heat removal (Q) from the rod increases by

No, the answer is incorrect.

Assisted Answer: Open Range [400, 500]

9) A copper fin of 380(W/mK) 800 mm long and 5 mm diameter is exposed to ambient air at 20°C. The convective heat transfer coefficient is 20 W/m²K. If the fin base temperature is 125°C, the efficiency of the fin (η) is

No, the answer is incorrect.

Assisted Answer: Open Range [0.6, 0.9]

10) Consider two long slender rods of the same diameter, but different materials. One end of each rod is attached to a base surface at 100°C, while the surfaces of the rods are exposed to ambient air at 20°C. By inverting the length of each rod, it was observed that the temperatures of the rods were equal at the position x = 0.15 m and y = 0.35 m, where x is measured from the base surface. If the thermal conductivity of rod A is known to be 76 W/mK, the thermal conductivity (X in W/mK) of rod B is

No, the answer is incorrect.

Assisted Answer: Open Range [173, 17.3]