Assignment 10

Due on 2016-11-06, 23:59 IST.

1. Heat of fusion of solid to liquid enters the control volume at a is expressed as \( h \) point.

2. Rate of heat losses by conduction into the control volume at a is expressed as \( h \) point.

3. Choose the correct vector form of the differential total energy balance \( \Delta e_{\text{tot}} \) point.

4. Choose the appropriate form of the differential energy balance \( \Delta e_{\text{tot}} \) point.

5. The equation representing differential energy balance for entropy is given as \( \Delta s \) point.

6. Choose the option which describe Fourier's law of heat conduction. \( f \) point.

7. A furnace wall consists of three layers. The inner layer of 15 cm thickness is made of Refractory (k = 1 W/mK). The intermediate layer of 25 cm consists of:

   a. mud-colored brick (k = 0.6 W/mK) followed by 10 cm thick concrete wall (k = 2.5 W/mK). When the furnace is in continuous operation, the inner surface of the furnace is at 1100°C while the outer surface is at 100°C. Calculate the rate of heat loss per unit area of the wall:

   - 115 kW/m²
   - 245 kW/m²
   - 205 kW/m²
   - 140 kW/m² \( f \) point.

8. Choose the assumption which is NOT made during the dermination of temperature profile in the non-steady state plane Couette flow. \( a \) point.

9. Two plates of different materials are maintained at same temperature. The temperature at a height of 5 cm from the bottom plate is:

   a. 25°C
   b. 50°C
   c. 10°C
   d. 0°C \( f \) point.