

## Module 1: Short questions

1. What is the driving force for (a) heat transfer (b) electric current flow and (c) fluid flow?
2. Which one of the following is not a property of the material ?
  - A. thermal conductivity
  - B. heat transfer coefficient
  - C. emissivity
3. What is the order of magnitude of thermal conductivity for (a) metals (b) solid insulating materials (c) liquids (d) gases?
4. What is the order of magnitude for the convection heat transfer coefficient in free convection? Forced convection? Boiling?
5. When may one expect radiation heat transfer to be important?
6. An ideal gas is heated from 50 °C to 70 °C (a) at constant volume and (b) at constant pressure. For which case do you think the energy required will be greater? Why?
7. A person claims that heat cannot be transferred in a vacuum. How do you respond to this claim?
8. Discuss the mechanism of thermal conduction in gases, liquids and solids.
9. Name some good conductors of heat; some poor conductors.
10. Show that heat flow lines must be normal to isotherms in conduction heat transfer. Will it be true for convection heat transfer?