

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 material property?
 - 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 are the orders of magnitude for free convection heat transfer coefficient, forced convection and boiling?
5. Under what circumstances can one expect radiation heat transfer to be significant?
6. An ideal gas is heated from 40°C to 60°C (a) at constant volume and (b) at constant pressure. For which case do you think the energy required will be greater? Explain why?
7. A person claims that heat cannot be transferred in a vacuum. Evaluate this claim.
8. Discuss the mechanism of thermal conduction in gases, liquids and solids.
9. Name some good and some poor conductors of heat.
10. Show that heat flow lines and isotherms in conduction heat transfer are normal to each other. Will this condition hold for convection heat transfer?