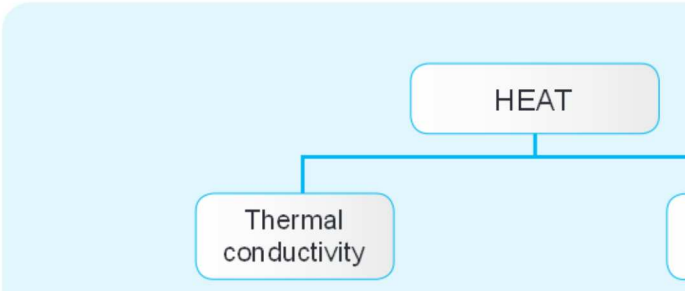
Heat 13

INTRODUCTION

Heat transfer is a discipline that concerns the transfer of thermal energy. There are several ways heat can be transferred from a system to another. Basically, heat will be transferred from a higher temperature system to a lower temperature system. This chapter discusses the rate of transfer and thermal expansion due to heat transferred.

CHAPTER OVERVIEW



13.1 Heat and Temperature

LEARNING OUTCOMES

You should be able to:
- Define temperature and heat.
- Define thermal equilibrium and state the Zeroth law of thermodynamics.
- Define absolute temperature and the triple point of water.
- Explain and use the relationship between Fahrenheit, Celcius and Absolute temperature scales.

Thermal Equilibrium

- **Temperature**: A quantity that shows the degree of coldness or hotness.
- **Heat**: The transfer of energy from an object or a system to another due to temperature difference.
- **Thermal equilibrium**: A condition where the heat is stopped from being transferred from system A (higher temperature) to system B (lower temperature) after both systems have reached the same temperature.
- **Zeroth law of thermodynamic**: If two objects A and B are separately in thermal equilibrium with a third object C, Then A and B are in thermal equilibrium with each other.

Thermometer and Temperature Scale

- **Thermometer**: A device that senses the change in physical property related with temperature.
- **Thermometry property**: A property that change with temperature.

Thermometric property	Thermometer type/ example
Volume of liquid.	Liquid in glass/mercury thermometer
The length of solid.	Liquid in glass/mercury thermometer
The resistance of material.	Thermistor
The pressure of trapped gas with constant volume.	Gas thermometer
The radiation emitted by an object.	Thermal analyser
The thermoelectric *emf* of a junction of two dissimilar metals.	Thermocouple