Chapter – 4

Heat

- **Heat:** It is a fomr of energy, which makes any object hot or cold.
- **Temperature:** Our sense of touch is not always a reliable guide to the degree of hotness of an object.
- Temperature is a measure of the degree of hotness of an object.
- Thermometer is a device used for measuring temperatures.
- Heat is the cause of temperature.
- Clinical thermometer is used to measure our body temperature. The range of this thermometer is from 35°C to 42°C. For other purposes, we use the laboratory thermometers. The range of these thermometers is usually from –10°C to 110°C.
- The normal temperature of the human body is 37°C.
- In solids, generally, the heat is transferred by conduction. In liquids and gases the heat is transferred by convection. No medium is required for transfer of heat by radiation.
- The materials which allow heat to pass through them easily are conductors of heat.
- The materials which do not allow heat to pass through them easily are called insulators.
- **Clinical Thermometer:** It is a thermometer used to measure the temperature of our body. It consists of a long, narrow, uniform glass tube with a bulb containing mercury at one end. There is a kink near the bulb. It reads a range of temperatures from $35°C$ to $42°C$.
- **Laboratory Thermometer:** It is a thermometer used to measure the temperature of objects other than our body. It consists of a column of mercury enclosed in a glass casing. The column is continuous without any kink. It measures a range of temperature from $-10°C$ to $110°C$
- **Sea Breeze:** Durign the day, the land heats up faster than the sea.
  Warm air above the land rises and colded air from sea takes its place.
  Warm air from the land moves towards the sea to compele the cycle.
  This produces a sea breeze from the sea to the land.
- **Land Breeze:** At night the land cools faster than sea.
- The warm air above the sea rises.
- This warm air is replaced by colder air from the land producing a land breeze.

- **Transfer of Heat:** Heat flows from a hotter object to a colder object until both objects reach the same temperature.
- The heat flows from a body at a higher temperature to a body at a lower temperature. There are three ways in which heat can flow from one object to another. These are **conduction**, **convection** and **radiation**.
- **Conduction:** It is the process by which heat is transferred from the hotter end to the colder and end of an object.
- **Convection:** It is the flow of heat through a fluid from places of higher temperature to places of lower temperature by movement of the fluid itself.
- **Radiation:** It is the mode of transfer of heat in which energy is directly transferred from one place to another. It does not need any material medium
- Dark-coloured objects absorb radiation better than the light-coloured objects. That is the reason we feel more comfortable in light-coloured clothes in the summer.
- Woollen clothes keep us warm during winter. It is so because wool is a poor conductor of heat and it has air trapped in between the fibres.