

CHAPTER 4: Heat

Depending on the weather one chooses clothes. For examples, light color help in cooling the body during the hot summers.

➤ HOT AND COLD:

1. Some items are hot or cold when you touch it.
2. The degree of hotness or coldness of an object may vary.
3. Sense of touch is used to measure the hotness or coldness of an object. But this is not a standard method.
4. Temperature: It is a standard method to measure the heat content or hotness of an object.
5. Thermometer: The device used to measure the temperature

➤ CLINICAL THERMOMETER:

1. The thermometer which is used by doctors or at home for measuring body temperature is called clinical thermometer.
2. The thermometer is made up of a thin, long, narrow glass tube, with a bulb on one end.
3. The bulb contains mercury and the glass tube has a marking scale to measure the temperature.
4. Temperature is measured in °C. The temperature range for clinical thermometer is 35°C to 42°C as the body temperature does not usually drop below this temperature.
5. The temperature can also be measured in Fahrenheit scale with temperature range from 94 – 108 °F.

➤ Precautions while using a thermometer:

- 1.) Wash the thermometer with an antiseptic solution.
- 2.) Check the temperature of thermometer which should have the level below 35°C.
- 3.) While taking reading observe the mercury level.
- 4.) Do not hit the thermometer against a hard object or keep it in sun or near flames
- 5.) Do not touch the thermometer bulb while taking reading
- 6.) Use clinical thermometer to measure body temperature only.

➤ How is the temperature Read?

- 1.) Usually, 1° C difference is indicated by 2 big marks.
- 2.) Between these 2 marks, if there are 5 smaller marks each small division is 0.2 °C
- 3.) Temperature is read in °C

- The human body has 37°C as the normal temperature. it can vary from person to person.
- The average body temperature is calculated by adding up the normal temperature of a large number of healthy people and dividing it by the number by of people
- Mercury has hazardous health effects; hence its use is questionable. It is also difficult to dispose

➤ An alternate to this is the digital thermometer.

➤ **LABORATORY THERMOMETER:**

1. The thermometer which is used to measure temperature of other items or objects is called laboratory thermometer.
2. The laboratory thermometer ranges from 10°C to 110°C
3. Maximum-minimum thermometer: It is used to measure the temperature of the previous day. It is mainly used to prepare weather forecast report.
4. Precautions:
 - It should be upright and not tilted.
 - One should not touch the bulb while measuring temperature.
 - The bulb must not touch the surface of the container.

➤ **TRANSFER OF HEAT:**

1.) Heat always flows from the hotter object to the colder object.

2.) **CONDUCTION:**

It is a process in which heat gets transferred from the hot end to the cold end of an object. This mainly takes place in solid state of matter.

- 3.) Conductors: The materials which allow the passage of heat through them are called conductors. Examples include aluminum, iron and copper.
- 4.) Insulators: The materials which do not allow the passage of heat are called insulators. Examples include plastics, wood, air are poor conductors of heat.
- 5.) Convection: As heat is supplied to a substance like air or water, it gets heated up and rises up. Whereas the cold water or air move down towards the heat source. This is known as convection.
- 6.) Sea breeze: the cooler air above the surface of the sea which rushes on the land during day time is called Sea breeze.
- 7.) Land breeze: At night, the cool air from land moves towards the sea. This is called as land breeze.
- 8.) Radiation: transfer of heat which does not require a medium is called radiation. For example, sunlight
- 9.) All known hot bodies are known to radiate heat. Some part of heat falling on an object is reflected, a part is absorbed and a part may be transmitted.
- 10.) Transfer of heat to any substance leads to increase in temperature.

➤ **SUMMER AND WINTER CLOTHING:**

- 1.) Light colors reflect most of the heat falling on it, hence it is advised to wear light colors in summer
- 2.) On the other hand, darker colors absorb most heat and helps us keep warm in the winter season.
- 3.) In recent times, hollow bricks are used for construction as they trap layers of air to keep the houses cool.

➤ **HOW WOOLLEN CLOTHS KEEP US WARM?**

- 1.) Wool is a poor conductor of heat, also the air trapped in the fabric does not allow heat from the human body to the colder surrounding environment.