4 Heat and Temperature

LESSON PLAN

SPECIFIC OBJECTIVES

The students will learn about

- heat
- transformation of heat energy
- temperature and its measuring instrument thermometer
- how to read a thermometer
- clinical thermometer, its structure and use
- laboratory thermometer and its structure
- precautions taken while using a thermometer

TEACHING AIDS

Pictures/charts/models/animations on electrical devices–electric iron, geyser, room heater, electric bulb; different types of thermometer, clinical thermometer.

LESSON PLAN

- The teacher should start the chapter with 'Gear Up' by introductory discussion on heat and energy as given in this section.
- The teacher should define the concept of heat as energy and its transformation in other forms of energy.
- The teacher should describe the concept of hot and cold bodies with the help of Activity 1 given at page 43.
- The teacher should define the concept of temperature and its measuring instrument, i.e., thermometer.
- The teacher should discuss the scales to measure temperature and the interconversion of temperature on these scales.
- The teacher should discuss the method of reading a thermometer.
- Now, the teacher should describe the structure of a clinical thermometer and its use to measure human body temperature and the precautions taken while using it.
- The teacher should describe the structure of a laboratory thermometer.
- The teacher should also discuss the method to measure the temperature using a laboratory thermometer by demonstrating Activity 4.

- ✧ The teacher should also discuss the precautions taken while using a laboratory thermometer.
- ✧ Students should be asked to solve 'Check Points' 1 and 2.
- ✧ At last, the teacher will sum up the lesson by going through the points given under the head 'Wrap Up Now'.
- ✧ The teacher will help the students to solve all the questions given in exercises under the head 'Practice Time' and will also discuss the topics given under the head 'Formative Tasks'.

BOOST UP

- ✧ Teacher should make students perform Activity 3 so as to learn the method of measuring body temperature.
- ✧ Teacher should encourage students to observe various forms of transformation of energy in everyday life.
- ✧ Students should be asked to obtain body temperature on both the scales.

EXPECTED LEARNING OUTCOMES

The students know about

- ✧ concept of heat and its transformation.
- ✧ hotness and coldness.
- ✧ temperature and measuring temperature with a thermometer.
- ✧ scales of temperature measurement and their interconversion.
- ✧ structure and uses of clinical and laboratory thermometers.
- ✧ precautions while handling thermometers.

EVALUATIVE QUESTIONS

The teacher may ask the following questions for evaluating the understanding of students.

1. Define heat.
2. Is heat energy transformed into mechanical energy in a steam engine?
3. Which instrument is used to measure the human body temperature?
4. Mention the differences between clinical and laboratory thermometers.
5. Establish a relationship between Celsius, Fahrenheit and Kelvin temperatures using formula.
6. Write the human body temperature in both Celsius and Fahrenheit scales.
7. Mention few precautions while handling a clinical thermometer.