

# 5

## Transfer of Heat

### LESSON PLAN

#### SPECIFIC OBJECTIVES

The students will learn about

- ✧ the flow of heat
- ✧ modes of heat flow, i.e., conduction, convection and radiation
- ✧ conduction; heat flow by conduction
- ✧ conduction of heat through different solid substances
- ✧ good and poor conductors of heat
- ✧ convection; heat flow by convection
- ✧ convection currents in nature, i.e., land and sea breezes
- ✧ applications of convection currents in everyday life
- ✧ radiation; choice of colours in our life

#### TEACHING AIDS

**Pictures/charts/models/animations** on heat flow in solids by conduction; convection in a liquid; sea breeze, land breeze; room heater, car radiator

#### LESSON PLAN

- ✧ The teacher should start the chapter with ‘Gear Up’ and discuss the questions asked in this section.
- ✧ The teacher should define heat flow and its three modes.
- ✧ The teacher should describe heat flow by conduction in different solid substances by performing Activities 1, 2, 3 and 4.
- ✧ The teacher should describe good and poor conductors of heat and their uses in everyday life.
- ✧ Now, teacher should describe flow of heat by convection with the help of Activity 5.
- ✧ The teacher should discuss heat flow by convection in air by demonstrating Activities 6 and 7.
- ✧ The teacher should discuss the convection currents in nature by explaining the formation of sea breeze and land breeze.
- ✧ The teacher should discuss the applications of convection currents in everyday life by giving some examples (as given in the chapter).

- ❖ Now, the teacher should define radiation and thermal radiation.
- ❖ Teacher should describe that dark bodies are good absorber and good absorbers are good radiators by performing Activities 8 and 9.
- ❖ Teacher should explain the fact that choice of colour for different objects in our life is based on the amount of heat absorbed or radiated out by the colour of the objects. Teacher should give various examples from everyday life (as given in the book).
- ❖ Students should be asked to solve 'Check Points' 1, 2 and 3.
- ❖ 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**

- ❖ The teacher should call each student of the class one-by-one and ask him/her to tell the names of modes of heat flow.
- ❖ Students should be asked to tell two-three examples each of poor and good conductors of heat. They should also be asked to tell the differences between sea and land breezes.

### **EXPECTED LEARNING OUTCOMES**

The students know about

- ❖ flow of heat.
- ❖ modes of heat flow, i.e., conduction, convection and radiation.
- ❖ conduction of heat flow through different solid substances.
- ❖ poor and good conductors of heat.
- ❖ convection, convection currents, sea breeze and land breeze.
- ❖ radiation and choice of colours in our life.
- ❖ differences between conduction, convection and radiation.

### **EVALUATIVE QUESTIONS**

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

1. Define conduction. How does heat flow by conduction?
2. Write the differences between poor and good conductors of heat. Give their two examples.
3. What is meant by convection?
4. Mention the differences between land and sea breezes.
5. In which form does the heat flow in radiation?
6. Why are pipes of solar heaters painted black?
7. Define thermal radiation.