21 Matter and Materials

LESSON PLAN

SPECIFIC OBJECTIVES

The students will be able to learn about

- matter, its three states
- change of one state of matter into another
- solution and solutions of three states of matter in liquids

TEACHING AIDS

- Charts/models of different types of molecules of same and different atoms (as given in the chapter); Picture/animation on the process of freezing, melting, evaporation and condensation of water; The process of dissolution of a solid in a liquid; Samples of some soluble and insoluble solids in a water, some miscible and immiscible liquids.

TEACHING STRATEGY

- Start the chapter with Warm Up section by asking some simple questions to students on different types of materials based on their previous 'knowledge.
- Now before defining the term 'matter', introduce the terms 'volume' and 'weight, and explain that anything that takes space and has weight is called matter.
- Ask the students to do Activity 1.
- With the help of teaching aids, explain that all matter is made of tiny particles called atoms.
- With the help of teaching aids, explain that atoms of a matter unite to form molecules.
- Now showing pictures/charts/models of arrangement of molecules in solids, liquids and gases and by performing Activities 2, 3, 4 and 5, explain the three states of matter (as given in chapter).
- Explain the process of freezing, melting, evaporation and condensation of water and also tell that some substances such as water can exist in more than one states.
- Define the terms solute, solvent and solution and explain the process of dissolution of a solid in a liquid (as in chapter).
- By performing Activity 7, explain that all solids do not dissolve in water.
- Explain the terms miscible and immiscible liquids.
- Sum up the chapter by going through the points given under the head 'Remember'.
- Finally, help the students do all the exercises.

BOOST UP

- To define the term volume, display a cuboidal or rectangular solid and explain that amount of space occupied by it is called its volume.
- While teaching liquid state of matter, demonstrate, by pouring same amount of a liquid in two different containers, that liquids do not have a definite shape.
- Demonstrate the process of freezing, melting, evaporation and condensation of water while teaching change in the state of matter.
- Demonstrate the process of dissolution of a solid in a liquid while teaching the terms solute, solvent and solution.
- Show the mixing of two immiscible liquids (oil in water) and two miscible liquids (milk in water) while teaching solution type 'liquids dissolve in liquids'.

EXPECTED LEARNING OUTCOMES

The students are able to learn about

- matter and know its three states.
- that a matter can change its one state into other.
- differences between atoms and molecules.
- the process of dissolution of one substance in other.
- the solutions of three states of matter, i.e., solid, liquid and gas in liquid.

EVALUATIVE QUESTIONS

The teachers may ask the following questions to evaluate the students.

1. What is volume of an object?
2. What are three states of matter?
3. How are molecules arranged in three states of matter?
4. What is freezing and melting of a substance?
5. What are immiscible and miscible liquids?