

# 5

## Separation of Substances

### LESSON PLAN

#### SPECIFIC OBJECTIVES

The students will learn about

- ✧ components of a mixture
- ✧ need for separation of substances from mixtures
- ✧ methods of separation of substances from mixtures
- ✧ soluble and insoluble solids in liquids
- ✧ soluble and insoluble liquids in liquids
- ✧ solution
- ✧ saturated solution

#### TEACHING AIDS

**Pictures/charts/models/animation** on straining of tea leaves; churning of milk; threshing of paddy crop on wooden boards; winnowing; sieving flour and sand; gathering of common salt on sea beds (all as given in chapter).

#### LESSON PLAN

- ✧ First, the teacher should start the chapter with Gear Up and discuss briefly the process of separating a mixture.
- ✧ The teacher should discuss about the components of a mixture, their separation and need for separation of substances from mixtures.
- ✧ Teacher should discuss the methods such as handpicking, threshing, winnowing, sieving used for separating mixtures of two or more solids.
- ✧ Teacher should explain handpicking method by performing Activity 1.
- ✧ Teacher should explain winnowing by performing Activity 2.
- ✧ The teacher should explain the processes of sedimentation and decantation, and filtration used for separating mixture of insoluble solid in liquids.
- ✧ The teacher should show how to separate the mixtures of insoluble solids in liquids by sedimentation and decantation method and a mixture of sand and water using filtration method by performing Activities 3 and 4.

- ❖ The teacher should explain separating a mixture of insoluble liquid in liquid by decantation method and by using a separating funnel by performing Activities 5 and 6.
- ❖ The teacher should explain process of evaporation and for separating a mixture of soluble solid in liquid should demonstrate Activity 7.
- ❖ Teacher should define solute, solvent, solution and saturated solution.
- ❖ Teacher should explain preparation of saturated solution by demonstrating Activity 8 at page 66.
- ❖ Teacher should explain water as universal solvent by performing Activity 9.
- ❖ Teacher should explain that components of some mixtures are separated by using more than one methods and perform Activity 10 at page 67.
- ❖ Students should also be asked to solve Check Points 1 and 2 given at pages 61 and 67 respectively.
- ❖ 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 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 mix impurities of different kinds, i.e., solid-solid, solid-liquid, liquid-liquid, place them at five different places and ask each student to come one-by-one and name the process used for separating them. The student, who will tell the correct name of the process will be declared as the best student of the class.

### **EXPECTED LEARNING OUTCOMES**

The students understand and know the

- ❖ components of a mixture.
- ❖ methods used in separating components of a mixture of two or more solids, insoluble solid-liquid, soluble solid-liquid and insoluble liquid-liquid.
- ❖ solution, saturated solution and universal solvent.

### **EVALUATIVE QUESTIONS**

The teacher may ask the following questions for evaluating the learning and understanding of students:

1. Components of which type of mixture are separated by handpicking?
2. Which type of mixture is separated by using a large sieve at a construction site?
3. What is the difference between sedimentation and decantation?
4. Which process is used for separating salt from a mixture of salt and water?

5. Define saturated solution.
6. What is a universal solvent?
7. What is meant by winnowing?