

# 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

- ✧ Teacher will start the lesson with ‘Science Vocabulary’ section by telling the meaning/definition of new terms which are used in the chapter.
- ✧ The teacher should discuss about the components of a mixture, their separation and need for separation of substances from mixtures.
- ✧ The teacher should discuss the methods such as handpicking, threshing, winnowing, sieving used for separating mixtures of two or more solids.
- ✧ The teacher should explain handpicking method by performing Activity 2.
- ✧ The teacher should explain threshing, winnowing and seiving.
- ✧ 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 by performing Activity 5.
- ✧ The teacher should explain process of evaporation for separating a mixture of soluble solid in liquid.
- ✧ The teacher should define solute, solvent, solution and saturated solution.
- ✧ Students should also be asked to solve Check Points 1 and 2.
- ✧ The teacher will help the students to solve the questions given in exercises under the head 'Let's Drill Our Skills' and to complete the flowchart given under the head 'Let's Memorise'.

### **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 and saturated solution.

### **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 meant by winnowing?