Chapter 5

SEPARATION OF SUBSTANCES

SOLUTIONS:

EXERCISES

1. Why do we need to separate different components of a mixture? Give two examples.

Ans: We need to separate different components of a mixture because of the following reasons:

(i) To separate two different, but useful components.

(ii) To remove non-useful components.

(iii) To remove impurities or harmful components.

Examples: Separating stones from rice and Churning milk to obtain butter.

2. What is winnowing? Where is it used?

Ans: Winnowing is the process used to separate heavier and lighter components of a mixture by wind or by blowing air.

This process is used by farmers to separate lighter husk particles from heavier seeds of grains.

3. How will you separate husk or dirt particles from a given sample of pulse before cooking?

Ans: Husk or dirt particles from a given sample of pulse are separated by hand picking before cooking.

4. What is sieving? Where is it used?

Ans: Sieving is a process by which fine particles are separated from bigger particles by using sieve.

It is used in flour mills or at construction sites.

5. How will you separate sand and water from their mixture?

Ans: Sand is separated from water by the process of sedimentation and decantation methods. First we leave this mixture for some time. After sometime, the sand which is heavier is settled down at the bottom. After that, we will pour water into another container and the mixture will be separated.

6. Is it possible to separate sugar mixed with wheat flour? If yes, how will you do it?

Ans: It is possible to separate sugar mixed with wheat flour.

Sugar can be separated from wheat flour by sieving. Due to differences in the size of the particles, sugar will remain on the sieve and the fine wheat flour will pass through the holes of the sieve.

7. How will you obtain clear water from a sample of muddy water?

Ans: We can obtain clear water from a sample of muddy water by the process of filtration. In this method, a filter paper folded in the form of a cone is fixed on the funnel. The mixture is then poured onto the filter paper. Solid particles i.e, the mud particles will remain on the filter paper whereas clear water will pass through it.

8. Fill in the blanks:

(a) The method of separating seeds of paddy from its stalks is called _____.

(b) When milk, cooled after boiling, is poured onto a piece of cloth the cream (malai) is left behind on it. The process of separating cream from milk is an example of _____.

(c) Salt is obtained from sea water by the process of _____.

(d) Impurities settled at the bottom when muddy water was kept overnight in a bucket. The clear water was then poured off from the top. The process of separation used in this example is called _____.

Ans: (a) threshing (b) filtration (c) evaporation (d) decantation

9. State true or false:

(a) A mixture of milk and water can be separated by filtration.

(b) A mixture of powdered salt and sugar can be separated by the process of winnowing.

(c) Separation of sugar from tea can be done with filtration.

(d) Grain and husk can be separated with the process of decantation.

Ans: (a) false (b) false (c) false (d) false

10. Lemonade is prepared by mixing lemon juice and sugar in water. You wish to add ice to cool it. Should you add ice to lemonade before or after dissolving sugar? In which case would it be possible to dissolve more sugar?

Ans: We should add ice only after dissolving sugar in lemonade because more sugar can be dissolved in high temperature. After mixing with ice, it gets cooled which enable it to dissolve less sugar in it.

EXTRA QUESTIONS AND ANSWERS:

1. Name any four methods used for separation of substances.

Ans: Hand picking, Winnowing, Sieving and Filtration.

2. Define:

(a) Threshing

(b) Decantation

(c) Evaporation

(d) Condensation

Ans: (a) The process that is used to separate grain from stalks etc is called threshing.

(b) The process in which water is removed when heavier components of mixture settled is called decantation.

(c) The process of conversation of water into its vapour is called evaporation.

(d) The process of conversion of water vapour into its liquid form is called condensation.

3. How is threshing done by farmers?

Ans: Threshing is done by farmers in the following ways:

(a) By beating the grain seeds.

(b) With the help of bullocks.

(c) By using machines.

4. How is salt prepared from sea water?

Ans: Salt is prepared from sea water by evaporation and condensation. Sea water is collected in a shallow pit and allowed to evaporate. After evaporation of water, crystals of salts are obtained. Common salt is then obtained from this mixture of salts by further purification.

5. What kind of substances can be separated by (i) sieving (ii) Hand picking (iii) Decantation?

Ans:

METHOD	KIND OF SUBSTANCE
(i) Sieving	Component of a mixture having different sizes.
(ii) Hand picking	Slightly large size impurities.
(iii) Decantation	(a) A mixture of two liquids that do not mix with each other. (b) A mixture of solid and liquid.

6. Name the methods used in separating these mixtures.

Sand and husks, Stone and pulses, Petrol and water, Grain from stalks, Seed and pulp from its fruit, Saw dust and water, Butter from milk and Cement and pebbles.

Ans:

MIXTURES	METHOD USED
Sand and husks	Winnowing
Stone and pulses	Hand Picking
Petrol and water	Decantation
Grain from stalks	Threshing
Seed and pulp from its fruit	Filtration
Saw dust and water	Filtration
Butter from milk	Churning
Cement and pebbles	Sieving

7. Which property can affect dissolution of substance in water?

Ans: Temperature.

8. Match the following:

(a) Yangkok Khappa	(i) Hand picking
(b) Phouman Khanba	(ii) Filtration
(c) Funnel	(iii) Solution
(d) Sugar + water	(iv) Winnowing

Ans: (a) – (iv); (b) – (i); (c) – (ii); (d) – (iii).

DEPARTMENT OF EDUCATION (S)
Government of Manipur