

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 :

- (a) to remove non-useful components.
- (b) to remove impurities or harmful components.
- (c) to separate two different but useful components.

Example 1. We have to discard tea leaves after making tea, because the used tea leaves are non-useful.

Example 2. Butter is taken out by churning milk. It separates two useful components, butter and butter milk.

2. What is winnowing? Where is it used?

Ans. Winnowing is a method of separation of heavier and lighter components of a mixture under the influence of wind or blowing air.

This method is commonly used by farmers to separate lighter husk particles from heavier seeds of grain.

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

Ans. To remove lighter impurities like husk or dirt from pulses before cooking, the pulses are washed in water. The husk being insoluble and lighter floats on the surface of water. This can be removed easily by hand. Dirt is soluble in water and forms solution while heavier pulses settle down at the bottom of the container. After its sedimentation, the water containing dirt is decanted. One more washing of pulses with water may remove all impurities of dirt, by decantation.

4. What is sieving? Where is it used?

Ans. Sieving is a method of separating bigger impurities from fine particles. The process allows the fine particles to pass through the holes of the sieve while the bigger impurities remain on the sieve.

Example : (i) In a flour mill, impurities like husk, stalks and stones are removed from wheat before grinding. Usually a bagful of

wheat is poured on a slanting sieve. This sieving removes pebbles, stalks and husk that may still remain with wheat after threshing and winnowing.

(ii) Sieving is used to remove pebbles, mollusc shells and stones from sand at construction site.

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

Ans. The mixture of sand and water is left aside undisturbed for a short while; sand being heavier and insoluble in water, settles down at the bottom of container (sedimentation).

Now, the container is slightly tilted and the clear water is slowly poured out into another container. This process is called decantation. We may also use filter paper to remove fine particles of sand.

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

Ans. Yes, we can separate sugar mixed with wheat flour through sieving.

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

Ans.

◆ First of all the muddy water is left undisturbed for some time.

◆ Soil/mud settles at the bottom of the container. This is called sedimentation.

◆ Upper clear water is poured out slowly in another container by slightly tilting the container of water. This process is called decantation.

◆ This clear water may be filtered through a fine filter paper to get clear water.

Mud being insoluble remains on filter paper. (To make this water fit for drinking the clear filtrate can be evaporated and vapour can be condensed).

8. Fill up the blanks.

(a) The method of separating seeds of paddy from its stalk is called

(b) When milk, cooled after boiling is poured on to a piece of cloth the cream (malai) is left behind on it. This 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) The method of separating seeds of paddy from its stalk is called **threshing**.

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

(c) Salt is obtained from seawater by the process of **evaporation**.

(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 examples is called **sedimentation and decantation**.

9. 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 the lemonade before or after dissolving sugar? In which case would it be possible to dissolve more sugar?

Ans. We should add ice to the lemonade after dissolving sugar. Sugar dissolves more quickly in warm water than in cold water. We can dissolve more sugar before mixing ice in water.