



Chapter 9

Methods of separation

Q.1 Write the summary of the chapter in the flow chart below, using the hints give below:

1. **Mixture:** A substance containing two or more kinds of particles of different substances which can be separated by physical methods.
2. **Handpicking:** Method in which one of the components is picked out by hand the component to be separated should be of different colour, shape, size and in small quantity
3. **Sieving:** This method is used to separate the components of mixture having particles of different sizes from each other. For e.g; Separation of wheat bran from flour
4. **Magnetic separation :** The process of separating a magnetic substance from a non magnetic substance by using a magnetic. for e.g; separating iron pins from sand by using a bar magnet
5. **Loading:** It is the process of adding a substance like alum to a mixture that sticks to the light suspended particles making them heavier and thus speeding up the sedimentation process.
6. **Crystallization:** The process of separation of pure crystals of a substance from its hot and supersaturated solution on cooling is called crystallization it is used to obtain solid substance in its pure form, like the crystals of sugar, salt.

Q2. Multiple Choice Questions

1. c) Magnetic separation
2. c) ii, iii, i, iv
3. c) Hand picking
4. d) Winnowing

Q3. Fill in the blanks:

1. Sieve and Filter paper are filtering devices.
2. Salt from water is separated by Evaporation .
3. Hand picking is used to separate weeds from bunch of coriander leaves.
4. Cream from milk is separated by Centrifugation .
5. Oil from water is separated by using separating funnel.

Q4. State whether the statements are 'True' or 'False'.

1. The process by which a gas changes into liquid is decantation. **False**
2. Aerated drinks are gas- liquid mixture. **True**
3. Plucking apple from tree is done by hand picking. **True**

4. In winnowing, the components of a mixture are separated by flowing water. **False**

5. Solution is a mixture of both solute and solvent. **True**

Q5. Give one word for the following:

1. A mixture in which all its components are evenly distributed. **Homogeneous**

2. A chemical used in the process of loading. **Alum**

3. Separation of a magnetic substance from non magnetic substances. **Magnetic separation**

4. Settling down of insoluble and heavier suspended particles. **Sedimentation**

5. The process of changing water vapour to water on cooling. **Condensation**

Q6. Match the columns:

	Column I		Column II
1.	A Churning	R	Platelets from blood
	B Threshing	P	Grains from stalks
	C Separating funnel	S	Oil and water
	D Filtration	Q	Sand and water

2.

	Column I		Column II
A	Material in a solid state converts directly to gaseous state without changing into liquid	S	Sublimation
B	Method to convert liquid to gaseous state	R	Boiling
C	Method to convert gaseous state to liquid state	P	Condensation
D	Settling down of insoluble and heavier suspended particles	Q	Sedimentation

Q7. Assertion and Reason Questions

Choose the correct options

1. **Assertion (A):** One can easily separate a mixture of tea leaves from tea by using strainer.

Reason (R): The tea leaves are collected on the strainer whereas tea passes through it.

Ans (A) Both the assertion and reason are true, and the reason is the correct explanation.

2. **Assertion (A):** Naphthalene balls sublime.

Reason (R): The process of conversion of solid to gases directly is sublimation.

Ans (A) Both the assertion and reason are true, and the reason is the correct explanation.

Q8. Very Short Answer Questions

1. **Given example of sieving used in everyday life.**

Tea leaves from tea, impurities from flour

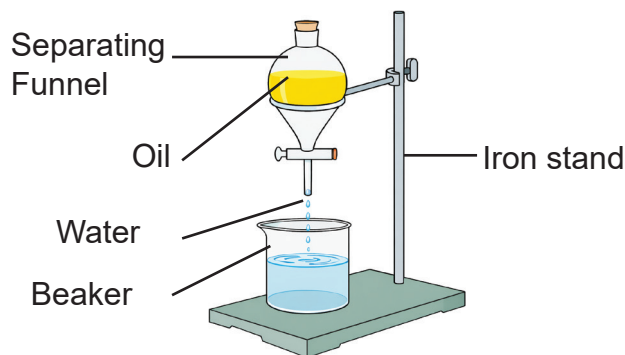
2. **On what basis hand picking is done?**

Impurities present are in lesser quantity and big enough to be removed by hand.

3. **Name the method used to separate chilli pieces from poha.**
Hand picking
4. **Give an example of solid in gas mixture.**
Smoke
5. **Which method is used to separate the mixture of two immiscible liquids?**
Separating funnel

Q9. Short Answer Questions

1. **What is a saturated solution?**
A solution in which no more solute can dissolve at a given temperature
2. **Name the method of separation and define it.**
Sieving It is a method of separating a mixture of two components in which one component is smaller.
3. **Which method of separation has been shown in the given diagram? Label the diagram.**



Separating Funnel – to separate two immiscible liquids

4. **How magnetic separation is helpful in industries that contains scrap iron?**
Strong magnets are used to separate iron from other scrap.
5. **What is decantation?**
Pouring of clear liquid after sedimentation.

Q10. Long Answer Questions

1. **Three glasses A, B and C are filled with water. To glass A, 2 teaspoons of salt is added, in glass B, 4 teaspoon of salt is added and to glass C, 5 teaspoon of salt is added. Which glass is most saturated? Why?**
Glass C as it maximum sugar
2. **Mention the methods that can be used for the separation of the following mixtures:**
 - i) **iron filings, sugar and husk**
Husk by winnowing, iron-fillings by magnet
 - ii) **small and big size pearls**
Hand-picking
 - iii) **camphor, chalk powder and stone pieces.**
Stone pieces by hand picking camphor by sublimation

Q11. Case Study Based Question

Class VI students were taken on a nature tour in a nearby forest. There they found muddy water. As they needed water to wash their hands, their teacher suggested to take water in a pan and keep it undisturbed for some time.

- 1. What is the process known as ?**
sedimentation followed by decantation
- 2. Do you get pure water after the process ?**
No
- 3. Suggest another method to purify water ?**
By boiling for 20 minutes

Q12. Crossword puzzle

Solve the crossword puzzle with the help of the given clues.

Across	Down
1. Sieving	1. Sediments
5. Decantation	2. Condensation
6. evaporation	3. Filtration
7. sedimentation	4. Winnowing

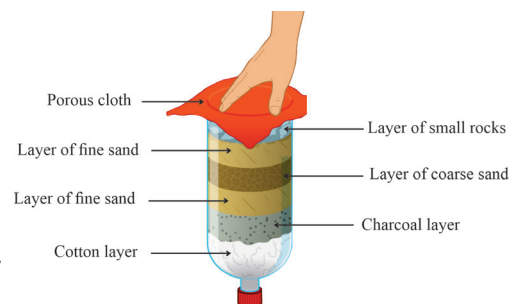
Q13. Fun Activity

Making your own water filter

Materials required: A plastic bottle, a pair of scissors, some cotton, sand particles (fine and coarse), charcoal gravel, container and a fine cloth piece

Instructions:

1. Cut the bottom of the bottle
2. Make a hole on the lid of the bottle using scissors.
3. Stuff the cotton as the first layer in the bottle.
4. Make the second layer of approximately 3 inch with broken pieces of charcoal.
5. Add a 2-3 inch of the fine sand to make the third layer.
6. Now, for the fourth layer add 2-3 inch layer of coarse sand.
7. Add an additional 2-3 inch of the fine sand for the fifth layer. Like an RO, multiple layers ensures that most of the particles present in the water are captured.
8. For the last or sixth layer, add a 2-3 inch of gravel or small rocks.
9. Cover top of filter with a piece of porous cloth.
10. Pour water slowly so as not to disturb filter layers.
11. Collect the filtered water in a container.



Water filter made out of plastic bottle

Inference: As the water passes through the different layers having different size particles, the dust particles get separated and filtered.