CH-3. Sepration Techniques

Exercise

Recalling ideas

I. SELECT THE CORRECT OPTION

1. A mixture of wheat and husk can be separated by

(a) Handpicking

(b) Winnowing

(c) Sieving

(d) None of these

2. A mixture of water and kerosene can be separated by

(a) Separating funnel

(b) Evaporation

(c) Decantation

(d) None of these

3. A mixture of iron fillings and leaves can be separated by

(a) Hand picking

(b) Magnetic separation

(c) Evaporation

(d) Sieving

4. Common salt can be separated from common salt solution by

(a) Filtration

(b) Centrifugation

(c) Evaporation

(d) Handpicking

5. A mixture of Sulphur and water can be separated by

(a) Evaporation

(b) Filtration

(c) Magnetic Separation

(d) Separation winnowing

II.STATE IF THE FOLLOWING STATEMENT ARE TRUE OR FALSE.CORRECT THE FOLLOWING STATEMENT.

1.Sedimentation and decantation method is used for separating an insoluble solid from liquid-True

2. Sieve has very small holes- True

3. The separation of sulphur from iron fillings is separated by the process of filtration-False

Correct statement- The separation of sulphur from iron fillings is separated by the process of Magnetic Separation.

4. Loading is used to separate cream from milk-False

Correct statement-. Centrifugation is used to separate cream from milk

5. Crude oil and petroleum are miscible liquids.-True

III.FILL IN THE BLANKS

1.Sand and water can be separated by Filtration

2.Coriander leaves are separated from mint leaves by Handpicking

3.Pure liquid is obtained from the solution of a salt in the liquid by Distillation

4.Two immiscible liquid are separated by using a Separating Funnel

5.The broken pieces of rice from the whole rice can be separated by Sieving

6.Cooking oil can be separated from milk by Separating Funnel

IV.MATCH THE FOLLOWING

Column A	Column B
1.Sedimentation	(a)Separation of suspended particles of a substance
2.Winnowing	(b)Process of settling the suspended particles faster
3.Loading	(c)Separation of solid dissolved in a liquid
4.Centrifugation	(d) Separating unwanted components from a mixture by using wind or blowing air
5.Evaporation	(e)Settling down of heavy particles

Answers 1-(e) , 2- (d) , 3-(b) , 4-(a) , 5-(c)

V. Find the odd one out and give scientific reason for your answer

1. Distillate, Precipitate, Filtrate, Filter paper.

Reason- Rest all are end products of separation.

2.Solution, Compounds, Suspension, Emulsions.

Reason – Rest all are mixtures.

3. Winnowing , Decantation, Filtration, Distillation

Reason- Rest all are used to separate Solid-Liquid mixture.

4. Chalk Powder and Water , Clay and water , Saw Dust and Water , Common Salt and Water.t

Reason- Rest all are insoluble in water.

Understanding Ideas

I.NAME THE FOLLOWING

1.The process which is used to obtain common salt from sea water.

Ans- Evaporation

2.The process which is used to separate cream from milk.

Ans- Centrifugation

3.The process used to separate two immiscible liquids.

Ans-Separating funnel

4.Two commonly known mixtures whose components are useful after separation

Ans- Salt-water and sugar-water

5.The process which is used to separate tea leaves from tea liquor:

Ans- Decantation

II. Define the following terms:

1. Sieving-It is a process to separate undesirable components in a Solid-Solid mixture by using a sieve.
2. Sediment-Matter that settles to the bottom of the liquid is called Sediment.

3. Supernatant Liquid-A liquid floating on the surface above the sediment or precipitate is called Supernatant Liquid.
4. Evaporation- The process in which liquid changes into vapour without boiling is called Evaporation.
5. Centrifugation- It is a method used to separate fine suspended particles in a liquid.

III.ANSWER THE FOLLOWING IN SHORT

1.Why do we sprinkle water before sweeping in a dusty room?

Ans- We sprinkle water before sweeping in a dusty room as it helps the dust to settle down and also prevent the dust to fly up again in the room.

2.The mixture of a powdered white solid P and Q can be separated by filtration. The solid P is left behind on the paper but clear liquid Q passes through the filter paper and collects in the beaker kept below.

(a) Name one solid which could be like P.

Ans- Sand.

(b) Name the liquid which Q could be

Ans- Water.

(c) What name is given to the solid left on the paper?

Ans- Sand is left behind is named as ‘Residue’.

(d)What name is given to the clear liquid collected in the beaker ?

Ans-Clear liquid is named as ‘Filtrate’.

3. The mixture contains two components W and X. The component W is a white solid which is soluble in water. It is obtain on a large scale from sea water by the process y. The component X consists of tiny pieces called fillings which can be attracted and removed from the mixture by a device Z.

(a) What do you think is component W?

Ans-Salt.

(b) Name the process Y.

Ans Evaporation.

(c) Name the component X.

Ans-Iron fillings.

(d) What could the device Z be?

Ans-Magnet.

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

Ans- The mixture of wheat and husk is taken in a vessel is allowed to fall down from a height. The wind carries the lighter husk with it. The wheat grains being heavier falls vertically down to the ground and form a heap.

IV.ANSWER THE FOLLOWING QUESTION IN DETAIL.

1. What is meant by separation of constituents of mixture? Why it is done?

Ans- The process by which unwanted or harmful component of a mixture is removed to get a desirable or pure component is called separation of constituents of mixture.

It is done for various purposes

- To remove harmful components.
- To remove unwanted components.
- To obtain pure samples.

2.How will you separate iron nails from sawdust?

Ans- When the magnet is moved over the mixture, iron nails cling to the magnet , leaving saw dust behind , thus iron nails from saw dust is separated by magnetic separation method.

3. Describe a method to separate iron dust from sulphur powder.

Ans- Take a mixture of iron dust and sulphur powder

- Wrap the plastic bag around the magnet bar.
- Move the magnet bar over the china dish.
- Iron dust will be attracted to the magnetic bar.
- Carefully remove plastic bag and scrap off iron dust.
- Thus iron dust is separated from sulphur powder.

4. Mention the methods that can be used for separation of the following

A) wheat, sugar and husk
Ans- winnowing-To separate husk from the mixture
Sieving- To separate wheat from sugar
B) Rice , gram and iron fillings
Ans Magnetic separation- To separate iron fillings from mixture
Sieving - To separate gram from rice

C) Sand black gram and husk
Winnowing- To separate husk from the mixture
Ans-Sieving to separate black gram from sand

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

Ans- Yes by sieving method.
Pour the wheat flour containing sugar in the sieve.
Shake the sieve over the vessel,Collect the wheat flour that passes through the sieve in the vessel leaving sugar on the sieve.

6. How will you separate a mixture of iron fillings, chalk powder and common salt?

- Ans-When a magnet is moved over the mixture, Iron fillings cling to the magnet leaving chalk powder and common salt behind.
- Now add some water to the residual mixture and stir it.
- Filter the mixture chalk powder being insoluble remains on the filter paper leaving salt solution behind.
- Now evaporate the salt solution till all the water evaporates.
- The white solid left behind is common salt.

7.By giving two reasons prove that

(a) Air is a mixture

- Ans-It is mixture of several gases
- These gases in the air are distributed uniformly

(b) Water is a Compound

It is formed by the chemical combination of hydrogen and oxygen elements.

These chemical combine together in a fixed proportion by weight

- THINK CRITICALLY

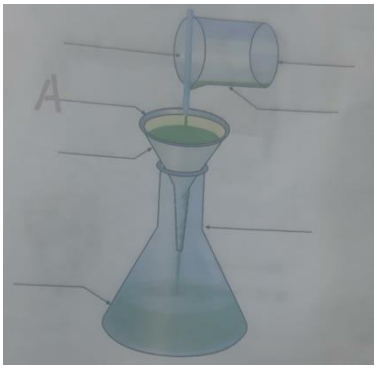
1.Why does visibility increase after rainfall?.

Ans-Because with rain tiny dust particles, polluted air and gaseous dust particles suspended in the air gets washed down

2. Suspended impurities in water sink to the bottom on adding alum. Give reasons.

Ans- When alum is added to raw water it attracts to fine particles and suspended impurities in water and settles down at the bottom of the container.

- **DIAGRAM BASED QUESTION**

1. 

1.Identify the process.

Ans- Filtration.

2.Which kind of mixture can be separated by this process?

Ans-Solid-liquid heterogeneous.

3.What name is given for the solid left on the filter paper?

Ans-Residue.

4.What name is given to to the clear liquid collected in the beaker?

Ans- Filtrate.

5. Label A

Ans-Funnel.

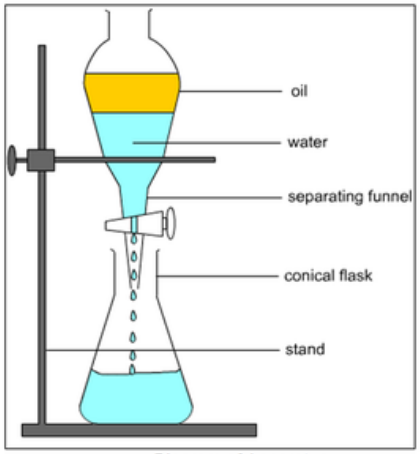


Diagram of Apparatus

1.Which liquid can be separated using separating funnel?

Ans- Immiscible liquids.

2. Which liquid remains in the separating funnel?

Ans-Lighter liquid remains in the separating funnel.

3.How many layers does the content in the separating funnel forms?

Ans- Two layers.