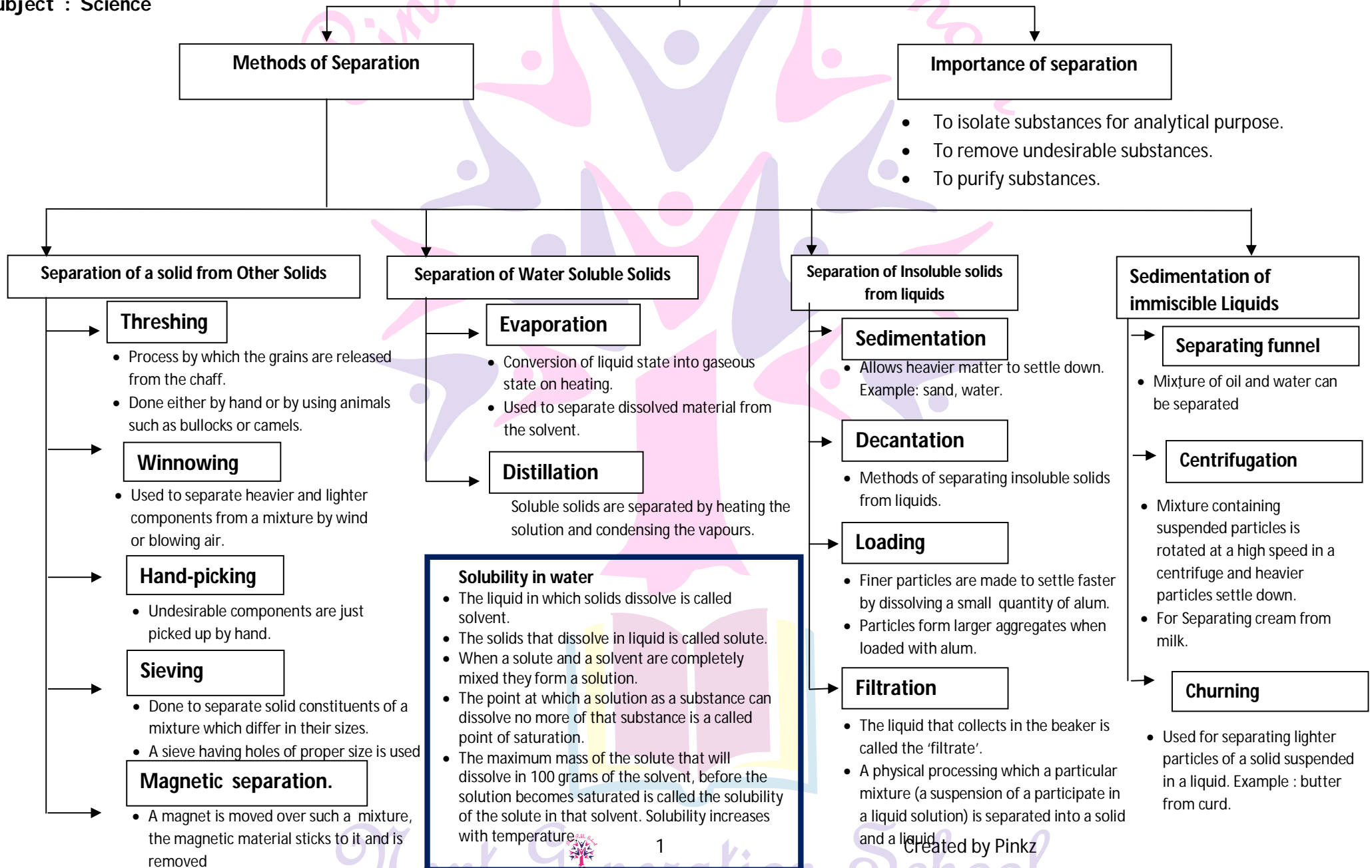


Grade : VI

Subject : Science

Separating means removing one thing from the other
act of separating one substance from the other.



I. Know the Terms

- **Aerated drink:** A mixture of water, sugar and carbon dioxide.
- **Homogeneous mixture:** The mixture that has uniform appearance and composition throughout.
- **Heterogeneous mixture :** The mixture that does not have a uniform appearance and composition throughout.
- **Insoluble :** Substance that does not dissolve in a liquid.
- **Solubility :** The ability of a substance to dissolve in water to form a solution.
- **Distillation :** The method of obtaining a pure liquid from a solution.
- **Immiscible liquids :** The liquids that do not mix with each other.

II. Know the Terms

- **Pure Substances :** Substances which contain only one type of constituent particles either of an element or a compound are known as pure substances. All the constituents have similar properties. For example, copper, iron, water, common salt and sugar.
- **Impure Substances :** Substances that contain two or more than two types of elements or compounds in no fixed ratio are called impure substances. For example, Air - the constituents are not having any fixed ratio.
- **Mixture :** A mixture is a material made by mixing two or more substances which can be easily separated.
 - The component of a mixture have no fixed ratio by weight.
 - The component of a mixture retain their original characteristics.
 - The component of a mixture can be separated easily.
- **Solute :** Substance that dissolve in another substance, e.g. salt, sugar.
Solvent : Substance in which solute dissolves, e.g. water.
Solution : Mixture of solute and solvent is called solution.
- **Saturated Solution :** A saturated solution is one in which no more of that substance (solute) can be dissolved at room temperature or at a given temperature in a given volume of the solvent.
- **Condensation :** The process of conversion of vapour of a liquid (say water vapour) to its liquid form (say water) is called condensation.
- **Substance :** A substance is a type of matter that cannot be separated into others type of matter by physical method.

- **Churning** : The method by which milk or curd is churned by the method to separate cream.
 - **Unsaturated solution**: The amount of solute contained in a solution is less than the saturation level.
-

I. Objective Type Question.

1 mark each

I. Multiple choice questions

- Most of the substances present around us are :
(a) Pure substances (b) Mixtures (c) Impure substances (d) Compounds
- Aerated drinks are examples of :
(a) Liquid-liquid mixtures (b) Solid-liquid mixtures
(c) Liquid-gas mixtures (d) None of these
- A common substance used in loading is :
(a) Sodium (b) Sulphur (c) Chlorine (d) Alum
- Which of the following is a heterogeneous solution ?
(a) Salt and water (b) Mud and water (c) Sugar and water (d) Both (a) and (c)
- Four mixtures are given below :
(i) Green peas and chick peas (ii) Corn and gram seeds
(iii) Rice flakes and rice grains (iv) Coffee beans and sugar
Which of the above mixtures can be separated by winnowing ?
(a) (i) and (ii) (b) (ii) and (iii) (c) (i) and (iii) (d) (iii) and (iv)
- Iron filings from a tea mixture can be separated by :
(a) Sieving (b) Magnet (c) Filtration (d) Burning
- Paheli bought some vegetables such as french beans, lady's finger, green chillies, brinjals and potatoes, all mixed in a bag. Which of the following methods of separation would be most appropriate for her to separate them ? **[NCERT Exemplar]**
(a) Winnowing (b) Sieving (c) threshing (d) Hand picking
- Boojho's grandmother is suffering from diabetes. Her doctor advised her to take 'Lassi' with less fat content. Which of the following methods, would be most appropriate for Boojho to prepare it ? **[NCERT Exemplar]**
(a) Filtration (b) Decantation (c) Churning (d) Winnowing

9. Which of the following mixtures would you be able to separate using the method of filtration? **[NCERT Exemplar]**
- (a) Oil in water (b) Cornflakes in milk (c) Salt in water (d) Sugar in milk
10. Sedimentation is followed by which process ?
- (a) Decantation (b) Evaporation (c) Filtration (d) None of these
11. The method used to separate the components of different densities, using wind is :
- (a) Threshing (b) Sieving (c) Winnowing (d) None of these
12. Which amongst the following methods would be most appropriate to separate grains from bundles of stalks ? **[NCERT Exemplar]**
- (a) Hand picking (b) Winnowing (c) Sieving (d) Threshing
13. Four mixtures are given below
- (i) Kidney beans and chick peas (ii) Pulses and rice
(iii) Rice flakes and corn (iv) Potato wafers and biscuits
- Which of these can be separated by the method of winnowing ? **[NCERT Exemplar]**
- (a) (i) and (ii) (b) (ii) and (iii) (c) (i) and (iii) (d) (iii) and (iv)
14. While preparing chapatis, Paheli found that the flour to be used was mixed with wheat grains. Which out of the following is the most suitable method to separate the grains from the flour ? **[NCERT Exemplar]**
- (a) Threshing (b) Sieving (c) Winnowing (d) Filtration
15. You might have observed the preparation of ghee from butter and cream at home. Which method(s) can be used to separate ghee from the residue ?
- (i) Evaporation (ii) Decantation (iii) Filtration (iv) Churning
- Which of the following combination is the correct answer ? **[NCERT Exemplar]**
- (a) (i) and (ii) (b) (ii) and (iii) (c) (ii) and (iv) (d) (iv) only
16. The process of conversion of a substance directly from solid to vapour form is known as :
- (a) Condensation (b) Sublimation (c) Vaporization (d) None of these
17. In an activity a teacher dissolved a small amount of solid copper sulphate in a tumbler half filled with water. Which method would you use to get back solid copper sulphate from the solution ? **[NCERT Exemplar]**
- (a) Decantation (b) Evaporation (c) Sedimentation (d) Condensation

18. During summer, Boojho carries water in a transparent plastic bottle to his school. One day he left his bottle in the school. The bottle still had some water left in it. The following day, he observed some water droplets on the inner surface of the empty portion of the bottle.

These droplets of water were formed due to : **[NCERT Exemplar]**

- (a) boiling and condensation
- (b) evaporation and saturation
- (c) evaporation and condensation
- (d) condensation and saturation

19. Paheli asked for a glass of water from Boojho. He gave her a glass of ice cold water. Paheli observed some water droplets on the outer surface of the glass and asked Boojho how these droplets of water were formed. Which of the following should be Boojho's answer ?

[NCERT Exemplar]

- (a) Evaporation of water from the glass
- (b) Water that seeped out from the glass
- (c) Evaporation of atmospheric water vapour
- (d) Condensation of atmospheric water vapour.

20. Clear liquid can be separated from sedimented materials by : **[NCERT Exemplar]**

- (a) Decantation
- (b) Sedimentation
- (c) Evaporation
- (d) None of these

21. In a solution of salt and water, no more salt can be dissolved. If we want to add more salt, it needs to be :

- (a) Shaked well
- (b) Filtered
- (c) Alum has to be added
- (d) Heated

22. A transparent bottle, half filled with water is left outside in sun for a few hours. After some time, some water droplets are observed on the inner upper surface of the bottle.

Which processes do you think, are the cause of these droplets ?

- (a) Condensation and saturation
- (b) Boiling and condensation
- (c) Evaporation and condensation
- (d) Evaporation and saturation

1. (b)	2. (c)	3. (d)	4. (b)	5. (d)	6. (b)	7. (d)	8. (c)	9. (b)	10. (a)	11. (c)
12. (d)	13. (d)	14. (b)	15. (b)	16. (b)	17. (b)	18. (c)	19. (d)	20. (a)	21. (d)	22. (c)

II. Multiple choice questions

1. Method of separation of components from a mixture are.

- (a) Only one
- (b) Only two
- (c) Only three
- (d) Many

2. Method of separation of grains from stalks is

- (a) Winnowing (b) Threshing (c) Handpicking (d) Sieving

3. The process of separation of tea leave by strainer is called:

- (a) Filtration (b) Sedimentation (c) Evaporation (d) Condensation

4. The process of conversion of water into vapour is called:

- (a) Evaporation (b) Condensation (c) Both of them (d) None of them

5. When no more salt dissolves in water at a particular temperature then the solution at that temperature is called:

- (a) Unsaturated
(b) Saturated
(c) Sometimes saturated sometimes unsaturated
(d) None of them

1. (d)	2. (b)	3. (a)	4. (a)	5. (b)
--------	--------	--------	--------	--------

I. Fill in the blanks

1. Complete the following with a suitable word/ words.

- i. Cream is separated from milk by _____.
- ii. Common salt is obtained from sea water by _____.
- iii. Husk is separated from rice by _____.
- iv. The method used to settle down the suspended particles in muddy water is called _____.

i. Churning	ii. Evaporation	iii. Winnowing	iv. Loading and decantation
-------------	-----------------	----------------	-----------------------------

2. Fill in the blanks with appropriate words.

- i. Small pieces of stone can be removed from rice by _____.
- ii. _____ are obtained from stalks by threshing.
- iii. Husk from wheat flour is generally removed by _____.
- iv. The process of setting of heavier particles is called _____.
- v. Filtration is helpful in separating an insoluble _____ from a _____.

i. Hand picking	ii. Grains	iii. Winnowing	iv. Sedimentation
v. Matter, Mixture			

3. 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. 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 _____.

a. Threshing	b. Filtration	c. evaporation	d. Sedimentation and decantation
--------------	---------------	----------------	----------------------------------

II. Fill in the blanks

- 1. Centrifugation is used to separate _____ from milk.
- 2. Common salt is made by _____ of sea water.
- 3. Oil can be separated from water by _____.
- 4. For separation of two miscible liquids we use _____.
- 5. _____ is added to water to kill germs.
- 6. Shallow salt water lakes are called _____
- 7. Wheat flour is separated from its impurities by _____
- 8. A mixture of chalk powder from water can be separated by _____
- 9. Husk is separated from rice by _____
- 10. Components of a _____ retain their properties.

1. Cream	2. Evaporation	3. Decantation/ separating flask	4. distillation	5. chlorine
6. lagoon	7. sieving	8. filtration	9. winnowing	10. mixture

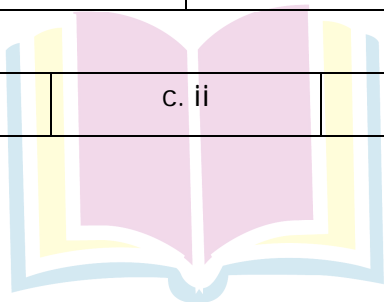
I. Match the following.

(I) Column A	Column B
(a) Separation of husk	(i) Evaporation from grains.
(b) Solids in liquid are	(ii) Threshing allowed to settle down.
(c) Dried stalks are beaten	(iii) Winnowing to free grain seeds.
(d) Separation of insoluble matter from solution	(iv) Sedimentation by passing through filter paper.
(e) Removing of solvent from a solution by heating	(v) Filtration.

a. iii	b. iv	c. ii	d. v	e. i
--------	-------	-------	------	------

(II) Column A	Column B
(a) Separation of immiscible liquids	(i) Centrifugation
(b) Removal of dissolved solids of different densities from liquid.	(ii) Loading
(c) To increase the size of impurities so that they settle down fast	(iii) Separating funnel
(d) Separation of components of a mixture of an insoluble solid and a liquid	(iv) By handpicking
(e) Separation of stones from rice.	(v) Filtration

a. iii	b. i	c. ii	d. v	e. iv
--------	------	-------	------	-------



Next Generation School

II. Match the following.

1. Match the following items given in column A with those in column B

Column A	Column B
(a) The method of separating slightly larger sized impurities	(i) Winnowing
(b) The process that is used to separate grain from stalks.	(ii) Evaporation
(c) The method used to separate heavier and lighter components from a mixture	(iii) Condensation
(d) The process of conversion of water into its vapour	(iv) Handpicking
(e) The process of conversion of water vapour into its liquid.	(v) Threshing

a. iv	b. v	c. i	d. ii	e. iii
-------	------	------	-------	--------

2. Match the mixture in column A with their method of separation in Column B.

Column A	Column B
(a) Oil mixed in water	(i) Handpicking
(b) Salt mixed with water	(ii) Sieving
(c) Lady's finger mixed with french beans	(iii) Magnet
(d) Iron powder mixed with flour	(iv) Decantation
(e) Rice flour mixed with kidney beans	(v) Evaporation

a. iv	b. v	c. i	d. iii	e. ii
-------	------	------	--------	-------

I. 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.
- (e) A mixture of oil and water can be separated by filtration.
- (f) Water can be separated from salt by evaporation.
- (g) A mixture of wheat grains and wheat flour can be separated by sieving.
- (h) A mixture of iron filings and rice flour can be separated by magnet.

(i) A mixture of wheat grains and rice flakes can be separated by winnowing.

(j) A mixture of tea leaves and milk can be separated by decantation.

(a) False	(b) False	(c) False	(d) False	(e) False
(f) True	(g) True	(h) True	(i) True	(j) True

II. True or False

i. When some salt remains undissolved in water even after enough stirring, the solution is said to be unsaturated.

ii. Salt cannot be obtained from sea water by evaporation method.

iii. We can obtain paneer from milk by adding a few drops of lemon juice to milk and then filtering the mixture through a strainer.

iv. Two liquids that do not mix with each other can be separated by decantation.

v. We can separate butter from milk by churning method.

i. False	ii. False	iii. True	iv. True	v. True
----------	-----------	-----------	----------	---------

Quiz Time

1. Why do we need to separate substances?
2. Give examples of two pure substances.
3. We prepare a solution of sugar in water. Name the solute and solvent in this solution.
4. Name any two impure substances.
5. Name the process used to separate cream from curd.
6. Name the device which is used to separate liquid from a solid.
7. Which method is used to separate the pieces of stone from grains?
8. What is the opposite method of evaporation?
9. Write the name of the method by which we get salt from the ocean water.
10. How can we separate grain from stalks?
11. You are given a mixture of salt and sand. Can you separate them by handpicking?

Answer:

1. We separate things to get useful components or to remove non-useful components.
 2. i. Copper ii. Iron.
 3. Solute—sugar, solvent—water.
 4. i. Air ii. Solution of water and sugar.
 5. Centrifugation.
 6. Strainer or sieve.
 7. Hand picking or sieving.
 8. Condensation.
 9. Evaporation.
 10. Threshing
 11. No, we cannot separate it by handpicking.
-

NCERT CORNER

Intext Questions

1. How does one separate grain seeds from their stalks ?

The process used for separating grain seeds from their stalks is called threshing.

It can be done by

- Manually beating the dry stalks on the ground or a hard surface to shake off the dried grains.
- Trampling them under the feet of animals like bullocks.
- Using threshing machines.

2. Why do we separate substances ?

We need to separate harmful or non-useful substances that may be mixed with the substance used. Sometimes, we separate even useful components if we need to use them separately.

For example: To separate stones from rice, churning milk to obtain butter etc.

3. What happens when sand and powdered leaves falling at the same place ?

When sand and powdered leaves are at the same place, sand reaches that place vertically and leaves are blown away, because sand is heavier than powdered leaves. This process is called winnowing.

4. Which method of separating tea leaves from prepared tea is better, decantation or filtration?

Filtration is better method than decantation to separate tea leaves from prepared tea.

5. The best way to carry out the filtration of the mixture of water and sand is to use filter paper not cloth. Why ?

The best way to carry out the filtration of the mixture of water and sand is to use filter paper not cloth because filter paper has fine pores while cloth has larger holes than filter paper. The particles of sand do not pass through filter paper but these may pass from cloth to filtrate.

6. From where does salt come ?

The source of salt is sea water. When sea water is allowed to stand in shallow pits, water gets heated by sunlight and evaporates leaving behind the solid salts. Common salt is obtained from this mixture of salts by further purification.

7. What will happen if a large quantity of a substance is forced to dissolve in a fixed amount of water ?

If a large quantity of a substance is forced to dissolve in the fixed amount of water then after a certain quantity of the substances has been dissolved, it will not dissolve due to saturation.

Textbook Questions

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

We need to separate different components of a mixture due to following reasons :

(i) To separate useful component from a mixture.

(ii) To remove harmful components.

e.g., Separation of stones from rice.

Separation of tea leaves from prepared tea.

2. What is winnowing ? Where is it used ?

The process used to separate heavier and lighter components of a mixture by wind or by blowing air is called winnowing . This process is used by farmers to separate lighter husk particles from heavier seeds or grains.

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

We will separate husk or dirt particles from a given sample of pulses before cooking by hand picking. Winnowing process can also be used for this purpose. Husk particles being lighter, will fly away from pulses.

4. What is sieving ? Where is it used ?

Sieving is a process which allows fine particles to pass through the holes of sieve, while the bigger impurities remain on the sieve. It is used in flour mill in which impurities like husk and stones are removed from wheat.

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

The sand and water from their mixture can be separated in following steps :

- (i) Allow mixture to stand in a glass.
- (ii) After some time, sand settles at the bottom and this process is called sedimentation.
- (iii) Clean water appears as the upper layer.
- (iv) Gently pour this water into another glass and this process is called decantation.

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

Yes, it is possible to separate sugar mixed with wheat flour. It is done by following method : Sugar and wheat flour can be separated by sieving. (ii) As size of sugar particles is more than that of the wheat flour, so sugar will stay on sieve and wheat flour will pass through the holes of the sieve.

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

We will obtain clear water from a sample of muddy water by sedimentation, decantation and filtration.

- (i) Allow muddy water to stand.
- (ii) After some time, mud settles down at the bottom. (sedimentation)
- (iii) Upper layer is clear water.
- (iv) Gently pour the clear water into another apparatus (Decantation) and filter the water to remove traces of mud particles.

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. 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 _____.

(a) threshing	(b) filtration
(c) evaporation	(d) 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.

(a) False	(b) False	(c) False	(d) False
-----------	-----------	-----------	-----------

I. Very Short Answer Type Questions

1. Which method is used to separate tea leaves from tea?

Sieving

2. What is a saturated solution?

A saturated solution is one in which no more of that substance or solute can be dissolved.

3. What is a solution?

When a substance mixes with a liquid in such a way that the substance is no longer seen, a solution is formed.

4. How can a saturated solution be made unsaturated?

By raising the temperature, a saturated solution can be made unsaturated.

5. What are the main reasons for separation of components of a mixture?

Separation is done when the components are mixed randomly and are undesirable.

II. Very Short Answer Type Questions

1. Sheela, Saima and Ravi have to dissolve maximum amount of sugar in the same amount of milk so as to win in a game. Ravi took hot boiling milk while Saima took ice cold milk. Sheela managed to get milk at room temperature. Who do you think would win the game and why?

[NCERT Exemplar]

Solubility increases with increase in temperature. So, I think that Ravi would win the game because hot boiling milk would dissolve more amount of sugar as compared to other milk.

2. Name two materials that are used as filters.

Paper and cloth.

3. What is unsaturated solution?

If a solution can further dissolve more solute, it is known as unsaturated solution.

4. How can you obtain pure water?

By distillation process. It is the process of simultaneous vapourisation and condensation.

5. What is meant by centrifugation?

Centrifugation is a process of separating suspended solid particles from a liquid.

6. What is a pure substance?

A pure substance is a single substance of a definite composition. It contains particles of only one type.

Eg. Pure copper and pure water.

7. Can mixture of salt and sugar be separated by filtration?

No, because both salt and sugar are soluble in water.

8. What is evaporation?

The process of conversion of water into vapour is called evaporation.

Next Generation School

III. Very Short Answer Type Questions

1. What is strainer?

Strainer is a kind of sieve which is used to separate a liquid form solid.

2. Name the method used to separate cream from milk.

Centrifugation

3. How will you separate mango from a mixture of mango and apple?

By hand picking.

4. You are given a mixture of salt and sand. Can you separate them by hand picking?

No, we cannot separate them by hand picking.

5. Name the method used to separate the pieces of stone from grain.

Handpicking.

6. How can you separate grains from stalk?

We separate grains from stalk by threshing.

7. What types of material can we separate by using handpicking?

The materials having different size and colour can be separated by handpicking.

8. Name the other methods used to separate solid materials of different size.

Sieving

9. Name the process used to separate heavier and lighter components of a mixture.

Winnowing

10. Can the above stated method be used if both the components have same weight?

No, method cannot be used.

11. Name the method by which we get salt from ocean water.

Evaporation.

12. Define condensation.

The process of conversion of water vapour into liquid form is called condensation.

13. Write opposite process of evaporation.

Condensation.

14. Name the method used to separate a mixture of two insoluble liquids.

Sedimentation and decantation.

15. Which method is used to separate husk from wheat grain?

Winnowing method.

16. What is Sedimentation?

When the heavier component of a mixture settle down in the container is known as sedimentation.

17. Define the term loading.

Alum is add to the muddy water to make the mud heavy and settle down, it is called loading.

I. Short Answer Type Questions.

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

[NCERT Exemplar]

- (a) To separate different but useful components.
- (b) To remove impurities or harmful components.

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

[NCERT Exemplar]

Ans. Pulses are washed with water to remove dirt particles or husk. Pulses are heavier than dirt particles and husk. Therefore, pulses settle down. This is called sedimentation. The dirt particles and husk floating in water are then removed by decantation.

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

[NCERT Exemplar]

Sand is insoluble in water. Following methods can be used for their separation:

(a) **Sedimentation followed by decantation:** When the mixture is allowed to stand for some time, sand particles will sediment and the water then can be decanted in another container.

(b) **Filtration:** When the mixture is passed through a filter, the sand particles being bigger in size will stay on the filter while clear water will pass through it.

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

[NCERT Exemplar]

Yes. It is possible to separate mixture of sugar and wheat flour by the method of sieving. Sugar being bigger in size than wheat flour will stay on the sieve and wheat flour will pass through the sieve pores.

5. How would you obtain clear water from a sample of muddy water? [NCERT Exemplar]

Clear water can be obtained from muddy water by the method of filtration. When muddy water is passed through filter, water will pass through it while the mud particles will remain on the filter.

6. Distinguish between the following:

(a) Pure substances and Mixture

(b) Threshing and Winnowing

Answer. (a)

S.No.	Pure substances	Mixture
(i)	These are made up of only one kind of particles.	These are made up of two or more elements or compounds.
(ii)	For example, silver, copper, etc.	For example, sea water, smoke, etc.

(b)

S.No.	Threshing	Winnowing
(i)	The process by which the grains are released from the chaff.	It is the process to separate husk from grains.
(ii)	This is done either by hand or by using animals.	It is done by hand with the use of wind or blowing air.

II. Short Answer Type Questions.

1. Name and describe briefly a method which can be helpful in separating husk from grains. What is the principle of this method? [NCERT Exemplar]

The method which can be helpful in separating husk from grains is called winnowing. This method is based on separation of lighter particles from heavier particles by wind or blowing air.

2. Write down the components of the following mixtures.

(a) air,

(b) soil.

(a) Components of air are nitrogen, oxygen, argon, carbon dioxide and other gases.

(b) Components of soil are sand, silt and clay.

3. How will you separate iodine from washing soda ?

I will separate iodine from washing soda by sublimation process.

4. What is the principle of centrifugation ?

If we churn a liquid solution, heavier particles will move towards periphery and then get separated.

5. In sharbat, what should be mixed first, ice cubes or sugar ?

We shall mix sugar first and then ice cubes.

6. Write the steps involved in distillation. Ans. Evaporation and condensation are two processes Involved in distillation.

7. What is a saturated solution ?

A saturated solution of a substance is the one in which no more of that substance can be dissolved.

8. What is sedimentation ? Give an example.

When a mixture is allowed to stand for some time, the heavier components in the mixture settle at the bottom and the process is called sedimentation. For example, when mixture of sand and water is allowed to stand for some time, the particles of sand settle down at the bottom of vessel . The settling down of sand particles is called sedimentation.

9. What is decantation ?

Decantation is a method of separation used after sedimentation in which when insoluble particles settle down, the clear liquid is poured into another container.

III. Short Answer Type Questions.

1. What is mixture?

When two or more than two substances are mixed together in any ratio then it is called a mixture.

2. Write various methods of separation of components from their mixture.

- i. Handpicking ii. Threshing iii. Winnowing iv. Sedimentation
- v. Decantation vi. Filtration vii. Evaporation viii. Condensation

3. Define the term handpicking.

The process used to separate slightly larger particles from a mixture by hand is called handpicking. For example: Stone pieces can be separated from wheat or rice by handpicking.

4. What do you mean by threshing? Where is it used?

Threshing is a process in which we separate grain from stalks. This process is used by farmer to separate gram, wheat, rice, mustard seeds in the field.

5. Write three methods of separation.

Handpicking, threshing and winnowing.

How will you separate oil and water from their mixture?

6. How will you separate oil and water from their mixture?

Oil, being lighter than water, will float on it. Two distinct layers are formed and slowly oil is allowed to flow into another container and is separated from water. Separating funnel can also be used to separate the two.

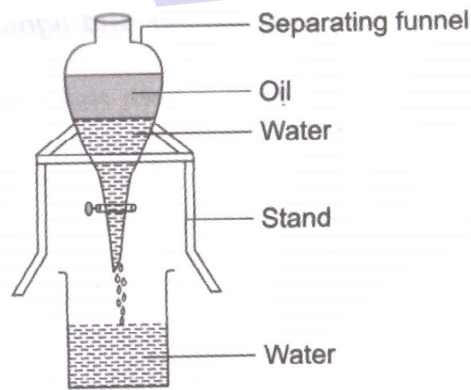


Fig. 5.13 Separation of liquids by separating funnel

7. What do you mean by sieving? Give an example.

Sieving allows the fine flour particles to pass through the holes of the sieve while the bigger particles or impurities remain on the sieve. For example, in a flour mill, impurities like husk and stones are removed from wheat before grinding it.

8. Match the column:

Separation process	Purpose for which we do the separation	What do we do with the separated components?
(1) Separate stones from rice	(a) To separate two different but useful components.	(i) We throw away the solid component.
(2) Churning milk to obtain butter	(b) To remove non-useful components.	(ii) We throw away the impurities.
(3) Separate tea leaves	(c) To remove impurities or harmful components.	(iii) We use both the components.

(1)-(c)-(ii)	(2)-(a)-(iii)	(3)-(b)-(i)
--------------	---------------	-------------

I. Long Answer Type Questions.

1. Both Sarika and Mohan were asked to make salt solution. Sarika was given a teaspoonful of salt and half a glass of water, whereas Mohan was given twenty teaspoonfulls of salt and half a glass of water.

(a) How would they make salt solutions ?

(b) Who would be able to prepare saturated solution ? [NCERT Exemplar]

(a) They will make salt solution by mixing salt in a certain amount of water. Sarika will make a proper salt solution.

(b) Mohan will be able to prepare saturated solution because Mohan will dissolve more salt in water, so some salt would remain undissolved and settle at the bottom of the glass.

2. Paheli was feeling thirsty but there was only a pot of water at home which was muddy and unfit for drinking. How do you think Paheli would have made this water fit for drinking if the following materials were available to her ?

Alum, tub, muslin cloth, gas stove, thread, pan and lid. [NCERT Exemplar]

Paheli will make this water fit for drinking by following steps :

Step I : first of all, She will filter the water by using muslin cloth.

Step II : swirl with alum and allow water to stand for some time.

Step III : pour the clear water in a pot by the process known as decantation.

Step IV : boil the water for 10 minutes in a pan covered with lid.

Step V : cool, filter and the filtrate is fit for drinking.

3. Read the story titled "WISE FARMER" and tick the correct option to complete the story. A farmer was sad/happy to see his healthy wheat crop ready for harvest. He harvested the crop and left it under the sun/rain to dry the stalks. To separate the seeds from the bundles of the stalk he handpicked/threshed them. After gathering the seed grains he wanted to separate the stones and husk from it. His wife winnowed/threshed them to separate the husk and later sieved/hand picked to remove stones from it. She ground the wheat grains and sieved/filtered the flout The wise farmer and his wife got a good price for the flour. Can you tell, why ?

[NCERT Exemplar]

Happy, sun, threshed, winnowed, handpicked, sieved. The wise farmer and his wife got a good price for the flour because they used proper methods of separation to get good quality of wheat flour.

4. You are provided with a mixture of salt, sand, oil and water. Write the steps involved for the separation of salt, sand and oil from the mixture by giving an activity along with the diagram. [NCERT Exemplar]

A mixture of salt, sand, oil and water can be separated by following steps :

Step I : First of all, the clear liquid is poured into another container by the process of decantation. By this process, oil is separated from the mixture.

Step II : Now filter the mixture by using filter paper, funnel and container by the process of filtration. By this process, sand is separated from the mixture.

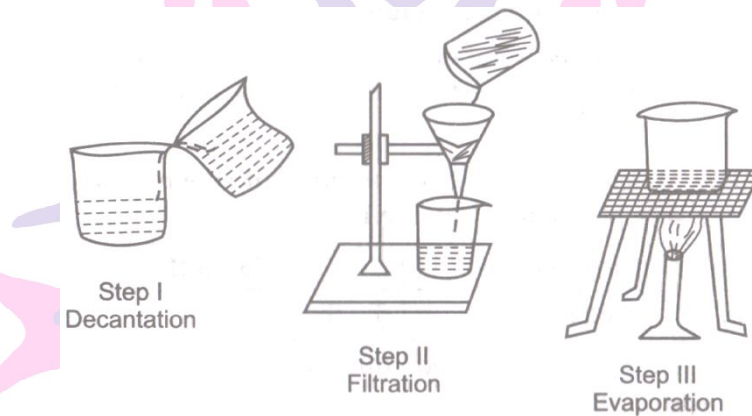


Fig.

Step III : Finally, the remaining liquid evaporates till the residue is obtained by the process of evaporation. By this process, salt is separated from the mixture.

5. A mixture of iron nails, salt, oil and water is provided to you. Give stepwise method to separate each component from this mixture ? [NCERT Exemplar]

The method to separate each component from the mixture is given below :

(i) Hand picking : It is used to separate iron nails from the mixture.

(ii) Decantation : The mixture is allowed to stand for some time. The clear liquid is poured to another container to separate oil from the mixture.

(iii) Evaporation : The remaining liquid is allowed to evaporate till residue is obtained. This residue is salt.

Next Generation School

II. Long Answer Type Questions.

1. What is threshing?

Threshing is a process that is used to separate grain from stalks. In this process the stalks are beaten to free the grain seeds. Sometimes threshing is done with the help of bullocks. Machines are also used to thresh large quantities of grain.



Fig. 5.14 Threshing

2. Describe the method to obtain salt from sea water.

Sea water contains many salts mixed in it. One of them is common salt. Sea water is allowed to stand in shallow pits, water gets evaporated and slowly turns into water vapour. In a few days, the water evaporates completely leaving behind the solid salts. Common salt is then obtained from this mixture of salts by further purification.

3. What is decantation?

Decantation is a process of separation of insoluble solids from liquid. The suspension of solid particles in liquid is allowed to stand for some time. The solid particles then settle down at the bottom of the container and clean water goes up. Without disturbing the settled particles, the clean water is transferred into another container.

4. Where is another container used? Give two examples.

(i) Decantation is used to separate insoluble solids from liquid. Rain water is a mixture of mud and water. It is purified by decantation.

(ii) Oil and water also get separated as insoluble.

5. How will you prepare cheese (paneer)?

For making paneer, a few drops of lemon juice are added to milk as it boils. This gives a mixture of particles of solid paneer and liquid. The paneer is then separated by filtering the mixture through a fine cloth or strainer.

6. Explain the method that can be used for separating the following mixture:

(i) Sand and husk (ii) Wheat, sugar and stalk (iii) Water and petrol

(iv) Rice and salt (v) Sand and salt

(i) Mixture of sand and husk: Sand and husk can be separated by the method of sieving.

(ii) Mixture of wheat, sugar and stalk: For separating stalk from the mixture we should follow the winnowing method because stalk is lighter than other two components and get separated. Wheat and sugar can be separated by sieving because they are of different sizes.

(iii) Mixture of water and petrol: Water does not dissolve in petrol. So, it can be separated by the use of separating funnel.

(iv) Mixture of rice and salt: Rice and salt can be separated by sieving.

(v) Mixture of sand and salt: Sand and salt is mixed with water, salt dissolves in water and sand can be separated from the solution by sedimentation and decantation followed by filtration. After that by evaporation common salt can be separated.

III. Long Answer Type Questions.

1. Name the steps and methods you will use to separate the following.

i. Coconut oil, salt and water

ii. Chalk powder, water and stone

iii. Iron filings, sand and salt

i. Coconut oil is separated by using a separating funnel and the salt is separated by evaporation.

ii. Stones being heavy are separated by sedimentation and chalk powder is separated by filtration.

iii. Iron filings are separated using a magnet and the sand is separated by dissolving in water followed by sedimentation.

Next Generation School

I. High Order Thinking Skills (HOTS) Questions

1. If you are given two transparent clear liquids, without tasting, how would you determine which is distilled water and which is a solution of salt water ?

We will differentiate between the distilled water and the solution of salt water without tasting by the process of evaporation. On evaporation, the salt water container will leave a caky residue which is absent from the distilled water.

2. Raghav is given a glass bottle with some white substances in it that is either chalk or sugar. How can be find out which of the two is sugar or chalk, without tasting it.

This can be done by dissolving both of them in water. Sugar gets dissolved in water while chalk is insoluble in water.

II. High Order Thinking Skills (HOTS) Questions

1. 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?

Ice should be added after dissolving sugar because in such a case more sugar can be dissolved. Dissolving capacity of a solvent increases as the temperature increases.

2. Why does visibility increase after rain?

Rain dissolve all the dust particles in atmosphere and bring them down to earth, thus increasing visibility.

Skill Based Questions

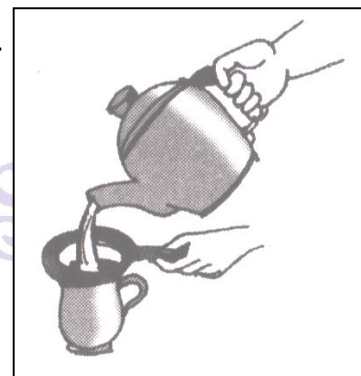
1. Observe the following diagram and answer the questions given below:

(i) Suggest a caption/title to the process shown in figure.

(ii) What method is used in this process?

(i) Separation of tea leaves with a strainer.

(ii) Filtration.



2. The following diagram shows the method used in taking out butter from milk and curd.

Answer the questions after observing the diagram carefully.

(i) What is the name of this process?

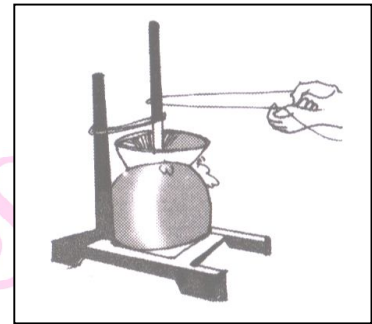
(ii) Explain the process/principle.

(i) Churning

(ii) Churning involves rotation of milk/curd at a high speed.

Cream being lighter collects towards the centre.

The cream floating on the surface of defatted milk can be separated by sieving.

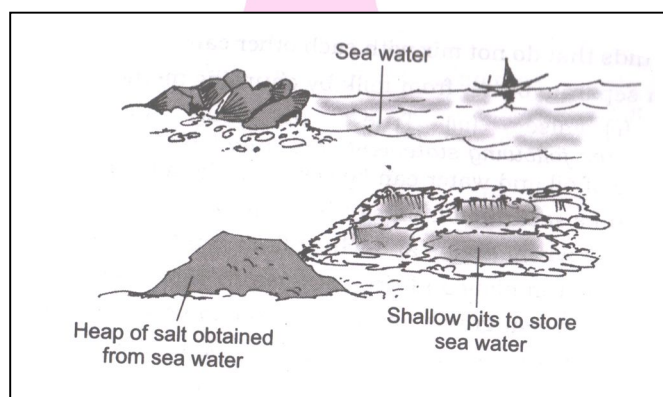


3. Observe the figure given below. Write what process of separation of substances indicates.



The diagram depicts removal of pebbles and stones from sand by sieving.

4. In the diagram given below is a part of the process adopted to obtain common salt from sea water. Observe it and answer the following questions.



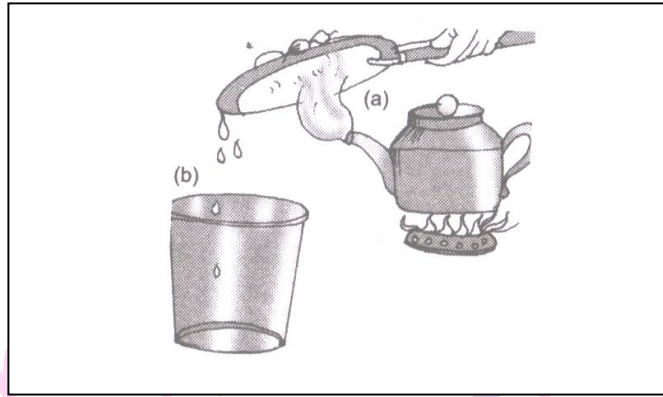
(i) Name the process of obtaining salt (solid) from the sea water as shown in the figure.

(ii) Define the process involved in obtaining salt from sea water at the first stage.

(i) Evaporation

(ii) The process of conversion of water into vapour is called evaporation.

5. The following figure indicates two processes. Identify and write their names.



(a) Evaporation

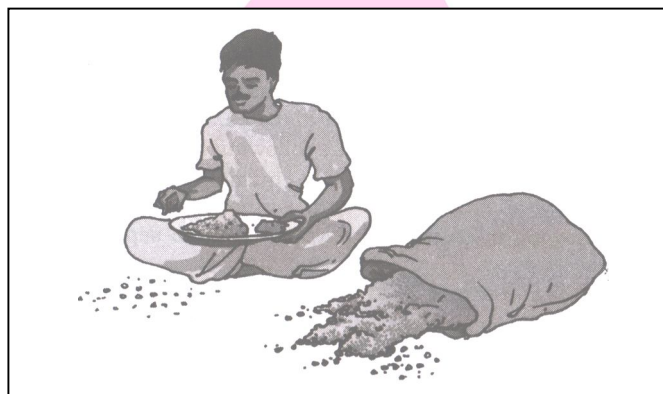
(b) Condensation

6. Draw a diagram to show the winnowing.



7. Observe the figure and answer the following question.

1. What does the figure show?
2. Name two mixtures which are separated by this method.



1. Handpicking
2. (i) Mixture of Stone and Rice.
(ii) Mixture of wheat grains and mustard.

Know the Links

- www.excellup.com
- <https://schools.aqlasem.com>
- www.learnbse.in
- www.studyrankers.com

Pinkz Public School



Next Generation School