

Chapter 5: Separation of Substances

NCERT Exemplar · Class 6 · Science

Multiple Choice Questions

Question 1

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?

A.

Winnowing

B.

Sieving

C.

Threshing

D.

Handpicking

Answer

Correct option: D

Solution

Ans: The correct answer is option (d) Hand picking.

Question 2

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?

A.

Filtration

B.

Decantation

C.

Churning

D.

Winnowing

Answer

Correct option: C

Solution

Ans: The correct answer is option (c) Churning.

The butter will separate from the curd during the churning process and can be removed. Less fat will be present in the remaining lassi.

Question 3

Which of the following mixtures would you be able to separate using the method of filtration?

A.

Oil in water

B.

Cornflakes in milk

C.

Salt in water

D.

Sugar in milk

Answer

Correct option: B

Solution

Ans: The correct answer is option (b) Cornflakes in milk. Cornflakes are insoluble in both milk and water. As a result, they can be filtered out of the milk.

Question 4

Which amongst the following methods would be most appropriate to separate grains from bundles of stalks?

A.

Hand picking

B.

Winnowing

C.

Sieving

D.

Threshing

Answer

Correct option: D

Solution

Ans: The correct answer is option (d) Threshing.

Question 5

Four mixtures are given below

(i) Kidney beans and chickpeas

(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?

A.

(i) and (ii)

B.

(ii) and (iii)

C.

(i) and (iii)

D.

(iii) and (iv)

Answer

Correct option: D

Solution

Ans: The correct answer is option (d) (iii) and (iv).

Because each of these items has its own weight, winnowing can be utilised in rice flakes, maize, potato wafers, and biscuits.

Question 6

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?

A.

Threshing

B.

Sieving

C.

Winnowing

D.

Filtration

Answer

Correct option: B

Solution

Ans: The correct answer is option (b) Sieving.

Because of the size difference between grain and flour, sieving can be used to separate them.

Question 7

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 combinations is the correct answer?

A.

(i) and (ii)

B.

(ii) and (iii)

C.

(ii) and (iv)

D.

(iv) only

Answer

Correct option: B

Solution

Ans: The correct answer is option (b) Decantation and filtration.

These two processes are the most acceptable since the mixture is made up of two independent elements in different states (ghee is liquid and residue is solid).

Question 8

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?

A.

Decantation

B.

Evaporation

C.

Sedimentation

D.

Condensation

Answer

Correct option: B

Solution

Ans: The correct answer is option (b) Evaporation.

Only the water will evaporate when the solution is evaporated, leaving only solid copper sulphate.

Question 9

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

A.

Boiling and condensation.

B.

Evaporation and saturation.

C.

Evaporation and condensation.

D.

Condensation and saturation.

Answer

Correct option: C

Solution

Ans: The correct answer is option (c) Evaporation and condensation.

The water in the plastic bottles heats up and evaporates throughout the summer. When the evaporated water collides with the bottle's cover, it condenses into water droplets. These water droplets

subsequently gather on the bottle's empty portion.

Question 10

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?

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.

Answer

Correct option: D

Solution

Ans: The correct answer is option (d) Condensation of atmospheric water vapour.

When ice-cold glass is exposed to air, water droplets form on the outer surface because water vapour in the atmosphere condenses.

Very Short Answer Questions

Question 1

Sheela, Saima and Ravi have to dissolve the 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?

Solution

Ans: Temperature has a direct relationship with the solubility of solids. Solubility rises as the temperature rises. Saima won't be able to dissolve much sugar in freezing cold milk, as a result. And because Sheela's milk is at room temperature, she'll dissolve even more sugar in it. Ravi has a scorching hot will, thus he'll win by dissolving the most sugar.

Question 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 settling of heavier particles is called _____.
- (v) Filtration is helpful in separating an insoluble _____ from a _____.

Solution

Ans: Hand picking

Ans: Grains

Ans: Sieving

Ans: Sedimentation

Ans: Solid, liquid

Question 3

State whether the following statements are true or false.

- (a) A mixture of oil and water can be separated by filtration.
- (b) Water can be separated from salt by evaporation.
- (c) A mixture of wheat grains and wheat flour can be separated by sieving.
- (d) A mixture of iron filings and rice flour can be separated by magnet.

Solution

Ans: The given statement is False. Oil and water can be separated by separating funnels.

Ans: The given statement is true.

Ans: The given statement is true.

Ans: The given statement is true.

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

Ans: The given statement is true.

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

Ans: The given statement is true.

Short Answer Questions

Question 1

Name and describe briefly a method that can be helpful in separating a mixture of husk from grains. What is the principle of this method?

Solution

Ans: Winnowing is the process of separating the husk from the grains. From a particular height, the mixture is allowed to fall. The lighter husk gets blown away by the wind and falls to the ground in this case. The grains fall to the earth in a direct line.

Question 2

Match the mixtures in Column I with their method of separation in Column II.

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

Solution

Ans: The correct match is-

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

Long Answer Questions

Question 1

Both Sarika and Mohan were asked to make salt solutions. Sarika was given a teaspoonful of salt and half a glass of water, whereas Mohan was given twenty teaspoons full of salt and half a glass of water.

(a) How would they make salt solutions?

(b) Who would be able to prepare a saturated solution?

Solution

Ans: Both Sarika and Mohan will continually stir the salt into the water. There will be a solution.

Ans: because Mohan has more salt than water, his solution will be saturated. Some of the salt will not dissolve.

Question 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.

Solution

Ans: Paheli would first filter the murky water via muslin cloth.

She'd then tie a bit of alum to a thread, dunk it in water, and leave it alone for a while.

She'll notice that the contaminants have sunk to the bottom of the container and that the water may now be emptied out.

Boil the water that has been emptied out, then let it cool before filtering it.

She is now able to swallow the water.

Question 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 crops 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 flour. The wise farmer and his wife got a good price for the flour. Can you tell why?

Solution

Ans: Happy, sun, threshed, winnowed, hand-picked, sieved.

Because they employed acceptable procedures to obtain good quality flour, the farmer and his wife were able to sell the flour for a good price

Question 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.

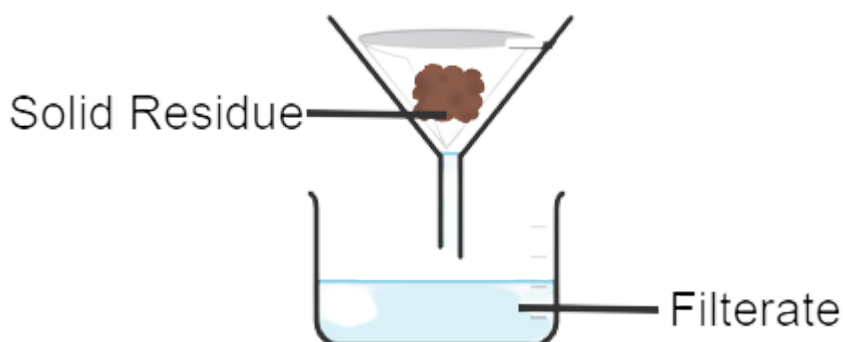
Solution

Ans: We can separate salt, sand, oil and water with the following method-

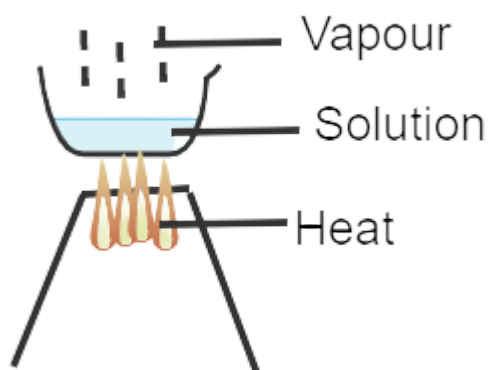
(a) Decantation: Because oil floats on water (it is insoluble in water), it is simple to decant.



(b) Filtration: Filter the mixture to separate the sand from the water (sand is insoluble in water), leaving just the salt solution.



(c) Evaporation: Salt can be separated from a solution by evaporating it.



Question 5

A mixture of iron nails, salt, oil and water is provided to you. Give stepwise methods to separate each component from this mixture?

Solution

Ans: Iron nails can either be hand-picked or attracted towards the magnet. Oil can be removed by decantation method or using a separatory funnel. Salt solution can be evaporated. In this, the water will evaporate and only salt will be left in the pan.

An Overview of NCERT Exemplar for Class 6 Science Chapter 5 Separation of Substances

We use a process that converts a mixture or solution of chemical substances into two or more distinct product mixtures which is known as separation. When the separation process is over, at least one substance out of a mixture is richer as compared to other constituents in one or more of the source mixture's constituents. In some cases, it happens that due to separation the mixture is divided fully into pure constituents.

Substances are mostly available in mixtures. A few substances are available in pure form. Hence, we need to separate the useful substance from the mixture by using some methods.

Need of separation

There are various kinds of impurities present in the Substances. So the separation process is needed to remove the impurities and get two or more products out of the mixture.

Separation of substances can be carried out under two conditions

- Dry conditions
- Wet conditions