INDIAN SCHOOL AL WADI AL KABIR		
Class: VI	**DEPARTMENT: SCIENCE-2024-2025**	**DATE: 10-06-2024**
WORKSHEET NO: 3 WITH ANSWERS	**TOPIC: SEPARATION OF SUBSTANCES**	**NOTE: A4 FILE FORMAT**
NAME OF THE STUDENT	**CLASS & SEC:**	**ROLL NO.**

I. OBJECTIVE-TYPE QUESTIONS:

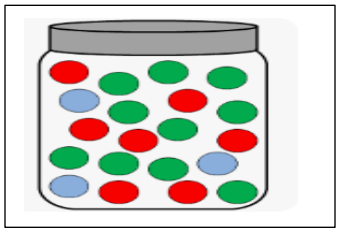
1. While preparing chapatis, Vandana found that the flour to be used was mixed with wheat grains. Which of the following is the most suitable method to separate the grains from the flour?
(a) Threshing
(b) **Sieving**
(c) Winnowing
(d) Filtration

2.The separation technique that involves heating a solution until the liquid changes into a gaseous state, leaving behind a solid is known as
(a) decanting **(b) evaporation**
(c) sterilisation (d) chromatography

3.Which would be an example of an immiscible mixture?
(a) Oil and water (b) milk and water
(c) ink and water (d) salt and water

4. On the basis of what property, does the mixture gets separated in winnowing?
(a) size (b) shape
(c) colour **(d) weight**

5. The image shows the different types of marbles in the jar.



Based on what property, the marbles can be separated?
(a) On the basis of size (b) On the basis of shape
(c) On the basis of colour (d) On the basis of weight

6. Harshita 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) **Hand picking**

7. A student takes some cold water in a beaker and dissolves two tablespoons of salt in it. When the student adds one more tablespoon of salt it gets settled at the bottom of the beaker. The student warms the water and observes that the salt disappears. What can be the reason for this observation?
(a) Heat increases the solubility of water
(b) Heat evaporates the excess salt in solution
(c) After heating the solution become saturated
(d) Two tablespoons of salt make the solution unsaturated

For the following questions, two statements are given- one labelled Assertion (A) and the other labelled Reason (R). Select the correct answer to these questions from the codes (i), (ii), (iii), and (iv) as given below
(i) Both A and R are true and R is the correct explanation of the assertion.
(ii) Both A and R are true but R is not the correct explanation of the assertion.
(iii) A is true but R is false.
(iv) A is false but R is true.

8. **Assertion (A):** Mixture of sawdust and water can be separated by sedimentation and decantation.
Reason (R): Sawdust is not heavier than water.
[(iv) A is false but R is true.]

9. **Assertion (A):** Sieving is used for separating components of a mixture on the basis of their particle sizes.
Reason (R): Sieving is done with help of wind.
[(iii) A is true but R is false.]

10. **Assertion (A):** It is possible to separate salt and water from salt solution.
Reason (R): Salt can be obtained by evaporation method and water can be obtained by condensation method.
[(i) Both A and R are true and R is the correct explanation of the assertion.]

11. **Assertion (A):** Separation of small quantity of big stones from rice can be done by handpicking method.
Reason (R): Handpicking method can be used for separating very fine particles.
[(iii) A is true but R is false.]

II. VERY SHORT QUESTIONS (2M):

1. Distinguish between soluble and insoluble substances.

SOLUBLE SUBSTANCES	INSOLUBLE SUBSTANCES
Substances that dissolve in liquid are soluble substance.	**Substances that do not dissolve in liquid are called insoluble substances.**
Example- salt, sugar.	**Example- sand, saw dust**

2. What happens when saturated salt solution is heated after adding small quantity of salt to it?
[Hint: The undissolved salt in the bottom of the beaker will dissolve. Larger quantity of salt can be dissolved in water on heating.]

3. (a) Why is water called a universal solvent?
[Hint: Water can dissolve many more substances than any other liquid found in nature but water cannot dissolve every substance. Hence, water is called a universal solvent.]

(b) How will you separate water from petrol/oil?
[Hint: Water and petrol/oil are immiscible liquids, so they can be separated by sedimentation and decantation method.]

4. (a) Define Sedimentation
[Hint: The process in which heavier solid components settle at the bottom of a liquid is called sedimentation.

(b) Explain decantation. Give two examples where decantation used.
[Hint: 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.
(i) Decantation is used to separate insoluble solids or liquid from liquid. Rain water is a mixture of mud and water. It is purified by decantation.
(ii) Two immiscible liquids can also be separated by this process. Oil and water is separated by this method because oil floats up.]

III. SHORT ANSWER TYPE QUESTIONS (3M):

1. (a) How is common salt obtained from sea water?
[Hint: Sea water is allowed to stand in shallow pits, slowly the water gets heated by sunlight and changes into water vapour through evaporation. After complete evaporation of water, solid salt remains. This salt is sent for further purification before its utilisation in food.]

(b) Define solute and solvent.
[Hint: A substance that dissolves in a liquid to form a solution is called solute. A substance in which other materials (solute) dissolve is called solvent.]

2. (a) During summer, Dev 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. Explain why droplets of water were formed.

[Hint: Due to evaporation and condensation. In summer, the water in a plastic bottle gets heated and evaporates. This evaporated water touches the cover of the bottle and gets condensed to form water droplets. These water droplets then get collected on the empty portion of the bottle.]

(b) If a solid dissolve in the liquid, sedimentation and decantation method cannot be used. Why?

[Hint: Sedimentation and decantation method is used for separating insoluble substances that are heavier than water. Insoluble substances in a mixture which are heavier than water, settle at the bottom of the container, when left undisturbed, whereas soluble solids completely dissolve in liquid and becomes inseparable from liquid.]

3. Name and describe briefly a method which can be helpful in separating a mixture of husk from grains.

[Hint: By using the process of winnowing, the husk can be separated from grains. When the mixture is allowed to fall down from a height, the lighter husk is carried away by air and the heavier grains fall on the ground. This method is based on the principle that a mixture with components of different weights (heavier and lighter) can be separated with help of wind.]

4. Name the method used to separate the following mixtures.

(i) Papaya seeds from urad dal - **[Hint: Handpicking]**

(ii) Iron filings from sand - **[Hint: Magnet]**

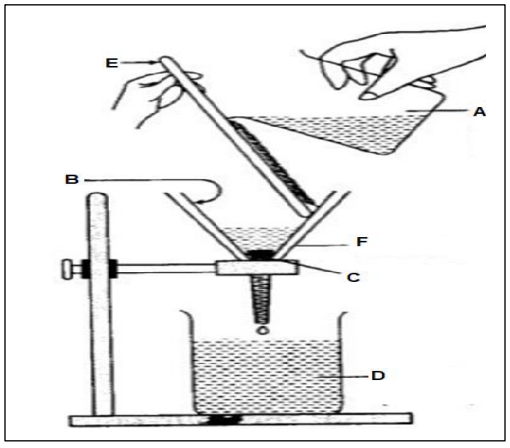
(iii) Cornflakes from milk - **[Hint: Filtration]**

(iv) seeds of grain from husk - **[Hint: Winnowing]**

(v) cream separated from milk - **[Hint: Churning]**

V. LONG ANSWER TYPE QUESTIONS (5M):

1. Observe the method of separation shown and answer the questions.



(a) Identify the process and label the parts marked.

[Hint: Filtration.
[A –mixture B-filter paper C-residue D- filtrate
E-glass rod F-funnel]

(b) Define the process.

[Hint: The method of separating insoluble components from a mixture using a filter/filter paper.]

(c) How is this method better than sedimentation and decantation?

[Hint: Filtration can be used to separate even smaller insoluble solid particles, which may not completely settle down with sedimentation. Also, during decantation there is a chance of the particles mixing back in the liquid.]

(d) Name one example from your daily life where you use this method of separation?
[Hint: Separating tea leaves from tea using a strainer.]

2. How will you prepare a saturated solution of sugar?
[Hint: Take some water in a glass and add one spoonful of sugar to it. Stir the mix. The sugar dissolves in a few minutes. Add another spoonful of sugar and stir. Keep on adding more sugar, one spoonful at a time, in the water and stir well. With stirring, more sugar can be dissolved. There will be a point when no more sugar dissolves in the water, no matter how much you stir. Record the number of spoons of sugar that were completely dissolved in water. A solution that cannot dissolve any more solute is called saturated solution.]

V. SOURCE-BASED/ CASE STUDY-BASED QUESTIONS;

A farmer was happy to see his healthy wheat crop ready for harvest. He harvested the crops and left it under the sun to dry the stalks. To separate the seeds from the bundles of the stalk he threshed them. After gathering the seed grains, he wanted to separate the stones and husk from it. His wife winnowed them to separate the husk and later handpicked to remove stones from it. She ground the wheat grains and sieved the flour. The wise farmer and his wife got a good price for the flour.

(i) What do you mean by hand picking method of separation?

[Hint: **The method in which components in a mixture can be separated by just picking them out with the help of the hand from the mixture is known as the hand-picking method**.

(ii) How will you separate a mixture of dried peas, uncooked rice and wheat flour?

[Hint: Using sieving first separate wheat flour and then by hand picking dried peas and uncooked rice]

(iii) What is the principle of winnowing method?

[Hint: Winnowing is based on the principle that a mixture with components of different weights (heavier and lighter) can be separated with help of wind.]

(iv) What is threshing? How is it done?

[Hint: The process that is used to separate the grain from the stalks of harvested crops is threshing. 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.]

Prepared by: *Ms Preeti Nambiar*	*Checked by:* *HoD Science*