INDIAN SCHOOL AL WADI AL KABIR

Class: VI	**DEPARTMENT: SCIENCE-2022-2023**	**DATE: 04.08.2022**
WORKSHEET NO: 4 WITH ANSWERS	**TOPIC: SEPARATION OF SUBSTANCES**	**NOTE: A4 FILE FORMAT**
NAME OF THE STUDENT	**CLASS & SEC:**	**ROLL NO.**

I.VERY SHORT ANSWER (1M):

1. List the various methods of separation of components from their mixture. [Hint: Handpicking; Threshing; Winnowing; Sedimentation; Decantation; Filtration; Evaporation; Condensation.]
2. What is meant by condensation? [Hint: The process of conversion of water vapour into its liquid form on cooling is called condensation.]
3. What is threshing? [Hint: The process that is used to separate the grain from stalks is called threshing.]
4. What do you mean by the saturated solution? [Hint: A saturated solution is one in which no more solute can be dissolved.]
5. Which method is used to separate heavier seeds of grain from husk? [Hint: The Winnowing method is used to separate heavier seeds of grain from the husk.]
6. How is cream separated from milk? [Hint: Cream is separated from milk by churning.]
7. How will you separate water from petrol? [Hint: Water and petrol are immiscible liquids, so they can be separated by sedimentation and decantation methods.]
8. Define solute and solvent. [Hint: A substance that dissolves in a solvent to form a solution is called the solute. A substance in which other materials dissolve is called the solvent.]
9. What is sedimentation? [Hint: Sedimentation is the process in which heavier solid components settle at the bottom of a liquid.]
10. Name the method used to separate the following mixtures.

a) Papaya seeds from urad dal – [Hint: handpicking.]
b) Iron filings from sand – [Hint: Magnet.]
c) Cornflakes from milk – [Hint: filtration]

For question numbers 11, 12 and 13, 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

11. Assertion (A): 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.]

12. Assertion (A): Sieving is used for separating components of a mixture based on of their particle sizes.

Reason (R): Sieving is done with help of wind.

[iii) A is true but R is false.]

13. Assertion (A): It is possible to separate salt and water from the 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.]

II.PASSAGE BASED QUESTIONS:

Read the following passage and answer the questions.

The process of conversion of water into its vapour is called evaporation. The process of evaporation takes place continuously wherever water is present. Salt is obtained from seawater through the process of evaporation. Sea water contains many salts mixed in it. One of these salts is the common salt. When sea water is allowed to stand in shallow pits, water gets heated by sunlight and slowly turns into water vapour, through evaporation. 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.

1. Name the process in which water is converted into its vapour on heating.

a. Condensation. b. Evaporation. c. Sedimentation. d. Decantation.

2. What does sea water contain?

a. Vitamins b. Proteins c. Salts d. Carbohydrates.

3. Name the process by which salt is obtained from seawater.

a. Condensation. b. Evaporation. c. Sedimentation. d. Decantation.

4. In the salt extraction process, the sea water is collected in _____.

a. Dark pits b. narrow pits c. deep pits d. shallow pits

5. Which of the following is obtained from the mixture of salts by the purification process?

a. Common salt b. Chemicals c. Metal d. sand.

III. CASE STUDY QUESTIONS:

1. A student has a sample of raw rice in a container. The student added water to the container to wash it. After some time, the dust particles come to the surface while the rice grains settle down at the bottom. Which processes would help remove the dust particles?

(a)Filtration and evaporation.

(b)Condensation and evaporation

(c)Evaporation and sedimentation

(d)Decantation and sedimentation

2. A student has a solution of salt, sand and water. Which option explains the processes required to separate the salt and sand from water?
(a)Evaporation to remove sand, filtration to obtain salt
(b)Filtration to remove sand, evaporation to obtain salt
(c)Filtration to remove sand, sedimentation to obtain salt
(d)Sedimentation to remove sand, filtration to obtain salt

3. 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 the solution
(c)After heating the solution become saturated
(d)Two tablespoon of salt makes the solution unsaturated

IV.a) SHORT ANSWER TYPE QUESTIONS (2 M):

1. Distinguish between Soluble and insoluble substances.

Soluble substances	Insoluble substances
Substances that dissolve in liquid are soluble substances.	Substances that do not dissolve in liquid are called insoluble substances.
Example- salt, sugar.	Example- sand, sawdust

2. Soni accidentally mixed a few green gram seeds with rice flour and her brother helped her in separating the substances. Which method they would have used to separate substances and why? [Hint: They would have used handpicking method as green gram seeds are small in quantity, large in size and different in colour.]

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

4. Why water is called a universal solvent? [Hint: Water can dissolve different kinds of substances. So, water is called the universal solvent.]

5. What is the use of Decantation? [Hint: Decantation is used to separate insoluble solids from liquids. Two immiscible liquids can also be separated by this process.]

IV.b) SHORT ANSWER TYPE QUESTIONS (3 M):

1. How is common salt obtained from seawater? [Hint: Sea water is captured in shallow pits, slowly the water gets heated by sunlight and changes into water vapour by the process of evaporation. After complete evaporation of water, salt remains. This salt is sent for purification.]

2. 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 process do you think is the cause of these droplets? Why? [Hint: Evaporation and condensation. As the bottle filled with water is left in sun, the water evaporates due to the heat of the sun. As the vapour touches the lid, it condenses to form water droplets.]

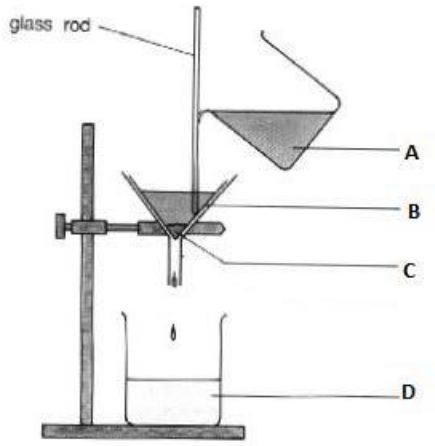
3. What is the basis of using handpicking as a method of separation? [Hint: Hand picking method is used, when: (i) The components to be separated are large and easily distinguishable; (ii) Unwanted components are present in small quantities; (iii)The shape, size and colour of the components are different.]

4. If the solid dissolves in the liquid, the sedimentation and decantation methods 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 become inseparable from the liquid.]

5. Name and describe briefly a method which can help in separating a mixture of husk from grains. What is the principle of this method? [Hint: By using the process of winnowing, the husk can be separated from grains. When the mixture is allowed to fall 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 can be separated with help of wind.]

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.
(Filtration.) [A –mixture B-filter paper C-residue D- filtrate]
b. Define the process.
[The method of separating insoluble components from a mixture using a filter.]
c. How is this method better than sedimentation and decantation?
[Filtration can be used to separate even smaller solid particles, which may not completely settle down with sedimentation. 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? [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, into 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 the saturated solution.]

3. a) What is decantation? Explain [Hint: Decantation is a process, of separation of insoluble solids from liquid. The suspension of solid particles in the 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.]
b) Where is decantation used? Give two examples.
[Hint: (i) Decantation is used to separate insoluble solids or liquids from liquids. Rainwater is a mixture of mud and water. It is purified by decantation.
(ii) Oil and water also get separated by this method because oil floats up.]

PREPARED BY MS. SOBHANA RANI.P	CHECKED BY HOD - SCIENCE