

परमाणु ऊर्जा शिक्षण संस्था, मुंबई
Atomic Energy Education Society
Session-2023-24

Class: VI

Subject: Science

WORKSHEET NO-3 (Answer key)

Name of the Chapter: Separation of substances

Name of the Topic : Separation of substances

I.Choose the correct option from the following . 1x10=10

1. (d) all of the above
2. (a) handpicking
3. (c) churning
4. (c) winnowing
5. (d) all of these
6. (b) mixture of a liquid and an insoluble substance
7. (d) Evaporation
8. (a) sieve
9. (b) evaporation
10. (a) filtration

II. Fill in the blanks with suitable word/s. 1x10=10

1. Winnowing
2. Sieving
3. Pure
4. sedimentation.
5. Condensation
6. Filtration
7. Wind
8. Evaporation

9. Sieving
10. residue

III. Answer the following question in one sentence.

2x10=20

1. Cloth, and filter paper are some materials used as filters.
2. Winnowing is the process of separating heavier components of a mixture from lighter components using wind.
3. A saturated solution is one that cannot dissolve any more solute at that temperature.
4. It is necessary to separate substances from mixtures in order to obtain pure substances for various purposes.
5. Handpicking is a method of separation in which impurities in a mixture that is bigger in size and less in quantity are hand-picked and removed.
6. In threshing, the stalks are beaten to free the grain seeds. Threshing can be done with the help of bullocks or machines.
7. Sieving allows the fine particles to pass through the holes of a sieve while bigger impurities remain on sieve. E.g. separating bran from flour.
8. When steam comes in contact with the metal plate cooled with ice, it condenses and forms liquid water.
9. The process of conversion of water vapour into its liquid form is called condensation.
10. When the heavier component of a mixture settles after water is added to it, the process is called sedimentation.

IV. Answer the following questions in brief.

3x5=15

1. The process that is used to separate the grain from stalks 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.
2. Since oil is lighter than water, it will float on it. Two distinct layers form, and oil is slowly allowed to flow into another container, where it is separated from the water. This method to separate oil and water is called a separating funnel.
3. Sea water contains many salts mixed in it. When sea water is allowed to stand in shallow pits, water gets heated by sunlight and slowly turns into water vapour, through evaporation. In few days water is evaporated completely leaving behind solid salts. Common salt is obtained from mixture of salts by further purification.

4. The method of separating components of a mixture is called winnowing.
In the process of winnowing, first take a mixture to an open ground and stand on a raised platform. Then put the mixture in a plate or sheet of paper and hold it containing the mixture, at our shoulder height. Tilt it slightly, so that the mixture slides out slowly.

5. (a) They will mix salt with water within a certain amount to make salt solution.
Hence, Sarika will make a better salt solution.

(b) Saturation is the point at which a solution of a substance can dissolve no more of that substance and additional amount of that substance will appear as a precipitate.
Mohan's solution would be saturated because in Mohan's case, some salt would remain undissolved and settled at the bottom of the glass.

V. Answer the following questions .

5x5=25

1. Sedimentation is the process by which the heavier components of a mixture settle down. For example, when a sand-water mixture is allowed to stand undisturbed for some time and sand settles at the bottom.

Decantation is the process of separating the liquid portion of a mixture when the heavier component settles as sediments at the bottom. In other words, it is the process of moving a liquid from one container to another while leaving the sediments at the bottom alone.

For example, sand settles at the bottom of a container when a mixture of sand and water is allowed to stand. The upper portion of the container contains water. This can be separated from the sand at the bottom simply by pouring it into another container without the use of any other separating device. This is referred to as decantation.

2. Sieving and filtration are both methods of separating solid particles from mixtures, but they have distinct characteristics and applications.

Sieving:

Sieving is used to separate particles based on their size.

It involves passing a mixture through a sieve, which is a device with holes of a specific size.

Particles smaller than the holes pass through, while larger particles remain on top.

Example: Using a flour sifter to separate lumps from fine flour.

Filtration:

Filtration is used to separate particles based on their ability to pass through a porous barrier, such as filter paper.

It involves passing a mixture through a filter paper in a funnel.

Solid particles are trapped on the filter paper, while the liquid passes through as filtrate.

Example: Filtering coffee grounds from brewed coffee using a coffee filter.

Differentiate among opaque, translucent and transparent materials, giving one example.

3. Handpicking is a separation method that involves manually picking out substances from a mixture based on their physical properties. This method is effective when the substances to be separated have distinct characteristics that make them easily distinguishable. Here's how handpicking works and an example:

Process of Handpicking:

The mixture is spread out, and individuals pick out the desired substances by hand.

The selection is based on properties like size, shape, color, and texture.

Example: Separating Stones from Grains

In agriculture, after harvesting crops like rice or wheat, there may be stones, debris, and other unwanted materials mixed with the grains.

4. Yes, it is possible to separate sugar mixed with wheat flour. You can use the winnowing method or the sieving method.

To separate sugar mixed with wheat flour using the winnowing method, you can follow the steps below:

Spread the mixture of sugar and wheat flour on a flat surface, such as a winnowing tray. Hold the winnowing tray in front of the wind or blow air over the tray using a fan. The sugar particles will be blown away by the wind or air, while the wheat flour particles will be left behind.

To separate sugar mixed with wheat flour using the sieving method, you can follow the steps below:

Pour the mixture of sugar and wheat flour into a sieve. Hold the sieve over a bowl.

Gently shake the sieve. The sugar particles will pass through the sieve and collect in the bowl, while the wheat flour particles will be left behind in the sieve.

5. Filtration is a method of separating solid particles from a liquid by passing the liquid through a filter. The filter has tiny holes that allow the liquid to pass through, but the solid particles are too large to pass through the holes.

Filtration is commonly used to separate tea leaves from tea, to separate coffee grounds from coffee, and to separate sand from water.

Here are some examples of where filtration is used:

In a tea shop, tea leaves are filtered to remove the leaves from the tea.

In a coffee shop, coffee grounds are filtered to remove the grounds from the coffee.

In a swimming pool, sand is filtered to remove dirt and other impurities from the water.

XXXXXXXXXXXXXXXXXXXXXXXXXXXX