12.08.24

TENDER HEART HIGH SCHOOL, SEC-33B, CHD

CLASS- VII SUBJECT- CHEMISTRY

CHAPTER-3 TEACHER- ANAMIKA

Good morning to all the students!

Students this lesson is for class-VII for the subject of chemistry, Topic:- 'Separation of solid-liquid mixtures' which is covered in Chapter-3 'Elements, compounds and Mixtures' starting on page no-38 of your text-book titled- concise chemistry by 'Oselina Publication' and is being submitted to you

All students may now please open page no -38 of your notebook in front of you.

If all students are ready then let us start with this chapter. All students may now please listen carefully.

Separation of solid-liquid mixtures

These mixtures can be homogenous (a sugar solution) or heterogeneous (a mixture of sand and water).

Different methods are used depending upon the type of mixture.

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Sedimentation And Decantation:-

The settling down of suspended, insoluble, heavy solid particles in a solid-liquid mixture when left undisturbed is called sedimentation.

The solid which settles at the bottom is called sediment while the clear liquid above it is called supernatant liquid.

The process of pouring out the clear liquid, without disturbing the sediment, is called decantation.

Example:- A mixture of sand and water, rice and water

Filtration:- The process of separating insoluble solid particles from a liquid by allowing it to pass through a filter is called filtration.

This process is used for separating the components of a heterogeneous solid-liquid mixture in which solids are insoluble in liquids.

These filters allow liquids to pass through them but not solids. The insoluble solid left on the filter is called the residue, while the liquid which passes through the filter is called the filtrate.

Example:- Mixtures like chalk and water, clay and

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water, tea and tea leaves, sawdust and water, etc., are separated by filteration.

Evaporation :-

It is the process of converting a liquid into its vapour state, either by exposing it to air or by heating.

This method is used to separate the components of a homogenous solid - liquid mixture, like salt from sea water.

Crystallisation :- It is the process in which slow evaporation of a solution containing more of the solid component is done.

Crystals are the solid particles with definite shape and size. They are lustrous too. Example:- Sugar particles are cubical and they shine.
Example :- Here sugar is obtained from its solution in water by the process of crystallisation.

Distillation :- It is the method of getting a pure liquid from a solution by evaporating and then condensing the vapours.

When the solution is heated, the liquid component of the mixture evaporates in the form of vapours. These vapours are then condensed back into the liquid

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form which is very pure and is called as distillate.

Centrifugation :- It is the method of separating solids from liquids where the mixture is homogeneous. This is also called churning.

The process is used to separate the components of a mixture which differ in their density.

Cream is separated from milk by this method. At home, we use mixers or traditional churners to separate cream from milk. This process is used even now in dairies. In washing machines, this principle is used to squeeze out water from wet clothes.

(C) Separation Of liquid - liquid mixtures :-

By separating funnel :- It is a simple device used to separate the components of a liquid - liquid heterogeneous mixture.
Example :- Kerosene oil and water. The mixture is placed in a separating funnel and allowed to stand for sometime. The components form two clear layers. Water being heavier forms the lower layer and oil being lighter forms the upper layer. When the stopper of the funnel is opened, the heavier liquid trickles out slowly and is collected in a vessel. The stopper is closed when the bottom

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layer is entirely removed from the funnel. In this way, the two liquids are separated.

Fractional distillation :-

The process of distillation used to separate the components of a homogenous liquid - liquid mixture on the basis of the difference in their boiling points is called fractional distillation. The difference in their boiling points must be 25°C or more.

Example :- A mixture of water and alcohol. Alcohol boils at a lower temperature than water. The vapours of alcohol are collected and cooled while water is left behind in the flask.

Petrol, kerosene, diesel, etc., are obtained from crude petroleum oil in a similar way.

(D) Separation of a gas - liquid mixture :-

A mixture of gas in liquid can be separated by heating. Dissolved gas escapes from the liquid on heating.

Example :- Drinking water contains air dissolved in it. When it is boiled, air escapes and so the boiled water becomes tasteless.

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