CHEMISTRY

Separation of Substances

In nature, substances are often found in the impure state or mixed with other substances. A pure substance is made of only one type of atoms or molecules. Its components cannot be further separated by physicalmethods.
A mixture is an impure substance which contains different types of molecules (pure substances). It is a physically formed blend of two or more dissimilar substances.

Need for Separation of Mixtures

- To separate two or more substances, each being useful tous
  Examples: Rice and flour, sand and pebbles, kerosene and petrol, salt and iodine
- To separate useful substances from non-useful ones
  Examples: Sand and water, dirt and clothes, iron andgarbage
- To separate impure or harmful substances from useful ones
  Examples: Stone and rice, pesticides and water, weeds andcrops

Different Methods of Separation

Winnowing

This method is used to separate the heavier and lighter components of a mixture by wind or by blowing air. Example: Separation of husk fromgrains

Hand Picking

This method is used to separate slightly larger sized impurities such as husk from wheat or pulses.

Threshing

This method is used to separate grain from stalks and chaff. The stalks are beaten to free the grain seeds. This is done by hand or by using machines called threshers.

Sieving

This method is used for separation when the components of a solid mixture have different sizes.
Examples: Bran or impurities removed from flour, fine sand separated from coarse sand

Sedimentation and Decantation

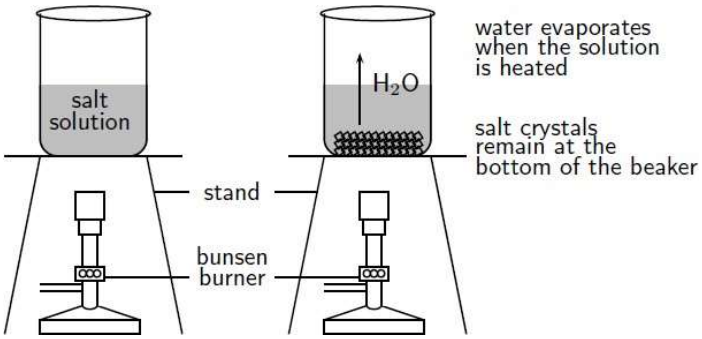
Deposition of solid heavy components (sediment) of a solid–liquid mixture at the bottom of the liquid is called **sedimentation**. When the liquid (along with dust) is poured from the vessel without disturbing the sediments, the process is called **decantation**.

Filtration

This method is used to separate an insoluble solid from a liquid through a filter. Example: Separating soil and dust particles from water

Evaporation

The process of changing of a liquid into vapour is called evaporation. It is used to obtain a solid substance which is dissolved in water (or any other liquid). Common salt dissolved in water can be separated by this process.



Saturated and Unsaturated Solutions

Saturated Solution

A solution which cannot dissolve more solute at a given temperature is called a saturated solution.

Unsaturated Solution

A solution which can dissolve more solute at a given temperature is called an unsaturated solution.