Class VI

GENERAL SCIENCE

CHAPTER 3: SEPARATION OF SUBSTANCES

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LEARN THE FOLLOWING DEFINITIONS:

1) **Mixture**
2) **Pure Substances**
3) **Separation**
4) **Hand Picking**
5) **Sieving**
6) **Threshing**
7) **Winnowing**
8) **Sedimentation**
9) **Decantation**
10) **Filtration**
11) **Evaporation**
12) **Condensation**
13) **Distillation**
14) **Immiscible Liquids**
15) **Loading**
16) **Solute**
17) **Solvent**
18) **Solution**
19) **Saturated Solution**

LET US PRACTISE

MULTIPLE CHOICE QUESTIONS:

a) Difference in weight
b) Increasing the temperature
c) Evaporation
d) Winnowing
e) Filtration
f) Alum
g) Hand-picking
h) Solvent

WRITE TRUE OR FALSE

a) True
b) True
c) False
d) True
e) False
f) True
g) False
h) False

GIVE ONE WORD

a) Hand-picking
b) Saturated solution
c) Threshing
d) Sedimentation

e) **Solvent**

f) **Filtration**

CIRCLE THE ODD ONE OUT:

a) **Filtration**

b) **Decantation**

c) **Winnowing**

d) **Sand**

NAME THE PICTURES:

a) **Winnowing**

b) **Filtration**

c) **Hand-picking**

OBSERVE THE PICTURE AND ANSWER THE FOLLOWING QUESTIONS:

a) **Filtration**

b) **To separate tea leaves from tea, to separate pulp from fresh juice**

VERY SHORT ANSWER TYPE QUESTIONS:

a) **Oil and water**

b) **Threshing**

c) **Water**

d) **Sedimentation and decantation, filtration.**

SHORT ANSWER TYPE QUESTIONS:

Ans 1. On increasing the temperature the saturated solution becomes unsaturated.

The rate of solubility increases in increasing the temperature. On the other hand, solubility decreases on decreasing the temperature.

Ans 2: The liquid that dissolves the solute is called solvent. Water is also called as universal solvent.

Ans3: A solution in which no more solute can be dissolved is called saturated solution.
Example:
Adding 6 table spoons of salt to 20 ml water in a beaker. We observe that solution becomes saturated, as some salt gets deposited at the bottom of the beaker.

Ans4: The method of separation is chosen on the basis of colour, size, shape and solubility of the particles of the mixture.

LONG ANSWER QUESTIONS:

Ans 1. There are three main reasons why we need to separate mixtures.They are:

1) To remove unwanted particles: Your mother always removes stones from rice before she cooks. Because stones are not wanted. Separation is necessary to remove the stones.

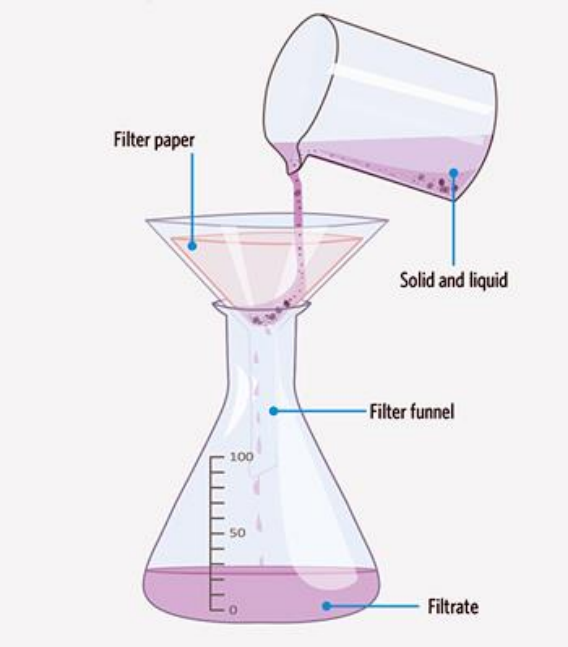
2) To obtain useful substances: Some substances are more important than others in a mixture. Therefore, these need to be obtained by separation of substances.

   Example: Crude oil is raw oil. It is a mixture of many oils. It has petrol, diesel, kerosene, paraffin wax. But it also contains impurities Thus; they have to be separated from the crude oil.

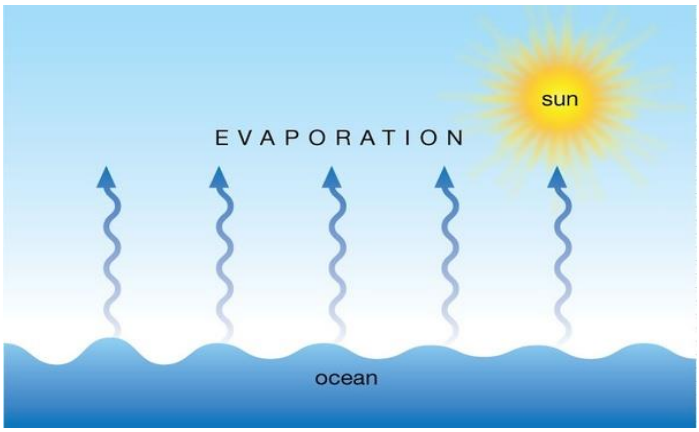
3) To obtain pure substances: A mixture is actually made up of pure substances only. But they get mixed with each other in a mixture. Sometimes the individual pure substances are more important than the mixture.

   For example, saltwater is not very important to us. But salt and water individually are very useful to us.

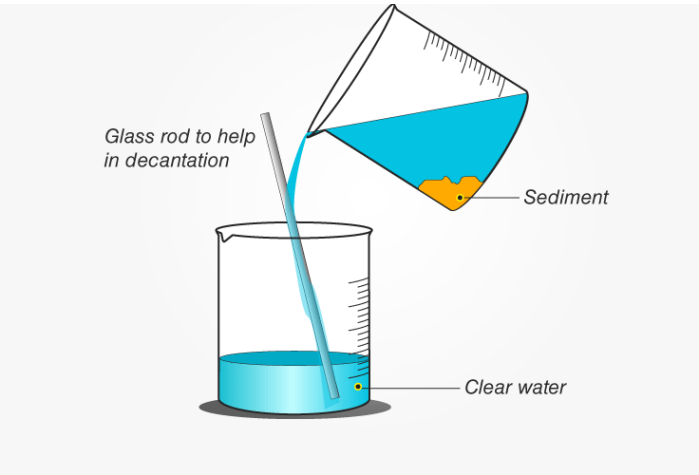
Ans 2: i) Filtration: It is a process used to separate solids from liquids using a filter paper that allows the liquid to pass through but not the solid. The solid left on the filter paper is called residue.



ii) Evaporation: It is the process by which water changes from a liquid to a gas or vapor on increasing the temperature.



iii) Decantation: It is the process that follows sedimentation, which involves pouring out of the liquid without disturbing the sediment.

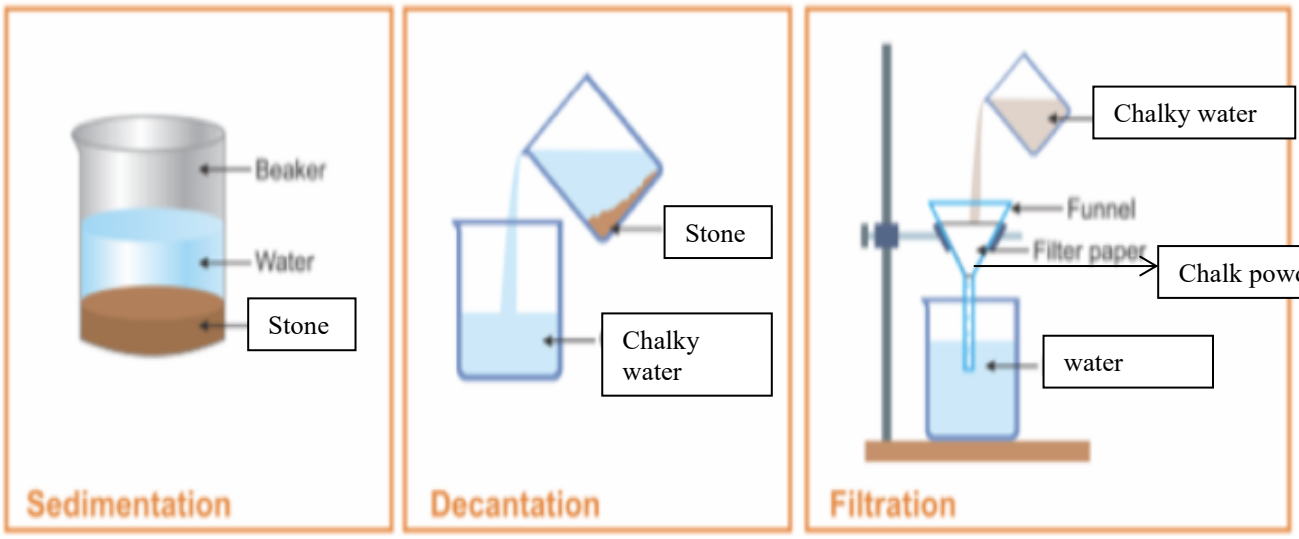


iv) Mixture: A substance that consists of two or more types of particles.

Example: Air is a mixture of different gases like oxygen, nitrogen, carbon dioxide and dust and water vapor.

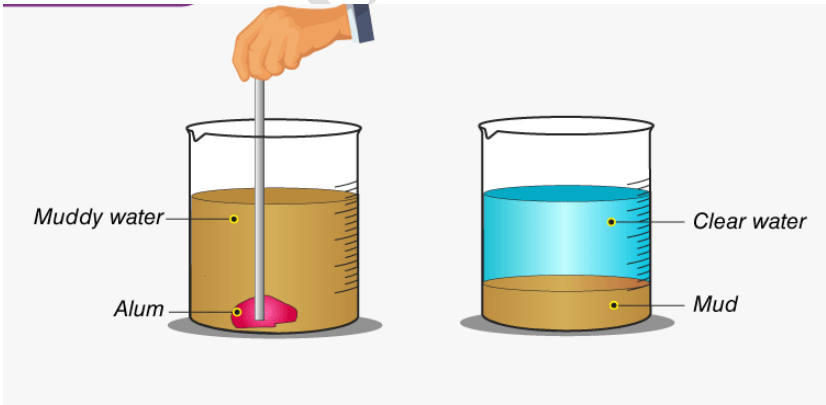
Ans c) Sedimentation followed by decantation and then filtration are the method that can be used to separate mixture of chalk powder and stones from water.

The stones being heavier particle will settle down quickly and the chalky water is collected in another beaker. This chalky water is passed through the filter paper and the chalk powder is collected on the filter paper. The water gets collected in as different beaker. This is how chalk powder, stones and water are separated from the mixture.



Ans d) Sedimentation: The process in which the heavier particles of solid in a liquid settle down at the bottom.

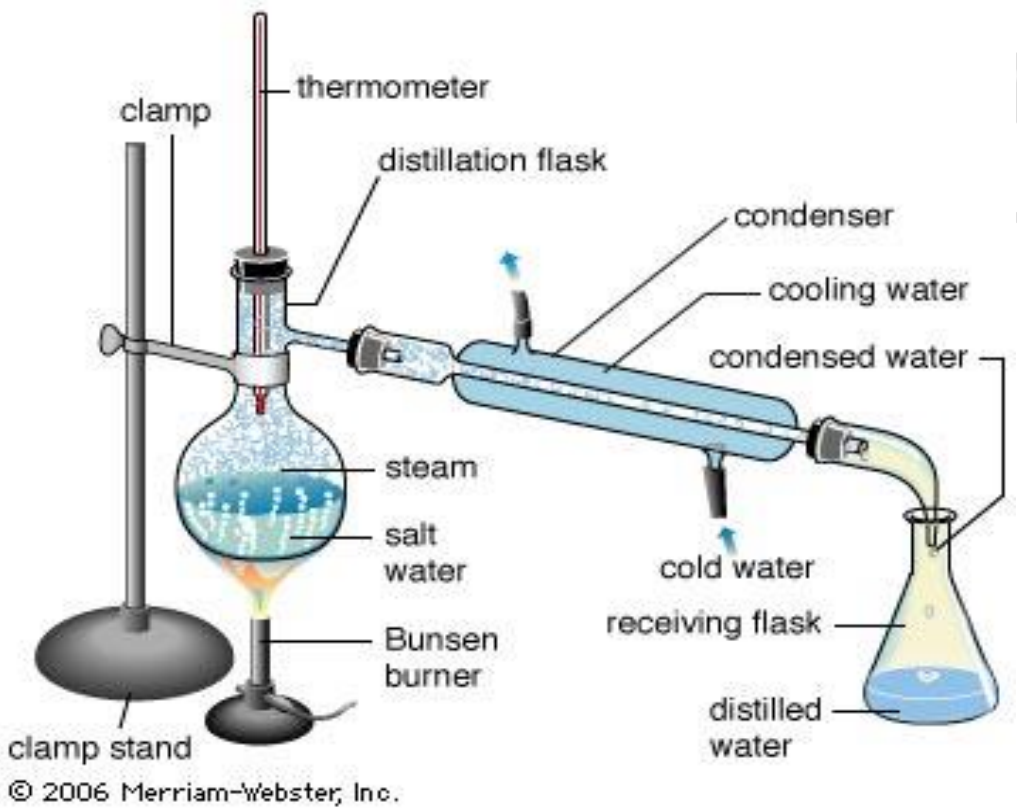
During sedimentation, the heavier particles settle down very quickly but finer particles take longer time. Finer particles can be made to settle faster by dissolving a small quantity of alum to the muddy water. This method id called loading. Thus, to increase the rate of sedimentation alum is added to a beaker of muddy water.



Ans e) A mixture of salt solution cannot be separated by filtration because salt gets completely dissolved in water, so when passed through filter paper no undissolved particles of salt (residue) gets collected on the filter paper.

We can use distillation method, in this process; both salt and water are obtained.

In this method, the mixture is heated in a flask. The liquid in the flask gets evaporated and is collected in another beaker with the help of a condenser as shown below in the figure. The salt is left behind in the flask.



Ans f)

S No	Evaporation	Condensation
1.	It is the process of converting a liquid into its vapor by heating.	It is the process of converting a vapor into its liquid form by cooling.
2.	It is used when the soluble solid component of the mixture is desirable.	It is used when the liquid component of the mixture is desirable.

Ans g)

Solution is a mixture of solute and solvent.

Ex. Salt solution.

Solute is the substance that dissolves in a liquid.

Ex. Salt

Solvent is the liquid that dissolves a solute.

Ex. Water