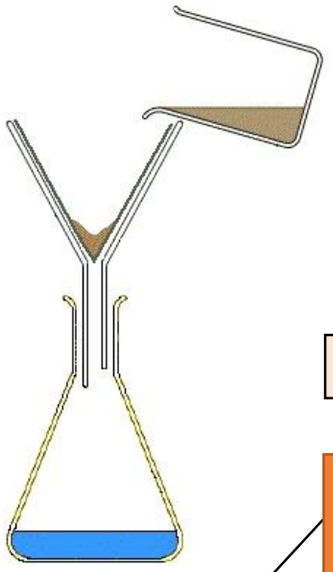
EDEXCEL TOPIC 2: STATES OF MATTER AND MIXTURES 2

Methods of separating substances

Filtration

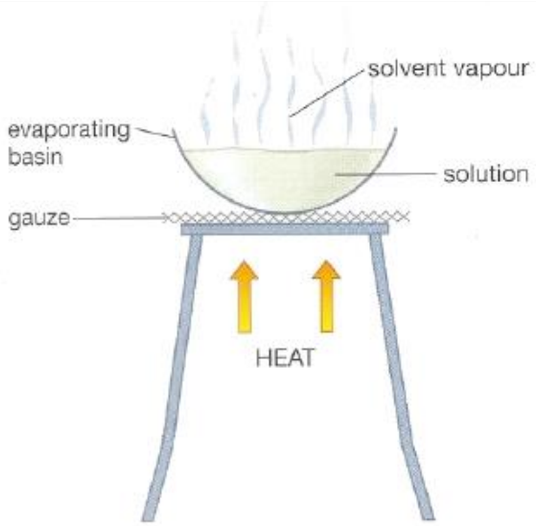
Filtration	***This technique separates substances that are insoluble in a solvent from those that are soluble***	An example is sand in water; the sand will collect in the filter paper and the water will move through the it.

The filtrate is the liquid that moves through the filter paper and collects underneath	The residue is the insoluble solid that collects in the filter paper.



Crystallisation

Crystallisation	***This technique separates a soluble substance from a solvent by evaporation***	An example is the crystallisation of sodium chloride from a salt solution.



Purifying substances

Potable water

Potable water	***Water of an appropriate quality is essential for life***	Human drinking water should have low levels of dissolved salts and microbes. This is called potable water.
UK water	***Rain provides water with low levels of dissolved substances***	This water collects in the ground/lakes/rivers. To make potable water an appropriate source is chosen, which is then passed through filter beds and then sterilised.
Desalination	***Needs to occur is fresh water is limited and salty/sea water is needed for drinking***	This can be achieved by distillation or by using large membranes e.g. reverse osmosis. These processes require large amounts of energy.

Sterilising agents include chlorine, ozone and UV light.

Using water	***Water used for chemical analysis must not contain any dissolved salts***	Water used for this purpose must be treated in order to be suitable.
Producing potable water	***There are 4 main steps to producing potable water***	1. Choosing appropriate source of fresh water 2. Sedimentation 3. Passing the water through filter beds 4. Chlorination

Waste water treatment

Waste water	***Produced from urban lifestyles and industrial processes***	These require treatment before used in the environment. Sewage needs the organic matter and harmful microbes removed.
Sewage treatment	***Includes many stages***	- Screening and grit removal - Sedimentation to produce sludge and effluent (liquid waste or sewage). - Anaerobic digestion of sludge - Aerobic biological treatment of effluent.