OBJECTIVE: TO SEPARATE THE SAND AND COMMON SALT FROM THE GIVEN MIXTURE IN DRY STATE.

APPARATUS REQURIED:

1. Breaker
2. Funnel
3. Filter paper
4. Porcelain basin
5. Gas rod
6. Test tubes
7. Tripod Stand
8. Wire gauze
9. Bunsen Burner

CHEMICAL REQUIRED:

1. Water
2. Mixture of sand and common salt
3. Silver Nitrate ($AgNO_3$)

PRINCIPLE:

In the mixture of sand and common salt, sand is insoluble in water while common salt is soluble in water. The soluble and insoluble components of the mixture are separated by dissolving the soluble component in water followed by filtration and evaporation.

Filtration is the process of separating the water soluble and insoluble components of the mixture by means of porous medium like filter paper.

The soluble component which passed through the filter paper during filtration is called filtrate while the insoluble component left in the filter paper is residue, e.g. Sand.

The filtrate contains sodium chloride (common salt). Crystals of sodium chloride are obtained by evaporating the filtrate in a basin heating up to crystallizati on point.

Evaporation is the process of escaping of liquid molecules from their mixture by continuous heating process.

The purity of the sand is detected by $AgNO_3$ solution by the formation of white precipitate.

$$NaCl + AgNO_3 \rightarrow AgCl \downarrow + NaNO_3$$

(Curdy white ppt.)

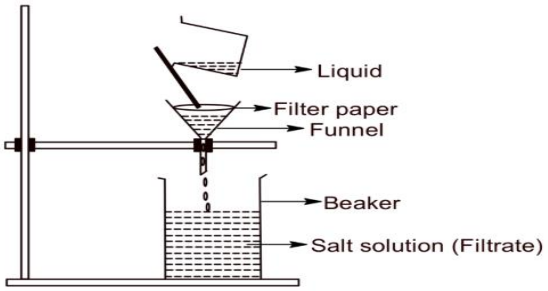

Fig: Filtration

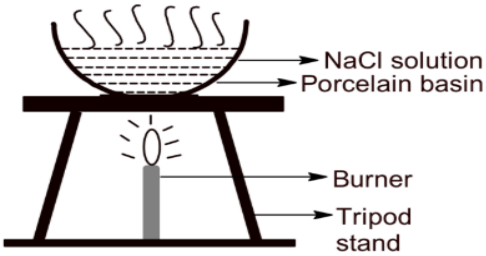

Fig: Evaporation

PROCEDURE:

The given mixture of sand and common salt was taken in a beaker and water was added to dissolve common salt completely by stirring with the glass rod. The sand was allowed to settle down by standing the mixture for some time. The filter paper was folded and sets up in funnel and fitted in on stand. The mixture solution was slowly transferred into the filter paper fitted in the funnel with the help of glass rod. The sand was washed with water in filter paper for 3 or 4 times. A few drops of last washing from the funnel was taken in the test tube and a drop of silver nitrate Solution was added. If a white precipitate occurred, it indicated that sand is not free from sodium chloride. The washing process was repeated till the filtrate gave no white precipitate with $AgNO_3$.The fitter paper was carefully removed from the funnel and the filter paper containing pure sand was dried. The Sodium Chloride solution was evaporated by heating up to crystallisation point and allowed to cool slowly to obtain crystals of sodium Chloride.

OBSERVATION:

Experiment	**Observation**	**Inference**
1. Add few drops of $AgNO_3$ to the last drops of filtrate.	a. White ppt. appears.	a. Sand is not free from Cl^- ions.
2. Add few drops of $AgNO_3$ to the last drops of filtrate	b. No white ppt. appears.	b. Sand is free from Cl^- ions.

RESULT:

Hence, the sand and common salt are separated in pure and dry state from the mixture.

CONCLUSION:

In this way, the mixture containing water insoluble (sand) and water soluble (common salt) components can be separated by filtration and evaporation.

PRECAUTIONS:

1. Salt should be dissolved in minimum amount of water.
2. During filtration, solution should not be filled up to the rim of filter paper.
3. There should not be air bubble between filter paper and inner wall of the funnel.
4. Heat should be gentle.
5. The glass rod should be inclined to the three folded sides of the filter paper in the funnel to prevent damage of filter paper.
6. Apparatus should be handled carefully.