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MATTER

TOPIC - EVAPORATION.

* Evaporation : The change of state from liquid to vapour at all temperatures from the surface of liquid.

* Difference between EVAPORATION & VAPORIZATION.

<u>Evaporation</u>	<u>Vaporization</u>
1. Takes place at all temperatures	1. Takes place at a fixed temperature (Boiling point of the liquid)
2. Process is slow.	2. Process is rapid.
3. Takes place only at the surface.	3. Takes place over the entire liquid.
4. It has cooling effect	4. It has no cooling effect.

* Rate of Evaporation :

1. The temperature of liquid - Rate of evaporation is high if the temperature of liquid is high.
2. The area of the exposed surface - The rate of evaporation increases if the area of surface exposed increases.

3. The nature of liquid - Liquids having low boiling point (volatile liquids) evaporate faster.
4. The flow of air above the liquid - If air is blown above the liquid surface the liquid evaporates quickly.
5. The presence of moisture or humidity - If humidity is less evaporation is faster.

* Explanation of Evaporation by Molecular Model.

In a liquid the molecules are in motion within its boundary. They collide with each other. During the collision some molecules below the surface of liquid acquire sufficient kinetic energy to overcome the force of attraction of other molecules and their intermolecular spacing increases. Such molecules move to the surface of liquid and they absorb heat from the surrounding to escape out in atmosphere. This is called evaporation.

* Evaporation produces cooling :

When a liquid changes into vapour it requires heat. This heat is supplied by the surroundings of the liquid. This results in fall in temperature in the surroundings. This produces cooling effect.

* Application of Evaporation -

1. In summer water gets cooled in an earthen pot.
2. Doctors advice to put the strips of wet clothes on the forehead of a patient having high fever.
3. We often pour tea in a saucer to cool it faster.
4. Evaporation of sweat from our body helps to maintain the body temperature.

- What do you mean by 'the change of state' ? Write the flow chart showing the complete cycle of change of state.
- Differentiate between melting point and boiling point, giving atleast one example of each.
- Describe the process of condensation and sublimation with examples.
- Explain the terms melting and melting point.
- Describe an experiment to demonstrate that a substance absorbs heat during melting without change in its temperature.
- Explain the terms vaporization and boiling point.
- A liquid can change into vapour state
 - at a fixed temperature, and
 - at all temperatures
 Name the processes involved in the two cases.
- Some ice is taken in a beaker and its temperature is recorded after each one minute. The observations are listed below :

Time (in minute)	Temperature (in °C)
0	0
1	0
2	0
3	0
4	0
5	0
6	3.8
7	7.6
8	11.4

From the above observations what conclusion do you draw about the melting point of ice ?

Ans: Melting point of ice = 0°C

- Describe an experiment to demonstrate that water absorbs heat during boiling at a constant temperature.
- State (a) the melting point of ice and (b) the boiling point of water.
- What is evaporation ?
- State three factors which affect the rate of evaporation of a liquid.
- Wet clothes dry more quickly on a warm dry day than on a cold humid day. Explain.

- Water in a dish evaporates faster than in a bottle. Give reason.
- Why are volatile liquids such as alcohol and spirit stored in tightly closed bottles ?
- A certain quantity of water is heated from 20°C to 100°C. Its temperature is recorded after each 1 minute. The observations are :

Time (in minute)	Temperature (in °C)
0	20
1	30
2	40
3	50
4	60
5	70
6	80
7	90
8	100
9	100
10	100
11	100
12	100

What conclusion do you draw from the above table about the boiling point of water ? Explain.

Ans: Boiling point of water = 100°C

- Why is cooling produced on evaporation of a liquid ?
- Explain with an example that when a liquid evaporates, it takes heat from its surroundings.
- Give two applications of evaporation.
- Explain why in hot summer days water remains cool in earthen pots.
- A patient suffering from high fever is advised to put wet cloth strips on his forehead. Why ?
- What do you mean by sublimation ? Explain with an example.
- Why does the size of naphthalene balls decrease when left open ?
- Describe an experiment to demonstrate the process of sublimation.