

STANDARD - VIII SUBJECT : PHYSICS

LESSON : 1 MATTER

Q.1. CHOOSE THE CORRECT ANSWER

- The number of states of matter is
a) 1 2) 2 c) 3 d) 4
- Particles in a solid are
a) less tightly bound b) more tightly bound
c) able to flow c) free to move
- Liquids have
a) definite shape b) definite volume and shape
c) definite shape but no definite volume d) definite volume but no definite shape
- Particles in a gas have
a) Least kinetic energy b) maximum kinetic energy
c) maximum intermolecular force attraction d) minimum intermolecular space
- Boiling takes place at
a) any temperature b) only at the bottom of the liquid
c) its boiling point only d) only on the surface of the liquid
- Freezing is the process of changing.
a) vapour to liquid state b) vapour to solid state
c) liquid to solid state d) solid to liquid state
- Sublimation takes place when
a) liquid changes to vapour b) solid changes to vapour
c) vapour changes to solid d) vapour changes to liquid

Q.2. FILL IN THE BLANKS.

- The states of matter are solid, liquid and gas.
- During the change of state, the temperature of a substance remains constant.
- Particles in a gas are free to move.
- Liquids when cooled change to solid state.
- Naphthalene balls undergo process of sublimation to change to gaseous state.
- The boiling point and condensation point are the same.
- Intermolecular space is the least in solid.
- Particles in a solid vibrate about their mean position.

Q.3. STATE TRUE OR FALSE.

- Boiling is a slow process. [false]
- Heat is absorbed during condensation. [false]
- Heat is given out during condensation. [true]
- The change of liquid to its vapour form at all temperature is called vaporization. [true]
- Particles come closer to each other during vaporization. [false]
- Liquid can only change to vapour state. [false]
- Change of state occurs at a fixed temperature. [true]

8. Gases have a fixed volume. [false]

Q.4. ANSWER THE FOLLOWING BRIEFLY.

1. What is vaporization?

The change from liquid to its gaseous (vapour) state on heating at a constant temperature is vaporization or boiling.

2. What is melting?

The change from solid to liquid state on heating at constant temperature is called melting.

3. What is the process of sublimation? Give an example.

The change of a solid to its vapour state directly is called sublimation. For example, Naphthalene balls when kept in the open change to its vapour state.

4. Can a substance be at the same temperature in two different states of matter? Give an example.

Yes a substance can be at the same temperature in two different states of matter.

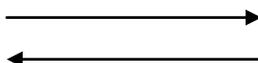
For eg-

BOILING

Water at 100° C

Heat is absorbed

Steam at 100 °C



CONDENSATION

Heat is released

5. What happens when some naphthalene balls are left in the open? Name the process.

Naphthalene balls when kept in the open change to its vapour state. This process is called sublimation.

6. How does the kinetic energy change when a liquid is cooled gradually?

When a liquid is cooled gradually its kinetic energy decreases on further cooling it is converted into solid state.

Q.5. ANSWER IN DETAIL.

1. In terms of kinetic theory explain the process of melting of a solid.

According to the kinetic theory, the molecules in a solid vibrate about their mean positions. When a solid is heated, the molecules gain more kinetic energy and vibrate through a greater amplitude. They move further apart and occupy more space. The attraction between the molecules is just not enough to keep the molecules in a fixed position. They tend to move away from each other and this results in the change of state of the substance. A solid thus changes into the liquid state. On further heating, the liquid changes into the gaseous state.

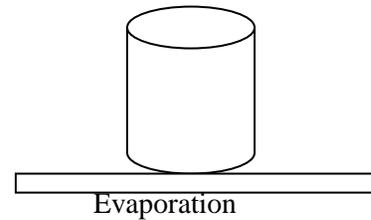
2. Evaporation is a surface phenomenon. Explain this in terms of kinetic theory.

Temperature of a body is the average

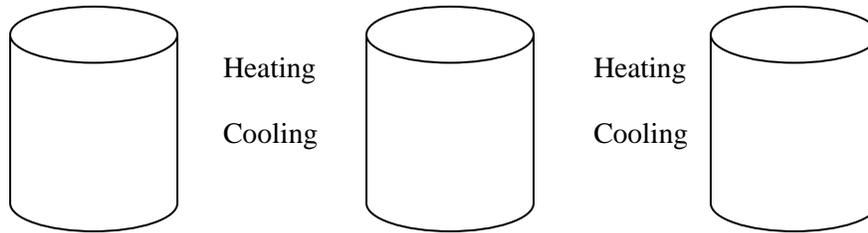
kinetic energy possessed by the molecules.

This means all the particles do not have the same

kinetic energy. Those with higher kinetic energy is balanced by those with lower kinetic energy. Evaporation occurs at all temperature. Those particles with higher kinetic energy than the rest break through the surface of the liquid by overcoming the intermolecular force of attraction of the rest of molecules in the liquid. They slowly escape as gaseous particles. The particles on the surface are more free to leave. This process is called evaporation.



3. **Some ice cubes are heated till it changes to steam. Draw a schematic diagram to show the change and write the name of the process and temperature at each stage.**



4. **State three properties each of solids, liquids and gases which distinguishes them each other**

The properties of three different state is:

1) Solid

- a) Solids are rigid
- b) solids have a definite shape and volume.
- c) Solids can not flow

2) Liquid

- a) Liquids are not rigid.
- b) Liquids have definite volume but no definite shape.
- c) Liquids can follow from a higher to a lower level.

3) Gas

- a) Gases are not rigid.
- b) Gases neither have definite shape nor definite volume.
- c) Gases can flow in all directions.

5. **Describe the movement of particles when the kinetic energy of solids, liquids and gases increase.**

Same as no.1.

6. **Write five examples of evaporation from your daily life.**

The five examples of evaporation are as follows:

1. Drying of a mopped floor.
2. Drying of wet hair after some time.
3. Drying up of water bodies like lakes and rivers.
4. Evaporation of water sprinkled on ground or roof top.
5. Evaporation of water from earthen pots.

Q.6. DIFFERENTIATE BETWEEN.

1.	Boiling point	Condensation point
	1. The fixed temperature at which boiling takes place is called the boiling point of the liquid. 2. Heat energy is absorbed	1. The fixed temperature at which the vapour changes to its liquid state is called the condensation point of vapour. 2. Heat energy is released

2.	Sublimation	Deposition
	1. The change of a solid to its vapour state directly is called sublimation 2. Example Camphor, naphthalene balls etc.	1. The change of a vapour to its solid state directly is called deposition Or de- sublimation 2. Example-Formation of frost.

3.	Evaporation	Boiling
	1. Takes place on the surface. 2. Takes place at all temperature 3. No bubbles are formed 4. Energy is supplied by the surroundings and from within the liquid. 5. It is a slow process. 6. Produces a cooling effect.	1. Takes place throughout the liquid. 2. Takes place at the boiling point of the liquid. 3. Bubbles are formed 4. Source of energy is required 5. It is a fast process. 6. No cooling effect.

4	Liquids	Gases
	1. Have a definite volume but no definite shape. 2. Can flow from a higher to a lower level. 3. Can be compressed to some extent. 4. Cannot be stored without a vessel.	1. Neither have definite shape nor definite Volume 2. Can flow in all directions 3. Can be easily compressed 4. Can be stored in closed vessel only.

5.	Melting	Freezing
	1. The change from solid to liquid state on heating at constant temperature is called melting. 2. Heat is absorbed.	1. The change from liquid to solid state with the release of heat at a constant temperature is called freezing. 2. Heat is released.

Q.7. DEFINE.

1. **Melting**- The change from solid to liquid state on heating at constant temperature is called melting.
2. **Boiling**- The change from liquid to its gaseous (vapour) state on heating at a constant temperature is called boiling.
3. **Freezing**- The change from liquid to solid state with the release of heat at a constant temperature is called freezing.
4. **Condensation point** – The fixed temperature at which the vapour changes to its liquid state is called the condensation point of vapour.
5. **Sublimation** – The change of a solid to its vapour state directly is called sublimation.
6. **Boiling point**- The fixed temperature at which boiling takes place is called the boiling point of liquid.

Q.8. GIVE REASON.

1. The temperature remains the same when change of state of matter takes place.

During change of state only potential energy of the molecules change, kinetic energy remains same. Hence temperature that depends only on kinetic energy of the molecules also remains same during change of state.

2. Liquids have no definite shape but a definite volume.

The molecules in a liquid are loosely packed so they move about freely within the liquid. Hence Liquids have no definite shape. Again the molecules are not free to move anywhere within the container only the molecules can exchange their position. Hence volume remains fixed.

3. A large volume of gases can be compressed in a small cylinder.

The intermolecular force of attraction is the least and intermolecular space is the maximum compared To liquids and solids. Hence large volume of gases can be compressed in a small cylinder.

4. Particles in a solid do not flow.

In solids molecules are tightly bound to each other and they cannot move freely only they can Vibrate about their mean position. Hence particles in a solid do not flow.

5. A person with high fever is often advised to put a wet cloth in his/ her forehead.

When water evaporate from wet cloth it absorb the necessary heat energy from the person's forehead. Hence body temperature is reduced.

6. A liquid boils at its boiling point.

In boiling liquid converts to vapour from its whole mass. This is possible when the molecules of the liquid attains a maximum kinetic energy as kinetic energy is directly proportional to temperature. Hence boiling takes place at a particular temperature.
