

[B] Short / Long Questions -

① What is matter? What is it composed of?

Ans Matter is something which occupies space, has mass and can be perceived by our senses.

It is composed of tiny particles called molecules which is again further composed of very tiny particles called atoms.

② Name the three states of matter & distinguish them on the basis of their (i) volume, and (ii) shape.

Ans The 3 states of matters are

⇒ Solids

⇒ Liquids

⇒ Gases.

SOLIDS

LIQUIDS

GASES

	<u>SOLIDS</u>	<u>LIQUIDS</u>	<u>GASES</u>
(i) Volume →	It has a definite vol^m .	→ It has no a definite vol^m .	→ It doesn't have definite vol^m .
(ii) Shape →	It has a definite shape.	→ It has doesn't have definite shape.	→ It doesn't have definite shape.

③ Distinguish between liquids and vapours (or gas) states of matter on the basis of the following factors:

- (a) Arrangement of molecules
- (b) Inter-molecular separation
- (c) Inter-molecular force, and
- (d) Kinetic energy of molecules.

LIQUIDS

(a) The molecules ~~are~~ in a liquid can move within the boundary of the vessel. (loosely packed)

(b) Inter-molecular separation is ~~less~~ more than solids.

(c) Inter-molecular forces of attraction is ^{weaker} ~~more~~ than solids.

(d) Kinetic energy of molecules is more than solids.

VAPOUR (OR GAS)

(a) The molecules of gas can move freely in the available space. (very loosely packed)

(b) Inter-molecular separation is the most between the molecules.

(c) Inter-molecular forces of attraction is ~~more~~ most weakest.

(d) Kinetic energy of molecules is the most.

(4) What is evaporation? Explain it on the basis of molecular motion.

Ans → The change of liquids into its vapour at all temp^r from its surface is called evaporation.

* In a liquid, molecules while in motion collide with in motion collide with each other. Some molecules which gain energy reach to the surface of liquid while others which lose energy remain inside the liquid.

During evaporation, the molecules on the surface which have sufficient kinetic energy to do work against the force of attraction on them due to other molecules inside the liquid, escape out from the surface into space. These escaping molecules form the vapour of the liquid.

The process continues till all the liquid evaporates.

⑤

Do all the molecules of a liquid take part in evaporation? If not, explain your answer.

Ans → * No, only the molecules on the surface of a liquid take part in evaporation.

* During evaporation, the molecules on the surface of a liquid have higher kinetic energy (than those inside the liquid) to do work against the force of attraction on them due to other molecules inside the liquid, so they escape out from the surface into space easily.

⑥

No heat is supplied to a liquid during evaporation. How does then the liquid change into its vapour?

Ans → * Though no heat is supplied to the liquid molecules, near the surface of the liquid acquire sufficient kinetic energy due to collisions with other liquid molecules. With this K.E. they overcome the attractive forces of other molecules & change into vapours.
During evaporation, particles of

• a liquid absorb heat from the surroundings to change their state. The particles at the surface ~~no~~ absorb more heat as a result change into vapour.

⑦ Comment on the statement 'evaporation is a surface phenomenon'.

Ans → 'Evaporation is a surface phenomenon'. It means ~~it~~ that only ^{mole-}~~the~~ ^{cules} on the surface of the liquid take part in evaporation. The molecules on the surface has more K.E. than molecules ~~&~~ inside the liquid. So they escape out from the surface easily.

⑧ Why is cooling produced when a liquid evaporates?

Ans → When ~~a~~ the molecules of a liquid escape out from the surface they ~~#~~ absorb or take away heat from the ~~sur~~ surface surroundings to escape out into the atmosphere with the

atmospheric air molecules during evaporation. Thus producing a cooling effect when a liquid evaporates.

Q Give reason for the increase in rate of evaporation of a liquid when

(a) air is blown above the liquid.
The reason is that the blowing air takes away with it the molecules of the liquid escaping out of its surface & to take their place, other molecules move to the surface of the liquid.

(b) Surface area of liquid is increased.

The reason is that on increasing the area of surface, number of molecules escaping out from the surface increases.

(c) temperature of liquid is increased.

The reason is that the energy of the molecules increases with the increase in temp, so more & more molecules come to the surface of liquid, hence the rate of evaporation will increase with increase of temp.

(10) What is boiling? Explain it on the ~~low~~ molecular motion.

Ans → * The change from the liquid state to the gaseous (or vapour) state, on heating at a constant temp^r, is called boiling.

* Heating of a liquid increases the avg. K.E. of the liquid molecules. When the molecules acquire sufficient K.E. to overcome the force of attraction of other molecules they escape out from the liquid in the form of vapour.

* These molecules now start leaving the liquid (not only at the surface but also near the walls of the containing vessel). There is a formation of bubbles on the walls of the vessel. These bubbles grow in size (with further evaporation) & move to the surface in quick succession, this is how boiling occurs.