



## Matter

### Long Question and Answers

#### Question 1

State the three effects of heat on matter.

**Answer:** When a substance is heated, it can cause.

1. Interconversions of states of matter.
2. Thermal expansion of the substance.
3. Chemical change.

#### Question 2

(a) Define: Interconversions of states of matter.

(b) What are the two conditions for the Interconversions of states of matter ?

**Answer:**

(a) The process by which matter changes from one state to another and back to original state, without any change in its chemical composition.

(b) Two conditions are :

1. Change in temperature
2. By applying pressure



### Question 3

Define the following terms:

- (a) Fusion
- (b) Vaporization
- (c) Condensation
- (d) Sublimation
- (e) Diffusion
- (f) Melting point
- (g) Boiling point
- (h) Liquefaction

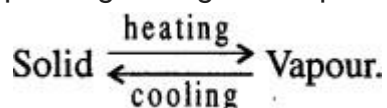
#### Answer:

**(a) Fusion:** The heating process by which a solid changes into the liquid state is called fusion.

**(b) Vaporization:** The heating process by which a liquid changes into its vapor state is called vaporization.

**(c) Condensation:** The process by which a substance in gaseous state changes into its liquid state is called condensation.

**(d) Sublimation:** The change of solid on heating to vapors directly and vice-versa Without passing through the liquid state is called sublimation.



**(e) Diffusion:** The phenomenon of intermixing or spreading of gaseous molecules is called diffusion.

**(f) Melting point:** The fixed temperature at which a solid changes into a liquid at a given pressure is called its melting point. The temperature remains constant as long as the conversion is going on.

**(g) Boiling point:** The fixed temperature at which a liquid starts changing into gaseous state is called its boiling point. The temperature remains constant till the whole of the liquid changes into gaseous state.

**(h) Liquefaction:** Change of vapors on cooling to liquid is called liquefaction.

### Question 4 Differentiate between:

- (a) Solidification and condensation
- (b) Melting and boiling
- (c) Gas and vapor
- (d) Miscible and immiscible liquids.

#### Answer:

**(a) Solidification:** The process of changing liquid into a solid state by cooling is known as solidification.

Example: water → ice.

**Condensation:** The process of changing a gas or vapour state to a liquid state by cooling is known as condensation. Example: steam → water.

**(b) Melting:** The fixed temperature at which a solid changes into a liquid at a given pressure is called its melting point.

e.g. ice → water.

**Boiling:** The fixed temperature at which a liquid starts changing into gaseous state is called its boiling point.

E.g. water → steam.

**(c) Vaporization:** The process by which a substance changes from a liquid state to vapor state is called vaporization or evaporation.



e.g., Water changes into gaseous state on heating.

**Gas:** The substance which remains in the gaseous state under normal conditions of Temperature and pressure are called gases. e.g. Oxygen, hydrogen, nitrogen.

**(d) Miscible:** Liquids which mix with each other are called miscible liquids. Example: Water and alcohol.

**Immiscible liquids:** Liquids which do not mix with each other are called immiscible liquids. Examples are Water and oil.

**Question 5 Give reasons:**

**(a) How is Interconversions of states of matter different from chemical reaction ?**

**(b) Why a solid does not flow, but a liquid flows?**

**Answer:**

**(a)** During Interconversions of state of matter composition of substance remains the same matter changes from one state to another and back to the original state, while chemical reaction involves re-arrangement of the molecular structure and composition changes.

**(b)** In solids there is a strong force of attraction between the molecules and the space between them is very negligible. The molecules are therefore, not free to move. They merely vibrate about their mean positions. But in the case of liquids, the molecules are not very closely packed. They do not attract each other as strongly as the molecules of solids. Thus, the intermolecular spaces are larger and the molecules are able to move about more freely. This makes a liquid flow.

**Question 6.**

**How a liquid does changes into its gaseous state? Explain?**

**Answer:**

As a liquid is heated, its particles start gaining energy and move more vigorously which increases the gaps between the particles and decreasing the force of attraction. Ultimately a liquid changes into gaseous state.

**Question 7**

**Water cycle is an example of Interconversions of states of water. Explain.**

**Answer:**

Water from oceans, rivers, lakes from leaves of trees (transpiration) changes into vapors when temperature increases or evaporates and enters the atmosphere as clouds when temperature falls the vapors change into water and some of it in the form of snow fall on mountains and earth in the form of water and haies and this continues. Thus water cycle is example of interconversion of states of water.

**Question 8**

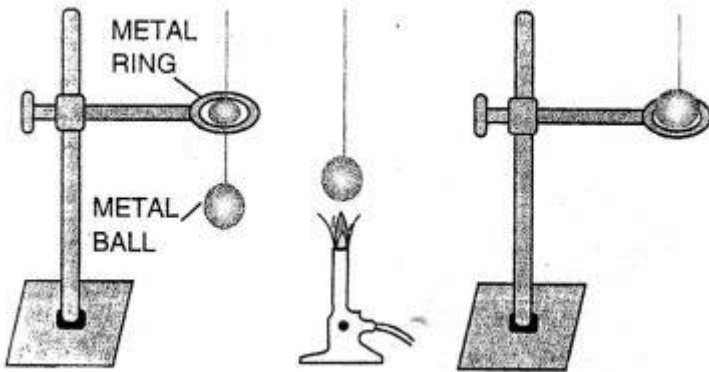
**What happens to a metal ball when it is heated? What does this show?**

**Answer:**

When metal ball is heated, it expands. This can be proved by following experiment: Take a metallic ring and ball. Try to pass the metal ball through the ring. The ball is able to pass through the ring. Now heat the metal ball for 5-6 minutes. The hot ball is not be able to pass through the ring. This shows that a solid expands on heating. Now cool the ball, it again passes through the ring. This



shows that a solid contracts on cooling.

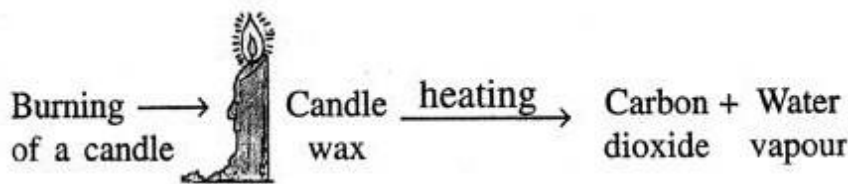


**Question 9**

**Why does a candle become smaller on burning with time?**

**Answer:**

On heating, candle wax melts, then turns into vapour which reacts with air to produce two new substances, carbon dioxide and water.



Therefore a candle on burning becomes smaller and smaller and the part of wax which has undergone chemical change cannot be recovered.

solid	liquid	gas
<ul style="list-style-type: none"> <li>● rigid</li> <li>● fixed shape</li> <li>● fixed volume</li> </ul>	<ul style="list-style-type: none"> <li>● not rigid</li> <li>● no fixed shape</li> <li>● fixed volume</li> </ul>	<ul style="list-style-type: none"> <li>● not rigid</li> <li>● no fixed shape</li> <li>● no fixed volume</li> </ul>
cannot be squashed	cannot be squashed	can be squashed