

MW  
15/7/21

EXERCISE - I

① Define matter.

Ans- Anything that has mass and occupies space is called matter.

Ex - Pen, Water, Book, Air, etc.

② What are the two main types of matter? Give two examples for each type.

Ans- The two main types of matter are -

→ Living Matter: Plants and animals.

→ Non-living Matter: Pen and book.

③ Differentiate between living and non-living matter.

Ans- <del>the</del> living matter	Non-living Matter
→ They can move.	→ They cannot move on their own.
→ They reproduce.	→ They do not reproduce.
→ They need food, water and oxygen to live.	→ They do not need food, water and oxygen to live.
→ They are natural only.	→ They can be both, natural and man-made.



④ Select natural and man-made matter from the following list:

Wood, plastic, silk, medicines, detergents, coal, water, ceramic, cotton, glass, nylon, fruits.

Ans- Natural Matter :

Wood, coal, water, cotton, fruits.

Man-Made Matter :

Plastic, silk, medicines, detergents, ceramic, glass, nylon.

### Extra Questions -

Q. Give an example to show that matter offers resistance.

Ans- It is easy to move our hand through water, but difficult to move our hand in glycerine. This shows that matter offers resistance.

Q. What do you mean by inter-molecular force of attraction?

Ans- The force of attraction that holds the molecules together is known as inter-molecular force of attraction.

C.W  
19.7.21

Important Notes :-

~~The electrons~~ Due to electrostatic force between the nucleus and the electrons, the electrons revolve around the nucleus.

H.W  
19.7.21

### EXERCISE - II

① Name the smallest particles from which matter is made up of.

Ans- The smallest particles from which matter is made up is atom.

⑧ Give reasons :

a) Liquids and gases flow but solids do not.

b) A gas fills up the space available to it.

c) The odour of scent spreads in a room.



d) We can walk through air.

e) Liquids have a definite volume but no definite shape.

f) When a teaspoon of sugar is added to half a glass of water and stirred, the water level in the glass remains unchanged.

g) When an empty glass jar is inverted over a gas jar containing a coloured gas, the gas also spreads into the empty jar.

h) A red ink drop added to a small amount of water in a glass turns the water red in some time.

Ans- a) The molecules of liquids and gases are far apart, i.e., they have more gaps, inter-molecular attraction force is very less as compared to solids. ~~Hence, liquids and gases can flow but solids cannot~~ whereas in solids, molecules are ~~less~~ closely packed and inter-molecular force of attraction is very strong. Hence, liquids and gases can flow, but solids do not flow.

b) In gases, the inter-molecular force of attraction is the least and the inter-molecular space is very large. Hence, a gas fills up the space available to it.



## Molecules of

c) Scent ~~or~~ fumes, being gases, fill the spaces between the air molecules and the molecules of air fill the spaces between scent molecules.

Due to this inter-mixing of scent molecules and air molecules, the odour of scent spreads in a room.

d) The molecules of air have high inter-molecular ~~spacing~~ spacing between them.  
This is why we can walk through air.

e) The molecules <sup>of</sup> liquid are loosely packed and have lesser inter-molecular <sup>attraction</sup> forces ~~than~~ than that of solid.

Hence, liquids have a definite volume but no definite ~~of~~ shape.

f) The sugar <sup>particles</sup> ~~molecules~~, when added to water, adjust between the water molecules as there is <sup>more</sup> ~~is~~ inter-molecular space between them.

This is why, when a teaspoon of sugar is added to half a glass of water and stirred, the water level in the glass remains unchanged.

g) When an empty gas jar is inverted over a gas jar containing a coloured gas, the gas also spreads into the empty jar ~~too~~ because, gases can flow in all directions and ~~spread~~ <sup>fills</sup> over the space available to it.

h) If we put a small amount of red ink <sup>in water</sup>, the water will turn red in colour after some time. This is because the particles of ink ~~mixes~~ (diffuses) with the particles of water slowly and continuously and turns the water red in colour.

⑦ Define:

a) Cohesive force - The force of attraction between particles of the same substance is called cohesive force.

b) ~~Diffusion~~ Diffusion - The phenomenon of intermixing of particles of one substance with another substance is called diffusion.



of Brownian movement - The ~~motion~~ zig-zag motion of particles suspended in a medium is called the ~~Bo~~ Brownian movement.

Cow  
22.7.21

Thermal expansion -

Thermal expansion is the tendency of matter to change in volume in response to absorption of heat.

Heating of ~~the~~ <sup>the</sup> water imparts heat energy to the water molecules which then begin to move.

This free movement of molecules causes the expansion of the liquid.

Melting Point -

The temperature at which a solid melts and becomes a liquid is the melting point.

Vaporization -

Conversion of a substance from the liquid or solid phase into gaseous (vapour) phase.

## EXERCISE - II

② Molecules are the smallest unit of matter. They exhibit all the properties of that kind of matter and is capable of independent existence.

③ Atoms may or may not have independent existence. While molecules have independent existence.

④ a) The molecules of matter are always in motion and attract each other with a force, and this force is called intermolecular force of attraction due to which they are held together.

b) The molecules can move only when there are gaps or space between them, this space is called intermolecular space.

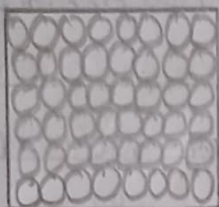
⑤ The three states of matter are:

- i) Solid State
- ii) Liquid State
- iii) Gaseous State.



### i) Solid state:

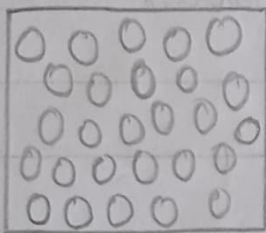
The molecules are very close to each other hence intermolecular spaces are small and intermolecular force is strong. Hence ~~the~~ solids have definite volume, rigid, retain definite shape and are incompressible.



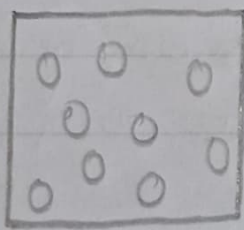
### ii) Liquid state:

The molecules are less closely packed have more intermolecular spaces than solid, less stronger forces than solids.

Hence liquids have definite volume but no definite shape. They take the shape of container in which they are put.



### iii) Gaseous state:





The molecules in the gases are far apart with weakest force of attraction. Hence gases have neither definite volume nor definite shape but easily compressible.

⑥ Substances that can flow are called fluids. Both gases and liquids are fluids, e.g. gases (Carbon dioxide, hydrogen), liquids (water, petrol and sulphuric acid).

⑦

Solids	Liquids	Gases
Common Salt	Milk	Oxygen
Wax	Mercury	H.P.G
Stone	Blood	Carbon Dioxide
Sugar	Coconut Oil	
Coal	Kerosene	
Butter		
Copper		

⑩ When we invert the bottle and blow air into the bottle through the side opening. It creates high pressure inside the bottle and the egg is kicked out of the bottle.



## Exercise - III

① When a substance is heated, it can cause:

① Interconversion of states of matter.

② Thermal expansion of the substance.

③ Chemical change.

② 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

③ a) Fusion -

The heating process by which a solid changes into the liquid state is called fusion.

b) Vapourisation -

The heating process by which a liquid changes into its vapour state is called vapourisation.

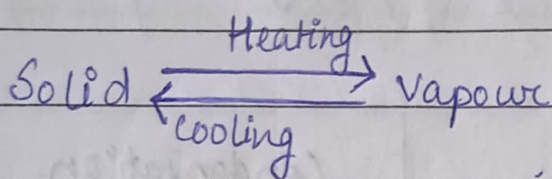


#### c) Condensation -

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 into vapours directly and vice-versa without passing through the liquid state is called sublimation.



#### e) Diffusion -

The phenomenon of inter-mixing 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.



↳ 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.

↳ Liquefaction -

Change of vapours on cooling to liquid is called liquefaction.

(4) a)

Solidification	Condensation
<ul style="list-style-type: none"><li>• The process of changing liquid into a solid state by cooling is known as solidification.</li><li>• E.g. water <math>\rightarrow</math> ice</li></ul>	<ul style="list-style-type: none"><li>• The process of changing a gas or vapour state to a liquid state by cooling is known as condensation.</li><li>• E.g. steam <math>\rightarrow</math> water</li></ul>

6)

### Melting

- The fixed temperature at which a solid changes into a liquid at a given pressure is called its melting point.
- E.g. Ice  $\rightarrow$  Water

### Boiling

- The fixed temperature at which a liquid starts changing into gaseous state is called its boiling point.
- E.g. Water  $\rightarrow$  Steam

7)

### Gas

- The substance which remain in the gaseous state under normal conditions of temperature and pressure are called gases.
- E.g. Oxygen, hydrogen, nitrogen

### Vapourisation

- The process by which a substance changes from a liquid state to vapour state is called vapourisation or evaporation.
- E.g. Water changes into gaseous state on heating.



d)

### Miscible liquids

- liquids which mix with each other are called miscible liquids.

- E.g. water and alcohol

### Immiscible liquids

- liquids which do not mix with each other are called immiscible liquids.

- E.g. water and oil

### interconversion

(5)

during ~~change~~ of states 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.

(6)

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.

(7) Water from ~~the~~ oceans, rivers, lakes, <sup>and</sup> from leaves of tree (transpiration) changes into vapour when temperature increases or evaporates and enters the atmosphere as clouds, when temperature falls the vapour changes into water and some of it in the form of snow fall on mountains and earth in the form of water and hail and this continues. Thus, water cycle is an ~~exp~~ example of inter-conversion of states ~~of~~ of water.

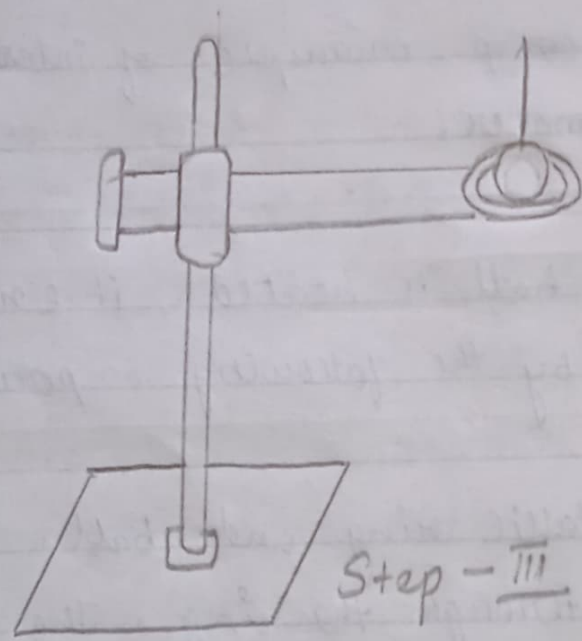
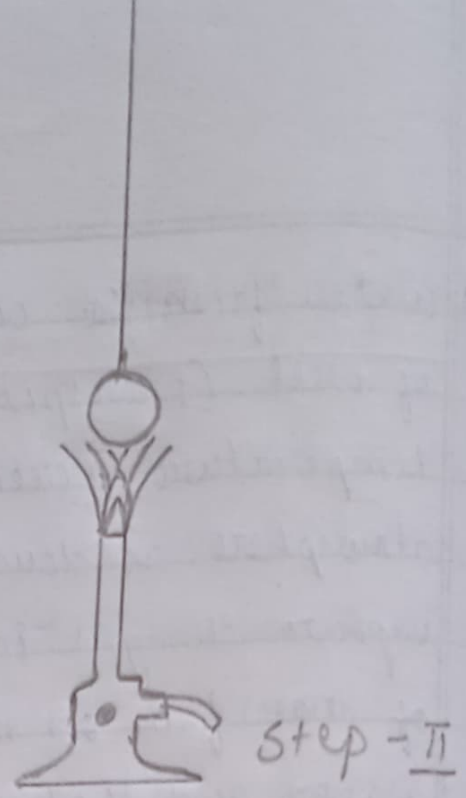
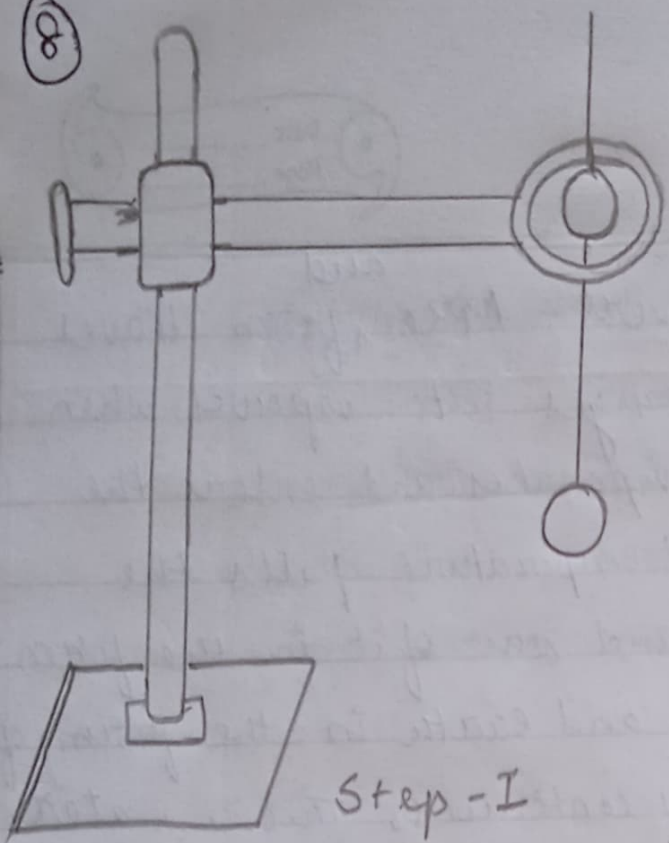
(8) When metal ball is heated, it expands. This can be proved by the following experiment:

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 solid expands on heating. Now, cool the ball. It again passes through the ring. This shows that a solid expands on heating and contracts on cooling.



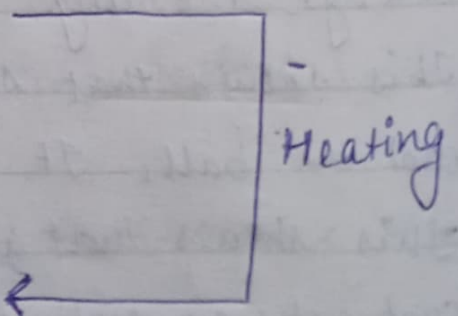
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9) Burning of a candle



Candle Wax



Carbon Dioxide + Water Vapour

(9) 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 part of wax which has undergone chemical change cannot be recovered.

### Objective Type Questions

(1) Fill in the blanks :-

a) Water is a matter because it has mass and occupies space.

b) Any matter which has a definite volume but no definite shape is called a liquid.

c) Liquids and gases can flow.

d) The molecules are at a greater distance in gases compared to liquids.

e) Water boils at 100 °C.



f) The physical state of a substance, which has neither fixed volume nor fixed shape is a gas.

② State whether true or false:-

a) Only water can exist in three different states. True

b) If the container in which a gas is collected has an opening, the gas will flow out and spread itself indefinitely. True

c) Solids have the largest inter-molecular space. False

d) There is no difference between evaporation and boiling. False

e) All solids, on heating, first change to liquid and then to the gaseous state. False

f) The intermolecular force of attraction is the weakest in gases. True

g) A gas has no free surface. True

(4) a) Particles move about very quickly but do not leave the surface. Liquid

b) Particles are quite close together. Solid

c) Particles are far apart and move in all directions. Gas

(5)

Column A

Column B

a) Solids

i) Can flow in all directions. (d)

b) Sublimation

ii) The temperature at which a liquid changes into its gaseous state. (c)

c) Boiling point

iii) Can have any no. of free surfaces. (a)

d) Gases

iv) Gaps between particles (e)

e) Intermolecular space.

v) Change of state directly from solid to gas. (b)



- ⑥
- a) Vapourisation
  - b) Sublimation
  - c) melting
  - d) boiling.

⑦ a) Substances which sublime. —

- 1. Naphthalene ~~carphor~~ ~~dry ice~~
- 2. camphor

b) Substances which do not change their state —

- 1. Oxygen
- 2. Hydrogen

c) Substances which ~~do not change their~~ are rigid and not compressible —

- 1. Glass
- 2. Stone

Multiple Choice Questions —

① which one is a kind of matter?

Ans — b) petroleum

② The state of matter which has no definite shape or volume is called:

Ans - e) gas

③ There are large intermolecular gaps in:

Ans - d) air

④ All kinds of matter:

Ans - a) occupy space and have a definite mass

⑤ A kind of matter which can sublime is:

Ans - c) iodine

⑥ A substance which can change its state:

Ans - b) oxygen

⑦ The process by which a solid changes into a liquid is called:

Ans - b) melting