

Hw  
29/12/21

## Exercise-1

1) Define matter?

Ans Anything which occupies space and has mass is called matter.

2) What are the two types of matter? Give two examples of each?

Ans Matter is of two types: Living thing, non living.

Living thing: Plants, animals.

Non-living  
Stone, pencil

3) Ans Living things are grow, breathe - eat, move, reproduce but non-living cannot. But plant is a living thing but it cannot move. Things like plastic, leather, paper are non-living things but plants, animals, humans, organisms, etc are living things.

4) Ans Natural wood, coal, water, cotton, fruits, silk, man-made plastic, medicines, detergents, ceramic, glass, nylon

Q/A

Exercise - II

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

A) The smallest particle from which matter is made up of is atom.

2) What are molecules?

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

3) Give one difference between atoms and molecules.

A) Atoms may or may not have independent existence. While molecules have independent existence.

4) Define:

a) Intermolecular force of attraction.

Ans 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) Intermolecular space.

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

5) Name the three states of matter and define them.

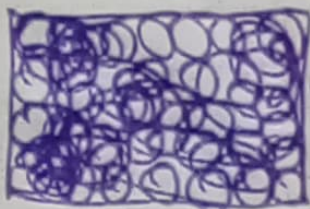
Ans The three states of matter are:

1) Solid

2) Liquid

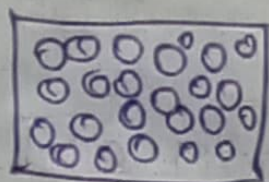
3) Gas

\* Solid State: The molecules are very close to each other hence intermolecular spaces are small and intermolecular force is strong.



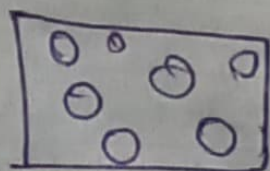
Hence solids have definite volume, rigid, retain definite shape and are incompressible.

**Liquids:** The molecules are less closely packed have more intermolecular spaces than solids, 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.

**Gases:**



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) What are fluids? Give two examples.

As 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) As	Solids	Liquids	Gas
	Common salt	Milk	Oxygen
	Wax	Mercury	L.P.G
	stone	Blood	(Carbon dioxide)
	Sugar	Coconut oil	
	Coal	kerosene	
	Butter		
	Copper		

8) Give reasons:

As the molecules of liquids and gases are far apart i.e. have more gaps, intermolecular attraction force is very less as compared to solids, hence liquids and gases can flow but solids do not as gaps in solid molecules is less and molecular force of attraction very strong.

b) As Intermolecular force of attraction is least and intermolecular spaces are very large, hence gases can fill up the space available to them.

c) As Scent fumes (molecules) being gasses fill the spaces between air molecules ~~due to~~ and the molecules of air fill the spaces between scent molecules due to diffusion, fumes spread into a room.

OR

Due to inter-mixing of scent molecules and air molecules, scent fumes spread into the room.

d) As The molecules of air are far apart i.e. large gaps and we can walk through air easily.

e) As The molecules of liquid are loosely packed and intermolecular force of attraction is small but number of molecules in it remain the same hence liquids have definite volume but no definite shape.

f) As When a teaspoon of sugar is

added to half a glass of water and stirred, the water level in the glass remains unchanged because sugar particles are adjusted between the water molecules as intermolecular gaps are more in liquids.

g) This is because Gases can diffuse or flow in all directions.

h) When we put a drop of red ink in a glass of water, its particles diffuse with particles of water slowly but continuously and the water turns red.

a) Define:

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

b) diffusion: The phenomenon of inter-mixing of particles of one kind with another kind is called diffusion.



e) Brownian movement: The zig-zag motion of particles suspended in a medium is called Brownian movement.

10) Why is an egg kicked out of bottle when air is blown inside the bottle?

Ans 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) State the three effects of heat on matter.

Ans When a substance is heated, it can cause.

- 1) Inter-conversion of states of matter.
- 2) Thermal expansion of the substance.
- 3) Chemical change.

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

Two conditions are:

- 1) Change in temperature.
- 2) By applying pressure.

a) Fusion: The heating process by which a solid changes into the liquid state.

b) Vaporization: The heating process by which a liquid changes into its vapour state.

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

Solid  $\xrightarrow{\text{heating}}$  Vapour  
 $\xleftarrow{\text{cooling}}$

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.

g) Boiling point: The fixed temperature at which a ~~solid~~ 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: The change of vapours on cooling to liquid is called liquefaction.

## 4) Differentiate between:

a) Solidification and condensation.

As Solidification

\* The process of changing liquid into solid state by cooling.

\* Ex. Water to ice

Condensation

\* The process of changing a gas or vapour state to a liquid state by cooling.

\* Ex. Steam to water

b) Melting

\* The fixed temperature at which a solid changes into a liquid at a given pressure.

\* Ex. Ice to water

Boiling

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

Ex. Water - Steam

c) Vapour

\* The process by which a substance changes from a liquid state to vapour state is called vapourisation.

Ex. Water to Gaseous

Gas

The substance which remains in the gaseous state under normal condition of temperature and pressure are called gases.

Ex. Oxygen, hydrogen, nitrogen.

## d) miscible and immiscible liquids

Miscible	Immiscible
Liquids which mix with each other are called miscible liquids. <u>Ex</u> Water and Alcohols.	Liquids which do not mix with each other are called immiscible liquids. <u>Ex</u> Water and Oil.

5) As ~~how~~ During inter-conversion of state of matter composition of substance remains the same, ~~it~~ changes from one state to another and back to the original state, while chemical reaction involves rearrangement of the molecular structure and composition changes.

Extra  
Q Why a solid doesn't flow but liquid flows?

As In solids there is a strong force of attraction between the molecules and space between them is very negligible. The molecules are therefore not free to move. They ~~are~~ 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 solid. Thus, the intermolecular spaces are larger and the

molecules are move about more freely. This makes a liquid flow.

Q) 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.

Q) Water from oceans, rivers, lakes, from leaves ~~from~~ of trees (transpiration) changes into vapours when temperature increases or evaporates and enters the atmosphere as clouds. When temperature ~~is~~ falls, the vapour change into water and some of it in the form of snow fall on mountains and earth in the form of water and hales and this continuous. Thus, water cycle is example of inter-conversion of states of water.

Q) When metal ball is heated it expands. This can be proved by

following experiments. 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~~ heat the metal for 5 to 6 mins the hot ball is not able to pass through ring. This shows that a solid expands on heating. Now cool the ball it again passes through ring. This shows that a solid contracts on cooling.

9

a) A on heating candle wax melts, then turns into vapour which reacts with air to produce two 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.

### Objective type Questions

1) Fill in the blanks.

- Water is matter because it has mass and occupies space.
- Any matter which has a definite volume but no definite shape is called a liquid.
- Liquids and gases can flow.
- The molecules are at a greater distance in gases compared to liquids.
- Water boils at 100°C.
- The physical state of a substance, which has neither fixed volume nor fixed shape is a gas.



2) Write whether the following statements are true or false.

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

b) If a 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

Correctans: Solids have the very small (negligible) inter-molecular space.

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

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

As false :- Few solids, on heating first change to the liquid and then to the gaseous state always.

f) The inter-molecular 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. Solids

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

5) Match the following:

Column A

a) Solids

b) Sublimation

c) Boiling point

d) Gases

e) Intermolecular space

Column B

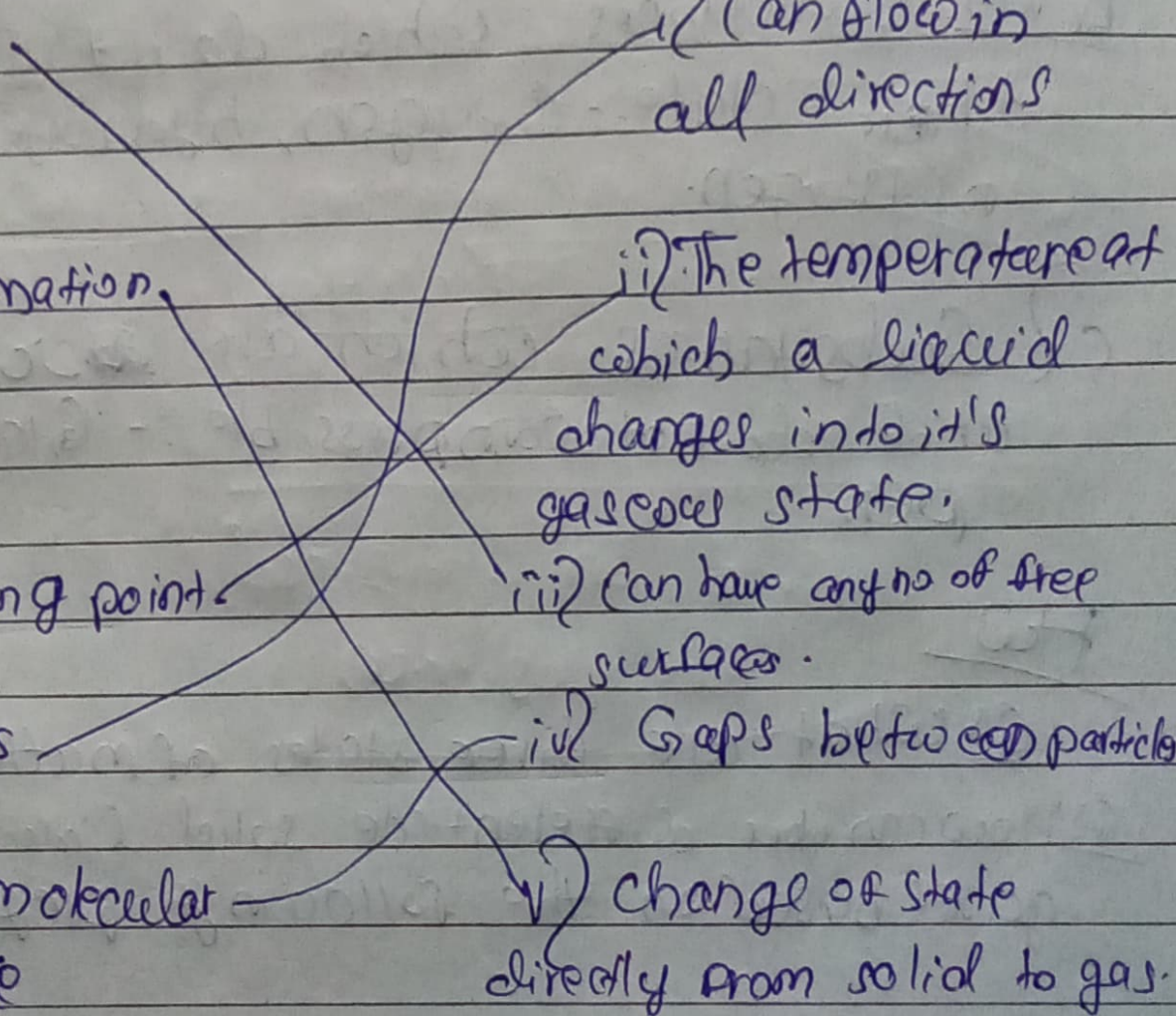
i) Can flow in all directions

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

iii) Can have any no of free surfaces.

iv) Gaps between particles

v) Change of state directly from solid to gas.



⑥ a) Formation of water vapour from water is vaporization.

b) Disappearance of camphor is sublimation.

c) Conversion of ice into water is melting.

d) Conversion of water into steam is boiling.

⑦ a) Substances which sublime: - Naphthalene, camphor, dry ice.

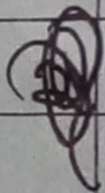
b) Substances which do not change their state: - Oxygen, hydrogen, nitrogen.

c) Substances which are rigid and do not compressible: - Glass, Stone, pen

# MCCQs

1) which one is a kind of matter?

A. b? petroleum



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

A) c) gas

3) There are large intermolecular gaps in,

A) d) air

4) All kinds of matter:

A) c) can change their states.

5) A kind of matter which can sublimate:

A) iodine.

6) A substance which can change its state:

A) b) oxygen

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

A) b) melting.

## Hw

Q List the characteristics of pure substances.

A They are made up of only one type of atom (elements) or molecules (compound). They are perfectly homogeneous nature. They have a fixed composition and density, boiling point, melting point, chemical and physical properties.

Q Differentiate between, i) elements and compound, ii) homogeneous and heterogeneous mixture.

A) elements

- \* Millions of substances
- \* Made up of millions of substances with basis on limited.

compounds

- \* made up ~~of~~ millions of elements.
- \* water, sugar, salt, glucose.

ii) A) homogenous

- \* mixture in which the substances ~~cannot~~ be uniformly distributed.
- \* Tea, coffee, honey, milk, blood

heterogenous

- \* mixture in which the substances ~~cannot~~ be uniformly distributed.
- \* oil and water, Assorted dry fruits.

Q/A of ch-3

MCQS

1) which one is a kind of matter?

A) b) petroleum