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## Exercise II

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

Ans→ The smallest particle from which matter is made up is atom.

2) What are molecules?

Ans→ Molecules are the smallest unit of matter. They exhibit all the properties of that kind of matter and is capable of indepent existence.

3) Give one difference between atoms and molecules.

Ans→ Atoms may or may not have independent existance. While molecules have independent existance.

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4) Define:

a) Intermolecular force of attraction.

b) Intermolecular space.

Ans→ 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) Name three states of matter and define them.

Ans→ The three states of matter are:

1) Solid state
2) Liquid State
3) Gases

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

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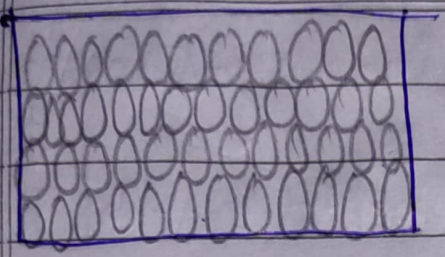
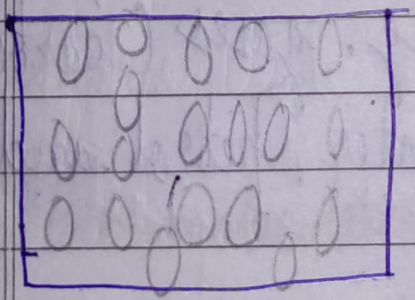


Hence solids have definite volume, rigid, retain definite shape and incompressible.

Liquids → The molecules are less closely packed have more intermolecular spaces than solids. But, less stronger force than solids.



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

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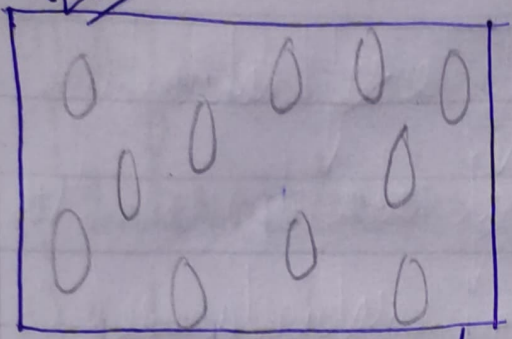

Gases → The molecules in the gases are far apart, with weakest force of attraction. Hence gases have neither definite volume nor definite shape but easily compressible.

6) What are fluids ? Give two examples.

Ans → 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) Classify the following into solids, liquids and gases.

Oxygen, milk, common salt, wax, stone, L.P.G, carbon dioxide, sugar, mercury, coal, blood, butter, copper, coconut, oil and kerosene.

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Ans → 

| Solids | Liquids | Gases |
|---|---|---|
| Common salt | Milk | Oxygen |
| Wax | Mercury | L.P.G |
| Stone | Blood | Carbon dioxide |
| Sugar | Coconut oil | |
| Coal | Kerosene | |
| Butter | | |
| Copper | | |

8) a) → The molecules of liquids and gases are far apart i.e. they have more gaps, intermolecular force of attraction is very less as compared to solids, hence liquids and gases can flow but solids do not as gaps in solids molecules is less and

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molecular force of attraction is very strong.
b) Intermolecular force of attraction is least and intermolecular spaces are very large, hence gases can fill up the space available on them.
c) Scent fumes (molecules) of air fill the spaces between scent molecules due to diffusion, fumes spread into a room.
d) The molecules of air are far apart i.e. large gaps and we can walk through air easily.
e) 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) When a teaspoon of sugar is added to half a glass of water and stirred, the water level in glass remains unchanged because the sugar particles are adjusted between the water molecules as inter-molecular

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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 continuosly and the water turns red

9) Define: a) Cohesive force, b) diffusion, c) Brownian Movement

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

b) Diffusion → The phenomenon of intermixing

of particles of one kind with another kind is called diffusion.

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

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

Ans → When we ~~convert~~ invert the bottle and blow air into the bottle throw the side opening it creates high pressure inside the bottles 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) Interconversion of states of matter.
2) Thermal expansion of the substance.
3) Chemical change.

2) a) Define: Interconversion of states of matter.

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

Ans+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 solid changes into liquid state is called fusion.

b) Vaporisation → The heating process by which a liquid changes into its vapour state is called vaporisation.

c) Condensation → The process by which a substance in gaseous state changes to its liquid state is called condensation.

d) Sublimation → The change of solid on heating to vapours state to a ~~liquid~~ solid state by colling is known as ~~condensation. Example → steam → water~~ 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 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) Liquefication: Change of vapours on cooling to liquid is called liquefication.

4) Differentiate between:

a) Solidification and Condensation

b) Melting and Boiling

c) Gas and Vapour

d) Miscible and Immiscible liquids

a) Solidification: The process of changing liquid into solid state by cooling is known as solidification. Exc → water → ice.

Condensation: The process of changing a gas or vapour state to a liquid state by cooling is knowing as condensation. Exc: ice → Water.

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

Exc: Water + Steam

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

c) Vapourisation: The process by which a substance changes from a liquid state to vapour state is called vaporisation or evaporation.

Exc → Water changes into gaseous state on heating.

Gas → The substance which remain in the gaseous

state under normal conditions of temperature and pressure are called gases.

d) Miscible: Liquids which mix with each other are called miscible liquids. Exc→ Water and alcohol.

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

5) Give reasons:

a) How is interconversion of states of matter different from chemical reactions?

b) Why a solid does not flow, but liquids flow?

Ans-1a) During interconversion of state of matter composition of substance remains the same matter changes from one state to another and back to ~~of substance remains the~~ original state, while chemical reaction involes re-arrangement of the molecular structure and composition changes.

b) In solids there is a very 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 freely. Thus, the intermolecular forces makes the liquid flow.

6) How does a liquid changes into its gaseous state? Explain?

Ans→ As a liquid is heated. Its particles starts 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 cycle is an example of interconversion of states of matter. Explain.

Ans→ Water from oceans, rivers, lakes from leaves of trees (transpiration) changes into vapours when temperature increases or

evaporates and enters the atmosphere as clouds when temperature falls the vapours changes 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 continues. This water cycle is example of interconversion of states of water.

8) What happens to a metal ball when it is heated? What does this shows?

Ans→ When a metal ball is heated it expands. This can be proved by following experiment: Take a metallic ring ball. 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 water It again passes through the ring. This shows that a solid contacts on cooling.

9) Why does a candle become smaller on

burning with time?

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

Burning a candle → Candle Wax ~~Heating~~ Carbon Dioxide + Water Vapour.

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.

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 great distance in gases compared to liquids.

e) Water boils at 100°C.

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

2) a) True
b) True
c) False
d) False
e) False
f) True
g) True

3) 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

4)

| Column A | Column B |
| --- | --- |
| i) Solids | a) Can flow in all directions. |
| ii) Sublimation | b) Change of state from solid to gas. |
| iii) Boiling | c) Can have any number of free surfaces. |
| iv) Gases | d) Gaps between particles. |

v) Intermolecular space

e) Change of state directly from solid to gas.

i → c, ii → e, iii → b, iv → a, v → d.

5) a) Formation of water vapour from water is vaporisation.

b) Disappearence of camphor is sublimation.

c) Conversion of ice water is melting.

d) Conversion of water into steam is boiling.

6) a) Naphthalene, camphor, dry ice

b) Oxygen, hydrogen, Nitrogen

c) Glass, stone, pen.

2) A substance of a definite composition which has consistent properties throught each part of the object, that is called pure substance.

* Pure substances are of two types:

1) Elements

2) Compounds

* Pure substances have fixed melting and boiling point.

* They have uniform composition, it means that, they are uniformly distributed and hence they are homogeneous.

* Pure substances have

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| 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | | | | | |

characteristics colour, odour and ~~taste~~ taste.

09 b) i) Elements → The substances which are made

10 of only one kind of atom, that is known as

11 elements.

12 Compounds → The substances which are made of

01 only one kind of molecule, that is known as

02 compounds.

03 ii) Homogeneous Mixture → The Mixture in

04 which the substances are uniformly distributed

05 those mixtures are known as homogeneous

06 mixture.

07 Heterogeneous Mixture → The Mixture in which

the substances are not uniformly distributed and can be broken into simpler substances and can be

distribute easily, those mixtures are known as heterogeneous mixture.