Exercise - 11

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

Ans- The smallest particle from which matter is ~~of~~ 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 independent existence

3. Give one difference between atoms and molecules.

Ans- Atoms may or may not have independent existance. While molecules have independent existence.

4. Define :

(a) Intermolecular force of attraction

(b) Intermolecular space

Ans-(a) The ~~intermolecular~~ molecules of matter are always in motion and attract each other with a forces and this force is called intermolecular forces 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 ~~intermol space~~ intermolecular space.

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

Ans-The three states of matter are:

1. Solid states
2. liquids
3. Gases:

Solid states: The molecules are very close to each other hence intermodular spaces are small and intermodular force is ~~strong~~ strong.

Hence solids have definite volume, ~~it~~ rigid, retain definite shape and are incompressible.
Liquids: The molecules are less closely packed have more intermolecular spaces than solid, less, ~~str~~ 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 attraction. Hence gases have neither definite volume nor definite shape but easily compressible.

6. What are fluids? Give two examples

Ans- Substances that can be flow are called fluids. Both ~~gass~~ 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, ~~eab~~ carbon-dioxide, sugar, mercury, coal, blood, butter, copper, coconut oil, kerosene

Ans- Solids | Liquids | Gas

Solids	Liquids	Gas
Common salt	Milk	Oxygen
Wax	Mercury	L.P.G.
Stone	Blood	Carbon d. oxide
Sugar	Coconut Oil	
Coal	Kerosene	
Butter		
Copper		

8. Give reasons:

a) Liquids and gases flow but solids do not

Ans- 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) A gas fills up the space available to ...

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

c) The odour of scent ~~spra~~ spreads in a room

Ans- Scent fumes (molecules) being a gases fill the spaces between air molecules and ~~it~~ 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) We can walk through air.

Ans)- The molecules of air are far apart, i.e large gaps and we can walk through air easily.

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

Ans- The molecules of liquids 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 the glass remains unchanged.

Ans- When a teaspoon of sugar is added to half a glass of water and stirred, the water level in the glass remains unchanged because the sugar ~~part~~ particles are adjusted between the water molecules as inter-molecular gaps are more in liquids.

g) When an empty gas jar is inverted over a gas jar containing a coloured

gas, the gas also spreads into the emty jar

Ans- ~~When~~ This is because Gases can diffuse or flow in all directions.

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

Ans- 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 turns red.

9. Define:

a) Cohensive force

Ans- The force of attraction between particles of the same substance is called cohensive force.

b) Diffusion

Ans- The phenomenon of intermixing of particles of one kind with ~~an~~ 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 inverl 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.

1. State the three ~~of~~ effects of ~~on~~ heating on matter.

Ans- When a substance is heated, it can cause.

1. ~~Int~~ Interconversion of states of matter.

2. Thermal expansion of the substance
3. Chemical change.

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

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

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

b) ans- Two conditions are:
1. change in temperature
2. By applying pressure.

3. Define the following terms:

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

b) Vaporisation: The heating process by which a liquid changes into its

vapour state is called vapourisation.

Condensation - The process by which a substances in gaseous state changes into its liquid state is called condensation.

d) Sublimation : The change of solid on heating to vapours directly and vice-versa ~~without~~ without passing through the liquid state is called sublimation.

Solid $\underset{\text{cooling}}{\overset{\text{heating}}{\rightleftharpoons}}$ Vapour

e) Diffusion : The phenomenon of intermixing ~~on~~ 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 ~~point~~ temperature at which a liquid starts changing into ~~gases~~ gaseous ~~sta~~ state is called its boiling point. The temperature remains constant till the whole of the liquid changes into gaseous state.

h) Liquefaction - Change of vapours on cooling to liquid is called liquefaction

Q4. Differentiate between:

a) Solidification and condensation.
b) Melting and boiling
c) Gas and vapour
d) Miscible ~~liq~~ and immiscible liquids.

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

Example: ✗ Water → ~~Ice~~ 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 ~~temperature~~ pressure is called its melting point.
eg. 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) Vapourisation: The ~~process~~ 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.

Gas- The substances which remain in the gaseous state under normal conditions of temperature and ~~gases~~ 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. Example Water and oil.

5 Give reasons:
(a) How is interconversion of states of matter different from chemical reaction?
(b) Why a solid does not flow, but a liquid flows?

Ans- (a) During interconversion of state of matter composition of substances 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~~ 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.

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

Ans- As a liquid is heated, its par-

ticles 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 inter-conversion of states of water. Explain.

Ans- Water from oceans, rivers, lakes from leaves of trees (transpiration) changes ~~into~~ into vapours when temperature increases or evaporates and enters the atomsphere as clouds when temperature falls the vapours 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 continues. Thus water cycle is example of interconversion of states of water.

8. What happens to metal ball ball when it is heated? What does this show?

Ans- When metal ball is heated; it expands. This can be proved by the following experiment:

Take a ~~metallic~~ metallic ring and ball. ~~Th try~~ 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 contacts on cooling.

q. Why does a candle become smaller on burning with time?

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

Burning of a candle ⟶ Candle Wax $\xrightarrow{\text{heating}}$ Carbon dioxide + Water Vapour

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

Elements, Compounds, Symbols and formulae

Date
Page

* Physical properties - color, texture, shape, size, melting point, boiling point, density, solubility

Chemical properties - toxicity, acidity, basicity, combustion, chemical stability.

Characteristics of pure substances

- Pure substances have a perfectly homogeneous nature.
- Pure substances are made up of only one type of atoms (elements) or molecules (compounds).
- Pure substances have a fixed composition.
- Pure substances have a fixed density, melting point, boiling point ~~this~~ physical and chemical properties.

2. Elements - An element is defined as a pure substance made up of only one kind of atoms that cannot be converted into anything simpler than itself by any physical and chemical process.

Compound - Compound are made up of only one kind of molecule

3 Homogeneous Mixture - It is the mixture in which the components are uniformly distributed throughout
Its volume and cannot be seen separately

Heterogeneous # Mixture - It is the mixture In which the components are not uniformly distributed throughout its volume and can be easily seen separately.