CCCV
26/09/23

Burning candle

Chemical change-
wax is the fuel that produces heat and light, carbon dioxide and water vapour

Physical change-
wax melts when it gets hot and solidifies when it gets cold

Exercise -11

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

A= The smallest particle from which matter is made up 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 existance. While molecules have independent existence.

4) Define:

a) Intermolecular force of attraction.

b) Intermolecular space.

A: 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 the three states of matter and define them

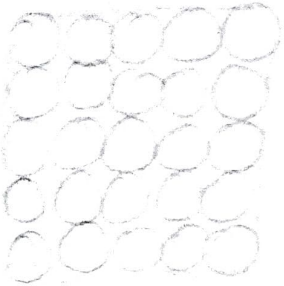
A= The three states of matter are:

1) Solid State

2) Liquids

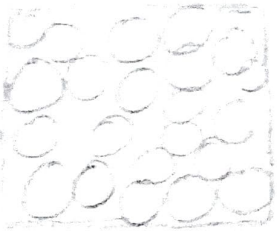
3) Gases:

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

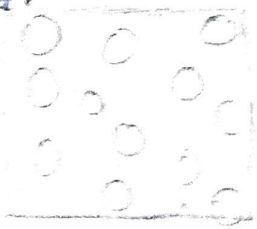


Hence solids have definite volume, rigid, retain definite shape and are incompressible.

Liquids: The molecules are less closely packed have more intermolecular spaces that 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.



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

Q) What are fluids? Give two examples

A: 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).

Q) 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, kerosene.

A:

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

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

A: 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.
A) When a substance is heated, it can cause.
1) Interconversion of states of matter.
2) Thermal expansion of the substance.
3) Chemical change.

2) Define: interconverting states of matter
b) What are the two conditions for the interconversion of states of matter?
A: The process by which matter changes from one state to another and back to its original state, without any change in its chemical composition.
b) Two conditions are:
1) Change in temperature
2) By applying pressure

3) Define the following terms:
a) Fusion
b) Vaporisation
c) Condition
d) Sublimation
e) Diffusion
f) Melting point
g) Boiling Point
h) Liquefaction

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 vaporisation.

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

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

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

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 vapours on cooling to liquid is called liquefaction.

i) Differentiate between:

a) Solidification and condensation

b) Melting and boiling

c) Gas and vapour

d) Miscible and immiscible liquids.

A: a) Solidification: The process of changing liquids into a solid state by cooling is known as solidification.

eg. Water → ice

Condensation: The process of changing liquid into a solid 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.

eg. ice → water.

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

eg. water → steam.

g) Vaporisation: The process by which a substance changes from a liquids state to vapour state is called vaporisation or evaporation.

eg. 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.

eg. Oxygen, hydrogen, nitrogen.

d) Miscible: Liquids which mix with each other are called miscible liquids. Examples: 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?

A=) During interconversion of state matter composition of substance remains the same matter changes from one state to another and back to the original state, while chemical reaction involves rearrangement 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 only vibrate about there mean positions. But in the case of liquids, 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.

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

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

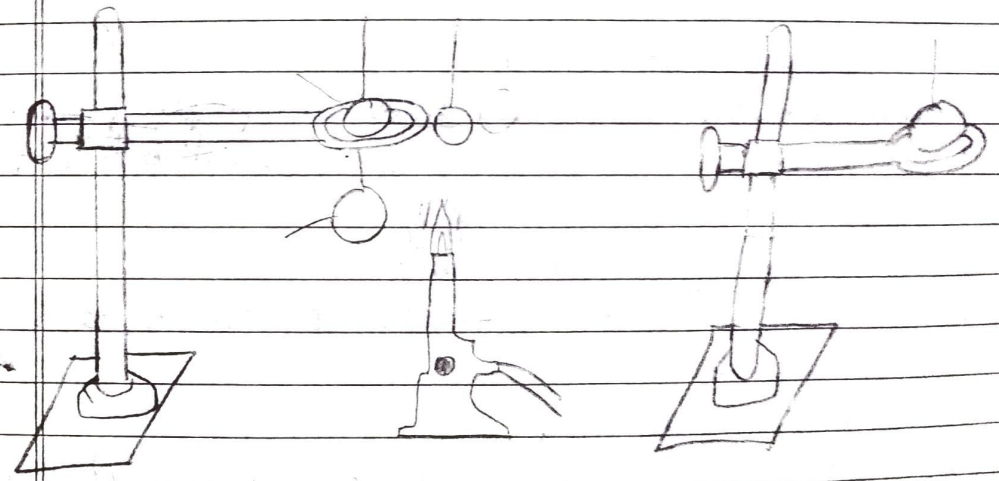
7) Water cycle is an example of interconversion of states of water. Explain.

- Water from oceans, rivers, lakes from leaves & trees. (Transpiration) changes into vapours when temperature increases or evaporates and enters the atmosphere 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 hail and this continues. Thus water cycle is example of

interconversion of states of water.

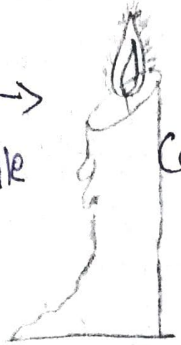
8) What happens to metal ball when it is heated? What does this shows?

A= 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.



Q) Why does a candle become smaller on burning with time?

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



Burning of a candle → Candle wax —heating→ Carbon Dioxide + Water Vapour

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

Objective Q/A

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 gasses 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.

2a) Only water can exist in three different states. True

b) If the container in which a gas is collected has an opening, the gases 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 always. False

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

g) A gas has no free surface. True.

3a) 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: Gases

4) 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 number of free surfaces.
iv) Gaps between particles.
v) Change of state from solid to gas.

5)
a) Evaporation of water vapour from water. Vaporization
b) Disappearance of camphore when exposed to air. Sublimation
c) Conversion of ice into water. Melting
d) Conversion of water into steam. Boiling

6) a) Substance which sublime. Naphthalene, camphore, dry ice.
b) Substances which do not change their states. Oxygen, hydrogen, nitrogen
c) Substances which are rigid and not compressible. Glass, stone, pen

MCQ

1) Which one is a kind of matter:
b) Petroleum

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

3) There are large intermolecular gaps in
d) air

4) All kinds of matter
a) occupy space and have a definite mass

5) A kind of matter which can sublime is
d) Iodine

6) A substance which can change its state
b) oxygen

7) The process by which a solid changes into a liquid called
b) melting

List the
b) Characteristics of pure substances.

A= Characteristics of pure substances.

- They are of two types, i.e., elements and compounds.
- Elements are made up of only one kind of atoms and compounds are made up of only one kind of molecules
- They have uniform composition throughout i.e they are homogeneous.
- They have a definite set of physical and chemical properties.
- They have fixed melting and boiling points.

Pure substances have characteristic colour, odour as taste

- Pure substances cannot be broken into simpler substances by any physical means

2) elements and compounds

i) Elements are the basic substances from which all other substances are made.
A compound is a chemical substance composed of many identical molecules.

homogeneous and heterogeneous are mixtures

ii) A mixture is which constituents are distributed uniformly is called homogeneous, such as salt in water, otherwise it is called heterogeneous, such as sand in water.