20.7.21

① Melting point :- The temperature at which a solid melts and becomes a liquid is the melting point.

② Boiling point :- The temperature at which a liquid boils and turns to vapour.

* Direct conversion from solid to gas is called sublimation.
* The process in which the water vapour directly to water is called condensation.

Exercise - II

Q1) Name the smallest particle which matter is made up.
ans. The smallest particle from which matter is made up is atom.

Q2) What are molecules?
ans. Molecules are the smallest unit of matter. They exibit all the properties of that kind of matter and is capable of independent existance.

Q3) Give one difference between atoms and molecule.
ans. Atoms may or may not have independent existance. While molecules have independent existance.

4) Define:

a) Intermolecular force of attraction

b) Intermolecular space.

answer

a) Molecules are held together by a force of attraction that exist between them. This force is called intermolecular force of attraction.

b) The space between two molecule is called intermolecular space.

Qii) Name three states of matter and define them.

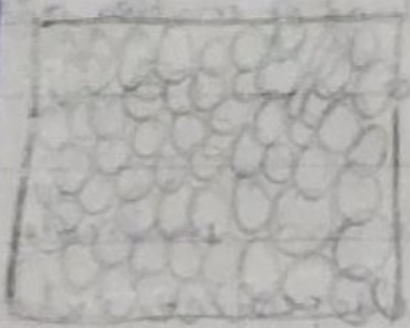
Ans- Three states of matter are:

i) Solid

ii) liquid

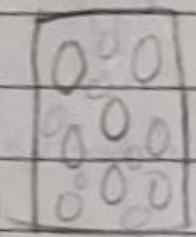
iii) gas

Solid: In this the molecule are very close to each other here the intermolecular space is negligible and the intermolecular force of attraction is large. So for that reason solid has a fixed shape and size, volume and rigid.

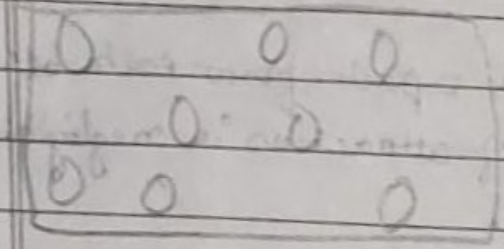


The molecules in solid states.

Liquids: The molecules in liquid are less closely packed and have more intermolecular space, and that are less strongly intermolecular force between molecule.
• Liquid have a definite volume but not shape. They take the shape of the container in which they are put



gases: The molecules in the gases are far apart with least intermolecular forces of attrac. They have the most intermolecular space. Thus, gase do not have a neither a definite volume nor definite shape but easily compressible.



Q) What are fluids? Give two examples
ans. The substances that can flow is called fluids. Both gases and liquid are fluids. Ex - hydrogen, water

07) Classify the followings into solid, liquid and gases.
oxygen, milk, common salt, sugar, wax, stone, L.P.G, Carbon dioxide, mercury, coal, blood, butter, copper, coconut oil, kerosene.

ans

solids	liquid	~~gases~~	gases
common salt	milk		oxygen
wax	mercury		L.P.G
~~dengut~~ Stone	Blood		Carbondioxide
Sugar	coconut oil		
coal	kerosene		
butter			
copper			

8) give reasons:

a) we can walk through air.
ans The molecules of air lie far apart from each other so for that reason the force of attraction is negligible and we can walk through air.

b) Liquid have a definite volume but no definite shape.
ans the ~~molecule~~ molecules in solid are not very closely packed. They do not attract each other as strongly as the molecules in solid. Thus liquid 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.

ans. The particles of sugar are adjusted between the intermolecular space. ~~that too~~ So for that reason the water level in the glass remain same.

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

ans- As the force of attraction is very low in gas they spread every where.

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

ans- because the particles of red ink diffuse with water slowly but continously so for that reson water turns red.

Exercise - III

1) State 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

Q2) Define

a) Interconversion of states of matter.

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

answer

a) The process by which matter changes from one state to another and back to original state, with any change in its chemical composition.

b) Two condition are:

1) change in temperature

2) By applying

Q3 Define: a) fusion

b) vaporisation

c) condensation

d) sublimation

e) Diffusion

f) melting point

g) Boiling point

h) Liquefaction.

answer

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

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

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 vapours directly and vice-versa without passing through the 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 remain 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.

Q4) Differentiate between:

a) Solidification and condensation.

ans Solidification: The process of changing liquid into a state by cooling is known as solidification.
eg - water → ice.

condensation: The process of changing a gas or vapour state to a liquid state by cooling is known as condensation.
eg - steam → water.

b) Melting and boiling

ans Melting: The fixed temperature at which a solid changes into liquid at a given 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.
eg - water → ~~steam~~ steam

c) Vaporisation: The process by which a substance changes from a liquid 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 condition of temperature and pressure are called gases.
eg - oxygen, hydrogen, nitrogen.

d) Miscible and immiscible liquids :

ans- Miscible : Liquids which mix with each other are called miscible liquids. Example : water, alcohol

Immiscible liquids : Liquids which do not mix with each other are called immiscible liquids. Eg - water, oil.

Q5) Give reasons

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

ans- During ~~interconv~~ interconversion 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~~ re-arrangement of the molecular structure and composition changes.

~~b) they~~ a

Q6 How does a liquid changes into its gaseous state? Explain?

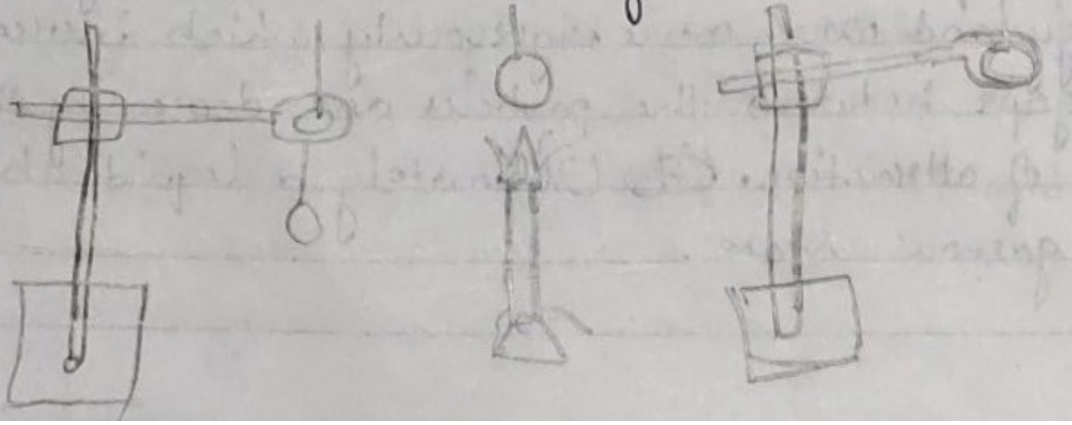
ans- As a liquid is heated, its particles start gaining energy and move more vigorously which increases the gaps between the particles and decreasing the force of attraction. ~~(1)~~ Ultimately a liquid changes into gaseous state.

7 Water cycle is an example of interconversion of states of water. explain.

ans Water from oceans, rivers, lakes from leaves of trees 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 ~~continues~~ mountains and Earth in the forms of water and lakes and this continues. Thus water cycle is example of interconversion of states of water.

8 What happens to a metal 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 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 expands on heating.



Objective type question

Q1) 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~~ Shape is called a liquid.

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

Q2 Write 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 intermolecular space. False

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

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

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

g) A gas has no free surface. True

23 Write solid, Liquid or gas.

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

b) Particles are quite close ~~to~~ together. Solid.

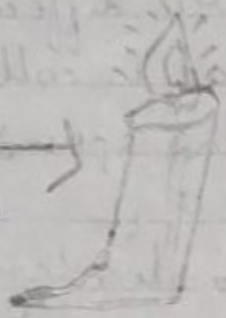
c) Particles are far apart and move in all directions. Gas.

Long Question

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

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

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



Burning a candle → Candle wax —heating→ Carbon dioxide + water vapour.

Objective questions

(1) ~~Math~~ Match the following:

a) Solids — can ~~have~~ have any number of free surface.
b) Sublimation — change of state from solid to gas.
c) Boiling point — The temperature at which a liquid changes into its gaseous state.
d) Gases - can flow in all directions.
e) Intermolecular space - Gaps between particles.

Q5 Name the phenomenon which causes the following changes:

a) Formation of water vapour from water. Sublimation
b) Disappearence of camphor. Sublimation.
c) Conversion of ice into water is. Melting
d) Conversion of water into steam is boiling.

Q6 Give two examples.
a) Substances which sublime. Champhor, dry ice
b) Substances which do not change their states.
Oxygen, nitrogen
c) Substances which are rigid and not compressible. glass, stone.

Multiple choice question.

1) which one is a kind of matter :
a) light
b) petroleum
c) sound
d) heat

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

3) There is a large intermolecular gaps in
ans air

4) All kinds of matter
ans occupy space and have a definite shape.

5) A kind of matter which can sublime is
ans iodine

6) A substance which can change its state
ans oxygen

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

ans- melting.

HW

Q1) List the characteristics of pure substances.

ans- * Pure substances have a perfectly homogenous nature
* Pure substances are made of only one atom or molecule.
* Pure substance has a fixed composition.
* Pure substances have a fixed density, melting point, boiling point, physical and chemical point.

Difference between

(i)

elements	compound
* Smallest particle is atom	* Smallest particle is molecule.
* It is made up of only one kind of atoms that cannot be converted into anything simpler	* compounds are made up of two or more elements in a definite proportion by mass.

	Homogeneous	Heterogeneous
*	A homogeneous is a mixture in which the composition is uniform through out the mixture.	* A heterogenous is a mixture in which the composition is not uniform throughout the mixture.
*	ex - Milk, Lemonade juice	* ex - mixture of water and oil.