C.W-

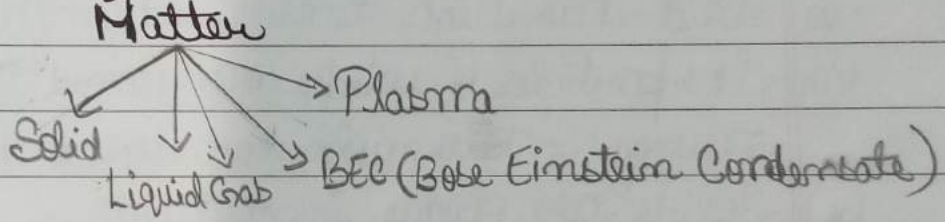
28/3/22

L-1

Matter in Our Surroundings

Matter → Anything having mass and occupies space and offers resistance are called matter.

Classification of matter-



1) **Solid** - The substance which have definite shape and definite volume.
Eg - table, chair etc.

2) **Liquid** - The substance which have indefinite shape and definite volume.
Eg - water, milk etc.

3) **Gas** - The substance which have indefinite shape and indefinite volume.
Eg - oxygen, nitrogen

Characteristics of Solid

~~The molecules of solid are tightly packed.~~

i) Solids are hard and rigid.
ii) Solid has definite shape and definite volume.
iii) Solid cannot flow.
iv) Solid cannot be compressed.
v) Solid has high melting point and boiling point.
vi) The particles of solids are not in motion.
vii) Solid has high tensile strength.
viii) The particles of solids are joined together with strong intermolecular force of attraction.
ix) Solids are opaque in nature.
x) The intermolecular space between the particles of solid are negligible that's why these particles are tightly packed together.

Characteristics of Liquid

i) Liquids have indefinite shape and definite volume.
ii) Liquids can flow.
iii) Liquids can be compressed.
iv) The molecules of liquids are loosely packed.
v) Liquids are not rigid.
vi) ~~Liquids are transparent in nature.~~
vii) ~~Liquids are~~ The particles of liquid are in motion.

viii) The intermolecular space between the particles of liquid are more than solid.

ix) Liquids have low boiling point than solid.

x) ~~The particles of liquid are not joined~~ Intermolecular force of attraction is less than solid.

Characteristics Of Gas

i) Gases have indefinite ~~shape~~ and indefinite volume.

ii) Gases can flow.

iii) Gases can be compressed.

iv) The particles of gases are far away from each other.

v) Gases have low density.

vi) The intermolecular ~~space~~ between the particles of gases are more than solid and liquid.

vii) Intermolecular force of attraction is less than solid and liquid.

viii) The particles of gases are in motion.

ix) The diffusion of gases are faster.

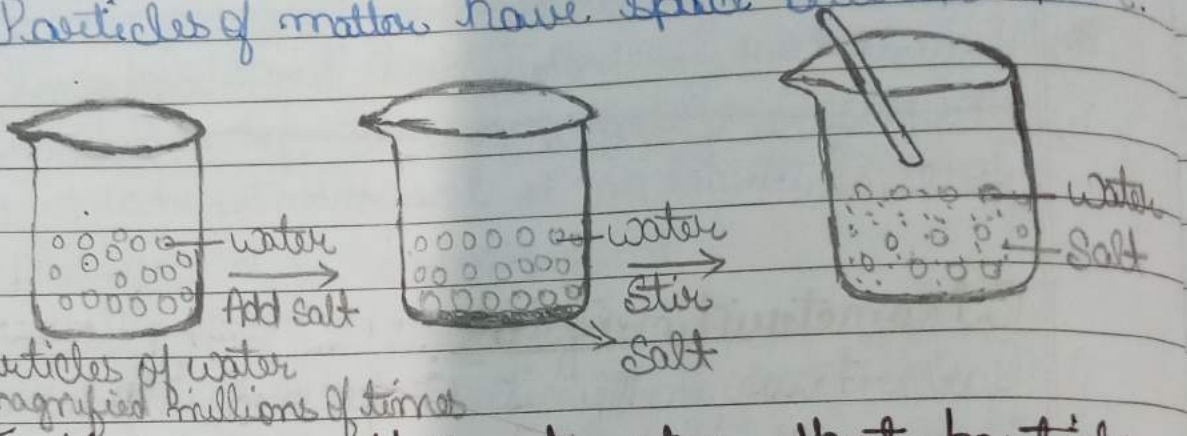
3/3

classmate
Date
Page
4/4/22

C.W.

Characteristics of particles of Matter

i) Particles of matter have space between them.



Q. Explain an activity to show that particles of matter have space between them with labelled diagram.

AIM:

To show that particles of matter have space between them.

Material Required:

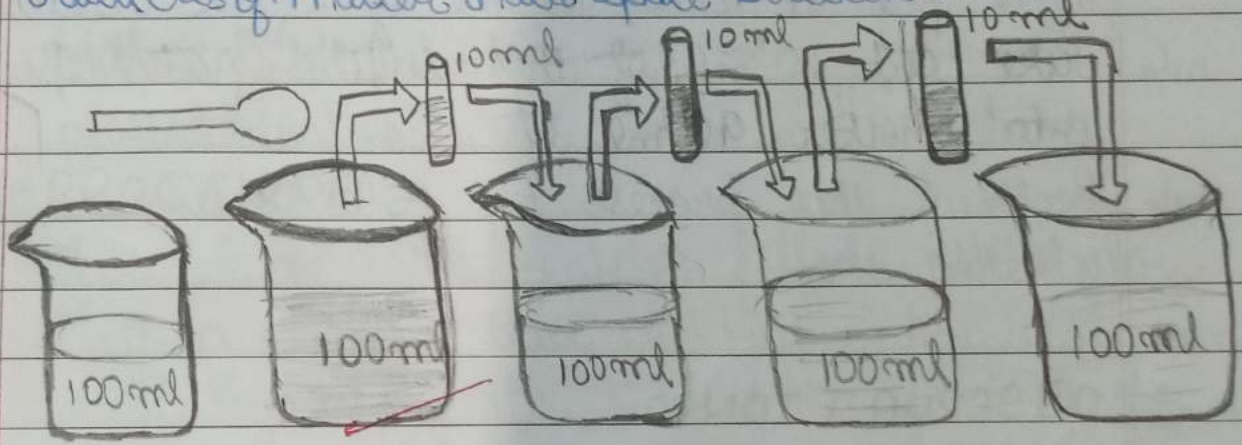
Beaker, water, salt / sugar, glass rod.

PROCEDURE:

- ~~Take~~ a 100 ml beaker should be taken.
- ~~Fill~~ half the beaker (should be filled) with water and mark the level of water.
- Some salt/sugar should be dissolved with the help of a glass rod.
- Observe any change in water level.

OBSERVATION:
There is no change in the water level. Sugar has taken space between the molecules of water.

CONCLUSION:
Particles of matter have space between them.

Q. 

Q. Explain an activity how small these particles of matter are with labelled diagram.

AIM:
To show that just a few crystals of potassium permagnet can change the colour.

MATERIALS REQUIRED
Beaker, potassium permagnet, water and glass rod.

PROCEDURE

i. Take 2-3 crystals of potassium permagnet and stir them in 100 ml of water.
ii. Take out approximately 10 ml of this solution and put it into 90 ml of clean water.
iii. Take out 10 ml of this solution and put it into another 90 ml of clean water.
iv. Continue this process till 5 to 8 times and observe them.

OBSERVATION

Just a few crystals of potassium permagnet change its colour.

CONCLUSION

The particles of matter are very small.

Q. Explain an activity to show that particles of matter are continuously moving.

AIM:

To show that particles of matter are continuously moving.

Materials Required:

glasses / beaker, water, blue ink, honey

PROCEDURE:

- Take two glasses / beakers filled with water.
- Put a drop of blue or red ink slowly and carefully along the sides of the first beaker and honey in the same way in the second beaker.
- Leave them undisturbed in house or in a corner of the class.

OBSERVATION:

Q. ~~Explain~~

The above activity shows that particles of matter are continuously moving and posses kinetic energy. As the temperature rises, particles move faster. It means with increasing temperature the kinetic energy of particles also increases due to which particles of matter intermix with each other and causes diffusion.

▷ Diffusion - Intermixing of particles of two different types of matter on their own is called diffusion. On heating the diffusion becomes faster.

▷ Diffusion of gases - Intermixing of gases without chemical reaction is called diffusion of gases.

C.W. 12/4/22

Q. Explain an activity to show the properties of solid.

AIM:
To show the properties of solid.

MATERIAL REQUIRED:
A pen, a book, a needle and a piece of wooden stick.

PROCEDURE:
- Sketch the shape of the above articles in your notebook by moving a pencil around them.
- Do all these have a definite shape, distinct boundaries and a fixed volume?
- What happens if they are hammered, pulled or dropped?

OBSERVATION:
All the articles listed above are solid because they are rigid, they are not compressible and have definite shape, distinct boundaries and fixed volume.

CONCLUSION:
Particles of a solid are not compressible. They have definite shape, distinct boundaries and fixed volume.

Q. Explain an activity to show the properties of liquid.

AIM:
To show the properties of liquid.
MATERIAL REQUIRED:
Water, cooking oil, milk, juice, a cold drink.
PROCEDURE:
50 ml of mark is marked on containers using a measured cylinder from the laboratory.
OBSERVATION:
All these liquid will flow when spilt on the floor volume of the liquid remain same when transferred to other container.
It tak the shape of the containers in which it is kept. It flow from one container to another when poured.
OR CONCLUSION:
Liquid have a definite volume, but do not have a definite shape.

Q. Explain an activity to show that gas is highly compressible as compared to solid and liquid.

AIM:
To show that gas is highly compressible as compared to solid and liquid.

MATERIAL REQUIRED:
3 syringe, rubber corks, water, pieces of chalk, sand.

PROCEDURE:

- Take three 100 ml syringes and close their nozzles by rubber corks.
- Remove the pistons from all the syringes.
- ~~Leaving one syringe untouched~~, fill one with sand, another with water and third one with air.
- All 3 syringes is being compressed and observe the output.

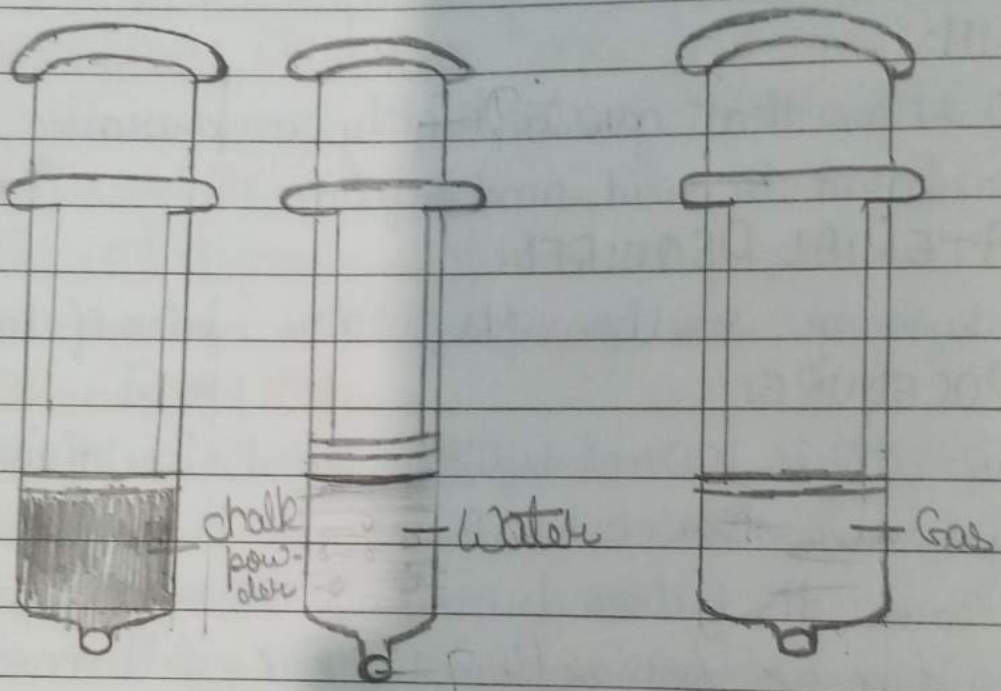
OBSERVATION:

- When the first syringe is compressed, we observe that it can be compressed.
- When the second syringe is compressed which was filled with sand / chalk powder, it was not compressing
- When the last syringe is compressed we will observe that

gas can be compressed easily.

CONCLUSION:

This shows that gas can be compressed easily as compared to solid and liquid.



Notes

In the gaseous state, the particles move about randomly at high speed. Due to this random movement the particles collide with each other and also the walls of container. The pressure exerted by the gas is because of this force exerted by the gas per unit area on the walls of container.

Due to high compressibility the large volume of gas can be compressed

into a small cylinder and transported easily.

Liquification of gas

The conversion of gas into liquid at very low temp. and high pressure is called liquifaction of gas.

Rigidity → The property of solid due to which it cannot change its shape after applying the external force. This is called rigidity.

Compressibility → The property of matter due to which it can be compressed after applying external force is called compressibility.

C.W.

Date
Page

25/4/22

Define the following terms-

1. Melting (Fusion) - The process of conversion of solid into liquid by heating at atmospheric pressure is known as melting.

2. Melting point - The temperature at which a given solid will be melt.

3. Evaporation - The process of conversion of liquid into gas by heating at atmospheric pressure is known as evaporation.

4. Condensation - The process of conversion of water vapour into liquid by cooling at atmospheric pressure is known as condensation.

5. Freezing - The process of conversion of liquid into solid by cooling at atmospheric pressure is known as freezing.

6. Boiling (vapourisation) - The process by which a liquid turns into vapour when it is heated to its boiling point.

7. Boiling point - The temperature at which a liquid starts to boil.

8. Vaporisation - It is a process which occurs when a element or a chemical is converted from a solid, liquid or to gas. Or takes place in boiling temperature.

9. Liquification - It is a process in which the gas phase is converted into a liquid phase.

10. Solidification - The process in which a liquid changes into solid at constant temperature, by giving out heat is known as solidification.

C.W.

26/4/22

Sublimation

A change of state directly from solid to gas without changing into liquid state is called sublimation.

Deposition

A change of state directly from gas to solid without changing into liquid state is called deposition.

2/5/22

Temperature

The degree of hotness and coldness of a body is called its temperature.

The relation between celcius scale and fahrenheit scale is $\frac{C}{5} = \frac{f-32}{9}$

$K = °C + 273$

Q. ~~Convert 300 Kelvin scale the following temp. to celcius scale.~~

Convert 300°K into celcius and farhenheit scale

$300\,K = (300-273)°C$

$= 27°C$

$\frac{C}{5} = \frac{f-32}{9}$

$\Rightarrow \frac{27}{95} = \frac{F-32}{9}$

$\Rightarrow 5F - 160 = 243$

$\Rightarrow 5F = 243 + 160$

$\Rightarrow 5F = 403$

$\Rightarrow F = \frac{403}{5}$

$\Rightarrow F = 80.6°F$

$\therefore 300K = 80.6°F$

Q. Convert 573K into farhenheit scale.

$573K = (573 - 273)°C$

$= 300°C$

$\frac{C}{5} = \frac{F-32}{9}$

$\Rightarrow \frac{300}{5} = \frac{F-32}{9}$

$\Rightarrow F - 32 = 540$

$\Rightarrow F = 540 + 32$

$\Rightarrow F = 572$

$\therefore 572°F$

Q. Convert 37°C into farhenheit scale and kelvin scale.

$K = °C + 273$

$K = 37 + 273$

$= 310°$

$\therefore 37°C = 310°K$

$$\frac{C}{5} = \frac{F-32}{9}$$

$$\frac{37}{5} = \frac{F-32}{9}$$

$5F - 160 = 333$

$5F = 333 + 160$

$5F = 493$

$F = \frac{493}{5}$

$F = 98.6$

$\therefore 37°C = 98.6°F$

ii) Convert 54°C into farhenheit and Kelvin scale.

$K = C + 273$

$= 54 + 273$

$= 327$

$\therefore 54°C = 327°K$

$$\frac{C}{5} = \frac{F-32}{9}$$

$$\frac{54}{5} = \frac{F-32}{9}$$

$$5F - 160 = 486$$

$$5F = 486 + 160$$

$$5F = 646$$

$$F = \frac{646}{5}$$

$$F = 129.2$$

$\therefore 54°C = 129.2°F$

iii) Convert 172°F into celcius Scale and Kelvin Scale.

~~$K = °C + 273$~~

~~$K =$~~

$$\frac{C}{5} = \frac{F-32}{9}$$

$$\frac{C}{5} = \frac{172-32}{9}$$

$$\frac{C}{5} = \frac{140}{9}$$

$$9C = 700$$

classmate
Date
Page

9/5/22

C.W.

Latent heat of fusion – The amount of heat energy required to change 1kg of solid into liquid at atmospheric pressure at its melting point is known as the latent heat of fusion.

Q. For any substance, why does the temperature remain constant during the change of state? (Pg-9)

⇒ The heat energy which is supplied is consume in overcoming the intermolecular force of attraction existing b/w the particles. That's why the temp. recorded in thermometer shows no change.

C.W

Date
Page

14/5/22

Specific Latent Heat - The amount of heat energy absorbed or released per unit mass of a substance during its change of state at constant temp. is called Specific latent heat.

~~Q.3. Evaporation causes~~

Factors affecting evaporation

i) Temperature
ii) Surface area
iii) Humidity
iv) Wind speed

1) Temperature

i) Evaporation increases on increasing the temperature of liquid

2) Surface area

ii) The rate of evaporation increases on increasing surface area.

3) Humidity

If there is more humidity there will be less evaporation and vice-versa.

4) Wind Speed

If wind is more, there will be faster evaporation and evaporation will be low when wind speed is less.