

CW

Exercises

~~While matter only assumes three states of matter~~

A) a) ~~f~~ / (b) ~~f~~ / (c) T / (d) T / (e) ~~f~~

- 2) a) identical.
- b) least, more, still more
- c) zig-zag
- d) vibrate on either side.
- e) gases
- f) downwards on its base
- g) least
- h) most.

*write down in full sentence
Again*

- 3) a) 10^{-10} cm
- b) solids
- c) in a liquid, move within its boundary.
- d) ~~more dense~~
- e) weaker than in solids.

- 4) a) III
- b) IV
- c) 1
- d) V
- e) II

Seen

- 2a) All the molecules of a substance are identical.
- b) The inter-molecular spacing is least, in solids more in liquids and still more in gases.
- c) The molecular motion in liquid and gas is in zig-zag path.
- ~~d) The most molecular~~
- d) In the solid, the molecules vibrate on either side but they remain at their fixed position.
- e) The inter-molecular forces are the weakest in gases.
- f) A solid exerts pressure downwards on its base.
- g) Gases are least dense.
- h) Solids are most rigid.

B) Short/long answer questions.

1) Matter is anything that occupies space and has mass.
Its composition is small particles etc called atoms.

2) The three states of matter are solid, liquid and Gas.

3) Molecule is the smallest particle of a substance.

4) Example of :

Monatomic Molecule: Neon

Diatomic molecule: Oxygen Molecule

5) The spacing between molecules is called inter molecular spacing.

6) Take a ^{half} amount of water in a glass. Add salt to it. Now gently stir it for few seconds. Then observe that the level of water doesn't change. It can happen because inter-molecular space exist.

7) Inter-molecular forces helps the molecules to held up together.

8) The force of attraction between the particles of same substances is called cohesive force while the force of attraction between the particles of different substances is called adhesive force.

9) * Three characteristics of solid:

It has definite shape, and size.

The molecules in a solid are closely packed.

The intermolecular forces are very strong.

* Three characteristics of liquid:

It has a definite volume but ~~not~~ not a definite shape.

The molecules are loosely packed.

The intermolecular forces are less strong.

* Three characteristics of gas:

It don't have a definite volume or shape.

Molecules are very loosely packed.

Inter-molecular forces are too weak.

10) Solid

In size, shape and Density.

They have definite size. Definite shape and are highly dense.

Liquid

They have a indefinite ~~shape~~ size, indefinite shape and are less dense than solid.

Gas

They have indefinite size, indefinite shape and are less dense than liquid and solid.

11) The molecules in a substance are in motion they follow the zig-zag path.

12) Open a window, see at the sunlight coming inside the room. There are dust particles moving in there. This particles move in zig-zag path. The mentioned experiment shows that molecules are not at rest, but in motion.

<u>13 Solids</u>	<u>Liquids</u>	<u>Gas</u>
- Definite shape	- Indefinite shape	- Indefinite shape.
- Definite size	- Indefinite size	- Indefinite size.
- Highly dense	- Less dense	- Less dense
- Intermolecular force is strong	- Intermolecular force is weak	- Intermolecular force is weak
- Molecules are not in motion. They only vibrate.	- Molecules are in motion.	- Molecules are in motion.

14) The molecules in solid are very tightly packed which cause it to have a definite volume and a definite shape.

15) The molecule in liquids are not very tightly packed so it will take the shape of container which indicates it has no definite shape but has a definite volume.

16) The molecule in gas are very far apart from each other so they move freely in air. So it doesn't have definite volume nor definite shape.

~~17) Solid - There is a strong inter mol~~

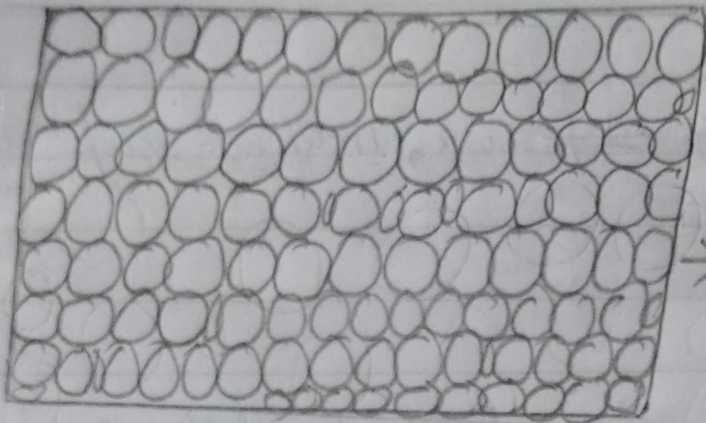
17) Solid - The molecules here are very tightly pack. There is no inter-molecular space between them. The molecules are arranged in a definite manner, therefore they have a definite shape. The molecules are packed tightly so they have high density.

Liquids - They have a definite volume, but no definite shape because they acquire the shape of the container in which they are kept. The intermolecular space is greater than in solid so they generally have low density.

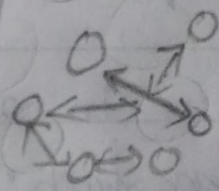
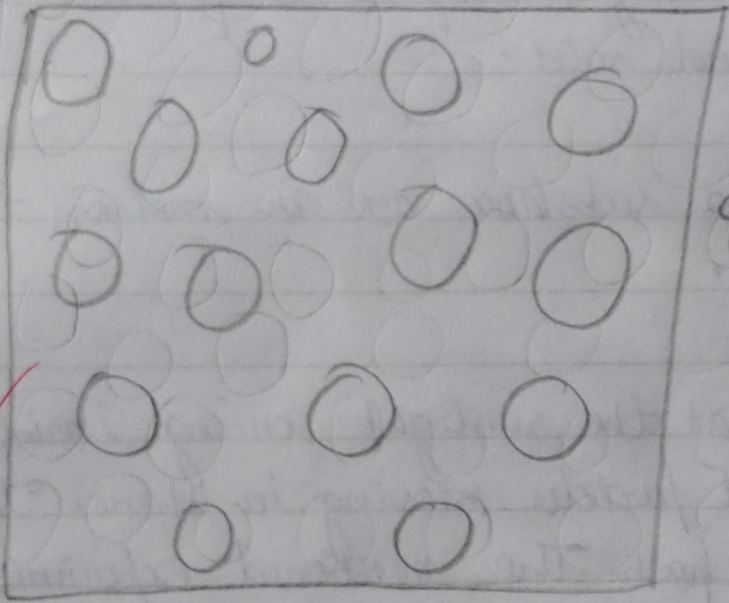
Gas - The molecules are far apart from each other. The density is very low. There is a negligible force of attraction between

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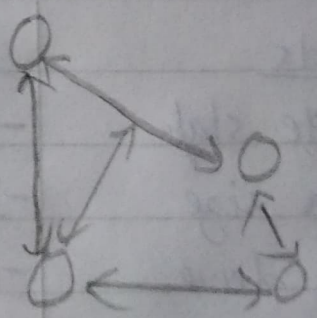
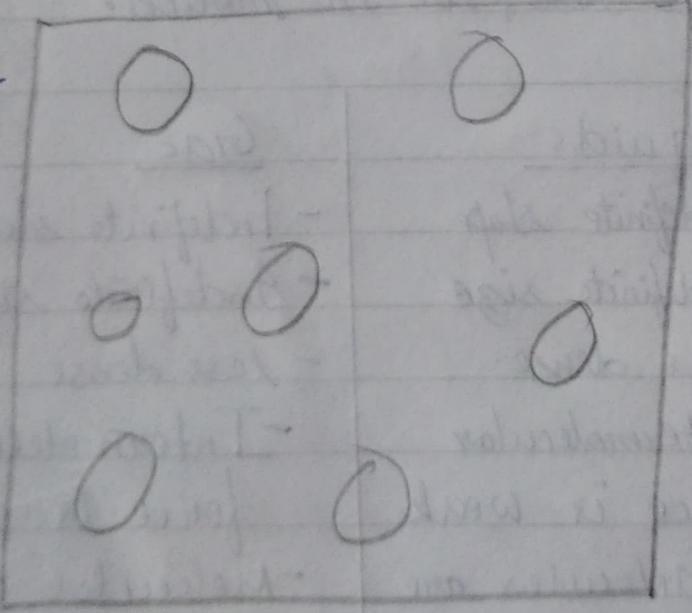
The Molecular model of liquids solids



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molecules so they are free to move in the entire space available to them. The molecules move faster than molecules of liquids. Gases can easily be compressed.

18) a) Compressibility - Solids - Can't be compressed.
Liquids - Can be compressed tightly.
Gas - Can be easily compressed

b) Fluidity - Solids - Can't flow
Liquids - Can flow
Gas - Can flow

c) Rigidity - Liquids - Less rigid
Solids - Highly rigid
Gas - Not rigid

d) Expansion on heating - ~~Solid~~ Solid - Low
Liquid - More than solid
Gas - More than liquids.

19) The change of a state of matter by heating or freezing.

a) Solid can be changed to liquid by melting.

The heat energy absorbed by substance increases the amplitude of vibrations of the molecules of solid and a stage is reached at melting point when the molecules acquire energy to overcome attraction force between them. Then the solid changes to liquid.

b) liquid can be changed into gas by boiling.

The heat energy absorbed by substance in liquid state increases the energy of its molecules due to which they begin to move rapidly. Then liquid changes to gas.

a) Melting. (Solid $\xrightarrow{\text{Melting}}$ Liquid)

b) liquid. (Liquid $\xrightarrow{\text{Boiling}}$ Gas)

~~MSD~~
~~2/7/21~~