1. True or false.

i. The molecules of each substance are identical. False

ii The inter-molecules forces are effective at all distance between the two molecules. False

iii. The molecules in a substance are in ~~rambe~~ random motion. True

iv. In a gas, the molecules can move ~~anyway~~ anywhere in space. True

v. Liquid are less viscous than gases. False

2) Fill in the blanks

i. All the molecules of a substance are idential.

ii) The intermolecular spacing is least in soild, more in liquid and still more in gas.

iii. The molecular motion in liquid and gases is in zig-zag path.

iv. In a soild, the molecules vibrate on either side but they remain at their fixed positions.

v. The inter-molecular force are the weakest in gases.

vi. A soild exerts pressure downward.

vii. Gases are least dense.

viii. Soild are most rigid.

3) choose the correct answer.

a. The diameter of a molecule is approximately -

i) 1 cm

ii) 10 cm

iii) 10^{-10} m

iv) 1m

b. The intermolecular forces are strongest in -

i) soild

ii) Liquid

iii) gas

c. The molecules,

i) In soild, move freely within boundary

iii) in a Liquid, move within the boundary.

iiii) in soild, liquid and gas, move anywhere.

d. soild are-

i) more dense

ii) less dense

iii) least dense

e. The intermolecular forces in liquid are-

i) weaker than in gas

ii) weaker than in soild

iii) as strong as in soild.

4. Match the following.

i)	A molecule is composed of	a) does not exist free in nature.
ii)	Ice, water and water vapour	b) atoms
iii)	An atom	c) are the three sates of water.
iv)	the molecules of a soild	d) occupy space
v)	Gases	e) can vibrate only up about 10^{-10} m from there mean position.

1 Define matter. what is its composition ?

Matter is anything which occupies space and has mass. It can be perceived by our sense of smell, touch, sight, hearing and taste. Matter is composed of tiny particles know as atoms.

2. Name the three state of matter.

A- The three states of matter are

(i) Solids - A soilds has a definite shape and volume.

Ex - wood, stone

(ii) Liquid - A Liquid has a definite volume but not definite shape.

Ex - water

(iii) Gases - A gas neither has definite shape nor a definite volume -

Ex - Air

3. Mention one examples each of a monoatomic and diatomic molecule.

One example of monoatomic molecule is - neon

and,

one example of diatomic molecule is - oxygen molecule.

4. what is a molecule ?

The smallest unit of matter which can exist indendently is called molecule.

5. what do you mean by inter-molecular spacing?

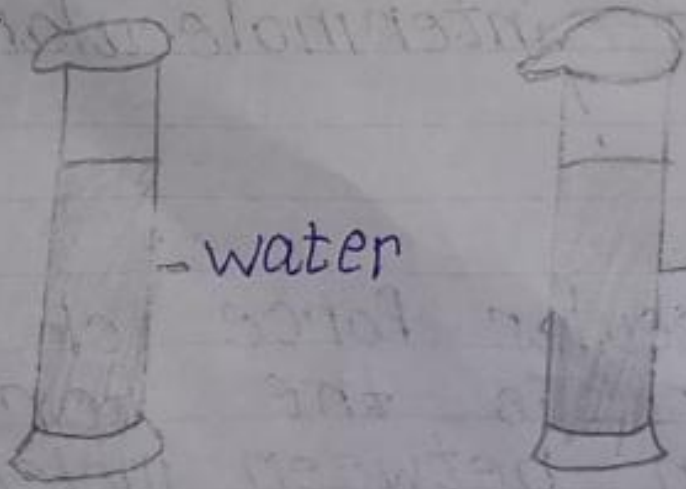
Inter-molecular space - The space between any two consecutive molecules of a substance is called inter molecular

6. what is intermolecular Force ?

A- Intermolecular force of attration is the force of attration between molecules.

7. Describe a simple experiment to illustrate the existence of inter-molecular spacing.

Take 100 ml of water in a measuring cylinder. Add 20 gram of salt in water gently and stir it well so as to dissolve the salt well in water. It is noticed that the level of water does not change. It shows that the particles of salt occupy space between the particles of the salt occupy space between the partiles of water.



8 What are the forces of cohesion and adhesion?

The force of attraction between the molecules of similar kind is called of cohesion.
Example - The forces between water molecules. This force of cohesion keep the molecules of the substance bind together.

The force of attraction between different types of molecules is called force of adhesion.
Example - when a glass filled with water is emptied some water I particles remain stuck to the glass due to the adhesion ~~water~~ between water molecules and glass.

9. State three characteristics of molecules of matter.

The particles of matter called molecules, have following characteristics -

- They are very small in size
- They have spaces between them.
- They are in constant random motion.
- They always attract each other.

10. How do soild, liquid and gases differ in their following properties :

•) size •) shape •) Density

A- Soilds

size - They have definite size

shape - They have definite shape

density - Highly dense

Liquid -

size - Indifinite

shape - Indifinite

Density - Less denser than soild.

Gas -

size - Indifinite

shape - Indifinite

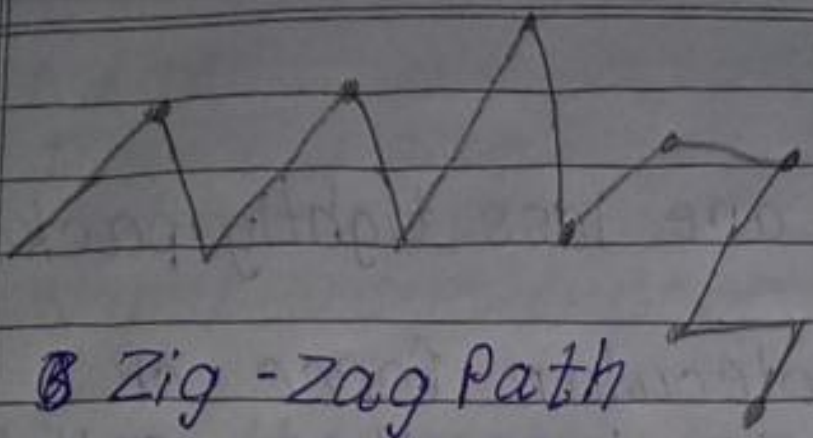
Density - Less denser than soild and liquid.

11. The molecules in a substance are in motion. What type of path do they follow?

The particles in a substance are not at rest (in motion), and they ~~the~~ move randomly in all possible directions in zig-zag path.

12 Describe a simple experiment to illustrate that the molecule are not at rest, but the constantly move.

Take a beaker. Fill it partly with water. Add some lycopodium powder in the beaker. Stir the contents with a glass rod. Take out few drops of this suspention on a glass plate. Place it on the table and illuminate with the lamp. Observe it through microscope. It is found that particle of lycopodium ~~powed~~ powder move in a ~~random~~ random motion in zig zag path.



Zig-Zag Path

13. Write down five general properties of soild, liquid and gas.

Soild

- The molecules here are very tightly packed having negligible intermolecular space.
- They have strongest intermolecular force of attraction.
- The molecules have very small vibration about their mean position.
- They have definite shape and size.
- They are hard and rigid.

Liquid

- Molecules are less tightly packed.
- The intermolecular force of attraction is less than soild.
- The molecule can move from one place to another.
- Do not have any particular shape of their own and thus acquire the shape of vessel.
- Liquid has definite volume at given temperature.

Gases -

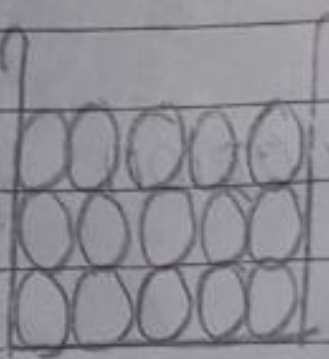
- The force of attraction between the molecule is least.
- The intermolecular space is the largest.
- Molecules move independently.

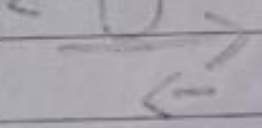
. Nither have a definite shape nor definite volume.

. Worst conductor of heat.

16. Give the molecular model for soild and use it to explain why soild have a definite volume and shape.

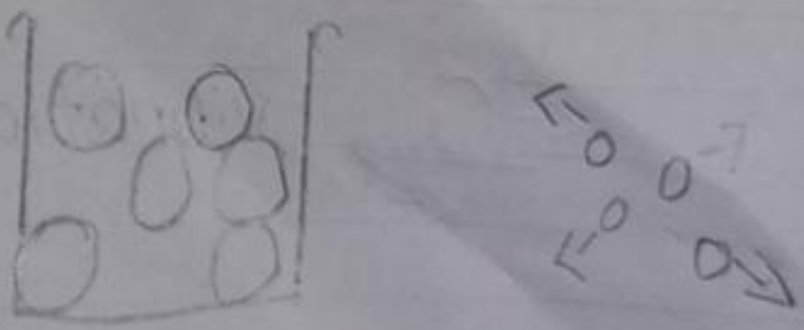
A. The molecules are very tightly packed that there is no intermolecular space and there is high intermolecular force of attraction (force of cohesion). The molecules do not move about their mean position and thus soild have definite shape and volume.





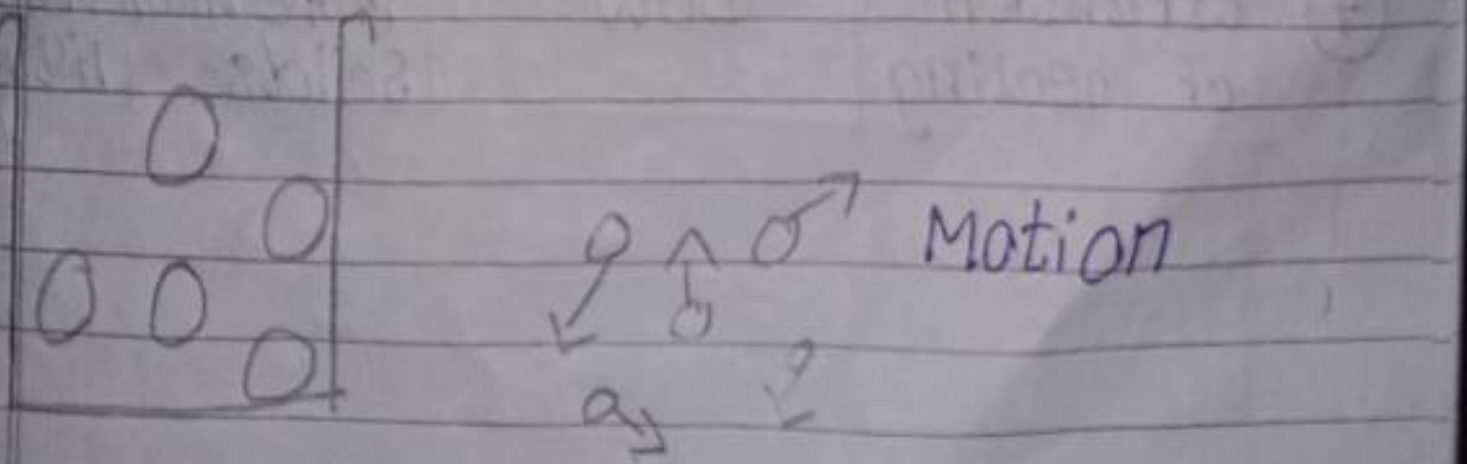
17. Describe the ~~molecules~~ molecular model for a liquid. How does it explain that a liquid has no definite shape, but has a definite volume?

A Here the molecules are less tightly packed as compared to soilds and also there is lesser force of intermolecular attration. The intermolecular ~~greater than~~ distance is greater than soild. Thus, they do not have a definite shape but acquire the shape of the ~~container~~ vessel in which they are contained but have a definite volume at a given temperature.



18. A gas has neither a definite volume nor a definite shape. Describe the molecular model to explain it.

A- Here the molecules are far apart from each other i.e. have the intermolecular ~~distance~~ distance which result into the weakest intermolecular forces of attraction. The molecules bound by any strong force move about freely and thus gases do not have a definite shape and also do not have any definite volume.



19. Distinguish between the three states of matter - soild, liquid and gas on the basis of their molecular models. Propeties (i) compressibility (ii) Fluidity (iii) rigidity (iv) expansion on heating.

Ans-

		soild	Liquid	Gas
(1)	compressibility	Not compressibility	Negiligibly compress-ible	Highly compress-ible
(2)	fluidity	Not possible	can flow	can flow
(3)	rigidity	Highly rigid	Less rigid	Not rigid
(4)	expansion of heating	Low	More than soilds	More than liquid

19. What do you mean by the change of state of matter ? Explain.

a) the change of a soild into a liquid at a constant temperature, and

b) the change of a liquid into gas at a constant temperature.

A- The change in state of matter of a substance from soild to liquid or from liquid to gas is brought by imparting heat energy to it at a constant temperature.

a) The process of change of a substance from soild state into its liquid state on absorption of heat at a particular temperature, called, the melting point,

Soild $\xrightarrow[\text{Heat absorbed}]{\text{Melting}}$ Liquid

b) The process of change of substances from a liquid state to it gaseous state at a perticular temperature called the boiling paint, is called boiling or

Liquid $\xrightarrow[\text{Heat absorbsed}]{\text{Boiling}}$ Gas

20. complete the following.

a) Soild $\xrightarrow{\text{heat}}$ Liquid

b) liquid $\xrightarrow{\text{Boiling}}$ Gas