

CW
22.05.2021
Wednesday

B) Short / Long answer questions.

1) Define matter. What is its composition?

Ans → Matter is defined as 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 called atoms.

2) Name the three states of matter.

Ans → The three states of matter are solid, liquid, gas.

Solids → A solid has a definite shape and definite volume.

Example → wood, stone, iron, ice, etc.

Liquid → A liquid has a definite volume ~~no~~ but no definite shape.

Example → water, juice, milk, oil, etc.

Gas → A gas neither has definite shape nor a definite volume. Example → air, hydrogen, oxygen, water vapour, etc.

3) What is a molecule?

Ans → The smallest unit of matter which can exist independently is called molecule. Example → Oxy. molecule (O_2) made of two atoms.

CW
Wednesday

Date 22.05.21
Page 7

4) Mention one example each of a monoatomic and a diatomic molecule.

Ans → Monoatomic → Neon, argon

Diatomic → Nitrogen, Hydrogen

5) What do you mean by inter-molecular spacing?

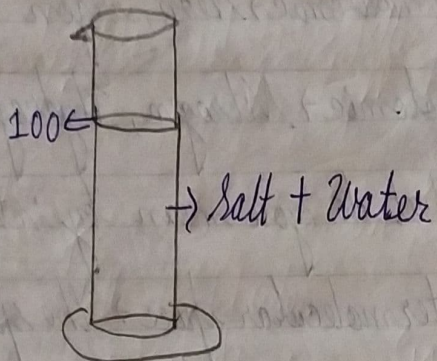
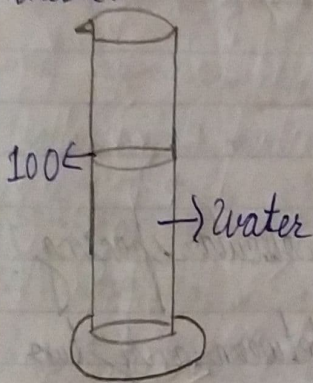
Ans → Intermolecular space → The space between any two consecutive molecules of a substance is called intermolecular space.

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

Ans → 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 in water. It is noticed that

Wednesday
12.05.2021

the level of water does not change. It shows that the particles of salt occupy spaces between the particles of water.



a) Water alone

b) Salt added to the water

The particles of salt occupy the spaces between the particles of water.

7) What do you mean by inter-molecular forces?

Ans → Intermolecular force of attraction - The force of the attraction between the molecules (like molecules or unlike molecules) is called force of attraction.

8) What are the forces of cohesion and adhesion?

Ans → The force of attraction between the molecules of similar kind is called force of cohesion. Example → The forces between

Wednesday

Date 12.5.21
Page 8

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 particles remain stuck to the glass due to the adhesion between water molecules and glass.

9) State three characteristics of molecules of matter

Ans → The particles of matter called molecules, have the following characteristics:

1) They are very small in size.

Wed
Wednesday
12.05.2022

- 2) They have spaces between them.
 - 3) They are in constant random motion.
 - 4) They always attract each other.
- 10) How do the solids, liquids and gases differ in their following properties:

	<u>Solids</u>	<u>Liquids</u>	<u>Gases</u>
Ans) size →	Definite	Indefinite	Indefinite
Shape →	Definite	Indefinite	Indefinite
Density →	Highly dense	Less denser than solids	Less denser than liquids and solids

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

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

Wed
Wednesday

Page No. 9

12) Describe a simple experiment to illustrate that molecules are not at rest, but they constantly move.

Ans) Take a beaker. Fill it partly with water. Add some lycopodium powder in the beaker containing water. Stir the contents of the beaker with a glass rod. Take out few drops of this suspension on a glass plate. Place it on the table and illuminate it with a table lamp. Observe the glass plate through a microscope. It is found that the fine particles of lycopodium powder move rapidly in a random manner and their path is zig zag as shown in the figure below.

Zig Zag path of fine particle of lycopodium powder

CW
Wednesday
12.05.2021

13) Write down five general properties of solids, liquids and gases.

Ans) Solids → 1) The molecules here are very tightly packed having negligible or very less intermolecular space.

2) They have the strongest intermolecular force of attraction.

3) The molecules have very small vibration about their mean position that is small amplitude.

4) They have a definite shape and volume.

5) They are generally hard and rigid.

6) They are good conductors of heat.

Liquids → 1) Molecules are less tightly packed.

2) The intermolecular force of attraction is less than solids.

3) The molecules here can move from one place to another.

4) Do not have any particular shape of their own and thus acquire the shape of the vessel.

5) A particular quantity of a liquid has a definite volume at a given temperature.

Ans
Wednesday

Date 25/21
Page 10

Gases \rightarrow 1) The force of attraction between the molecules is the least.

2) The intermolecular space is the largest.

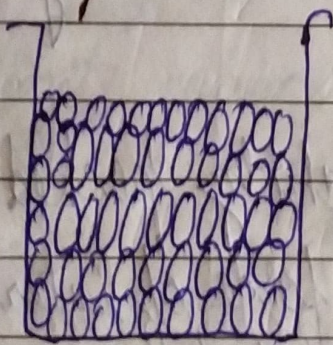
3) Neither have a definite shape nor a definite volume.

4) The molecules move independently.

5) Worst conductors of heat.

14) Give the molecular model for a solid and use it to explain why a solid has a definite volume and a definite shape.

Ans \rightarrow



Vibration of a molecule about its mean position

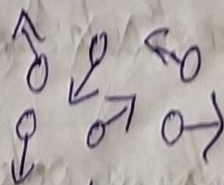
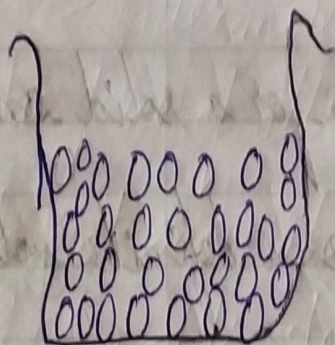
Molecules of a solid arranged closely packed in a definite manner, not free to move anywhere.

Cup
Wednesday
12.05.2024

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

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

Ans ->



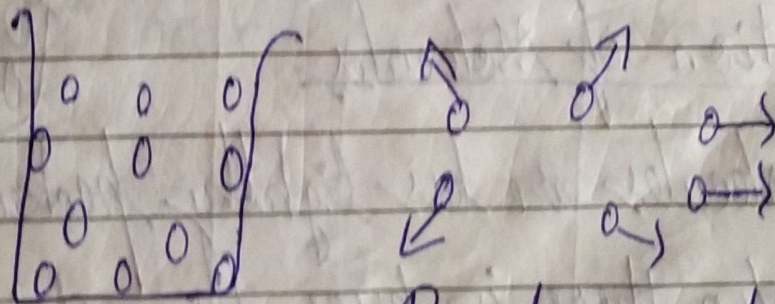
Motion of molecules

Molecules of a liquid arranged less closely, are free to move about, within the liquid.

Here the molecules are less tightly packed as compared to solids and also there is lesser force of intermolecular attraction. The intermolecular distance is greater than that in the solids. Thus, they don't have a definite shape but acquire the shape of the vessel in which they are contained but have a definite volume at a given temperature.

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

Ans) Here the molecules are far apart from each other that is have the greatest intermolecular distance which result into the weakest intermolecular forces of attraction. The molecules as are not 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.



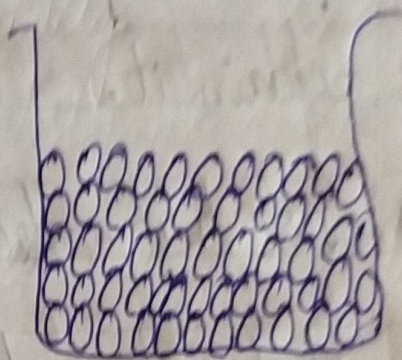
Molecules of a gas are far apart and are free to move about

PW
Thursday
13.05.2022

27) Distinguish between the three states of matter solid, liquid and gases on the basis of their molecular model.

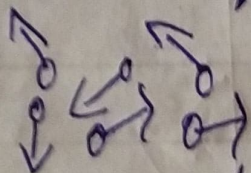
Ans) \rightleftarrows

vibration of a molecule about its mean position

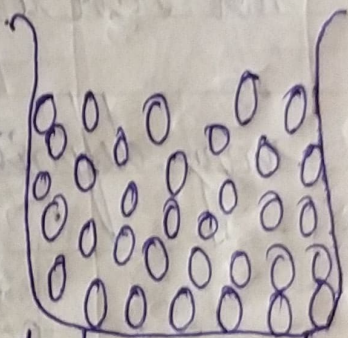


Here the molecules are very tightly packed that there is no or very less intermolecular space and there is high intermolecular force of attraction (force of cohesion). The molecules do not move about their mean position and thus solids have a definite shape and volume.

Liquids \rightarrow



Notion of Molecules

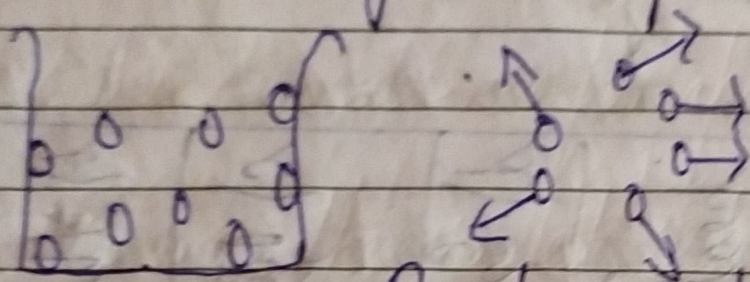


Here the molecules are less tightly packed as compared to solids and also there is lesser force of intermolecular attraction. The intermolecular distance is greater than that in the solids. Thus, they do not have a definite

Cue
Thursday

Page 12

shape but acquire the shape of the vessel in which they are contained but have a definite volume at a given temperature.



Random motion of molecules

Here the molecules are far apart from each other that is they have the greatest intermolecular distance which result into the weakest intermolecular forces of attraction. The molecules are not 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.

18) Distinguish between solids, liquids and gases on the basis of their following properties:

a) Compressibility

b) Fluidity

c) Rigidity

d) expansion on heating

Ans →

	Solids	Liquid	Gases
a) Compressibility	Not compressible	Negligible compressible	Highly compressible
b) Fluidity	Not possible	can flow	can flow
d) Expansion on heating	Low	More than solids	More than liquids
e) Rigidity	Highly Rigid	Less rigid	Not rigid

CW
Monday

Date 17.05.21
Page 13

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

a) The change of a solid into a liquid at a constant temperature, and

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

Ans → The change in state of matter of a substance from solid 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 solid state into its liquid state on absorption of heat at a particular temperature, called the

Su
Monday
17.05.2021

melting point, is called melting or fusion i.e.

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

b) The process of change of a substance from a liquid state to its gaseous state at a particular temperature, called boiling point, is called boiling or vaporisation, i.e.

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

20) Complete the following:

a) Solid $\xrightarrow{\text{Heating}}$ Liquid

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