H.W
12/10/21

Date
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HOLIDAY HOMEWORK

Q1) a) The solids are

i) More dense ✓

ii) less dense

iii) least dense

iv) Highly compressible

b) The intermolecular forces in liquids are

i) As strong as in solids

ii) Stronger than in solids

iii) Weaker than in solids ✓

iv) Weaker than in gases

c) What is state of motion?

i) Position of rest

ii) Position of motion

iii) both by the state of rest or motion ✓

iv) none of them

d) The strength of force is expressed by

i) Weight

ii) mass

iii) magnitude ✓

iv) longitudinal force

e) The force between two charged bodies is called

i) Muscular force

ii) Gravitational force

iii) Magnetic force

iv) Electrostatic force ✓

f) When two forces act in opposite directions, then net force acting two forces

i) Sum of two forces

ii) Difference between two forces ✓

iii) Both of these

iv) None of these

Q2) a) All the molecules of a substance are identical.

b) The intermolecular spacing is least in the solids, less in liquids and more in gases.

c) The molecular motion in liquid and gas in zig-zag path is called Brownian motion.

d) In a solid, the molecules vibrate but they remain at their fixed positions.

e) The intermolecular forces are weakest in gases.

Q3) i) How do the solids, liquids and gases differ in their following properties?

a) Size

b) Shape

c) Density

Ans → a) Solids have definite size ~~and a definite shape~~ (volume) and a definite shape, liquids have definite volume but no definite shape and gases have neither a definite volume nor a definite shape.

b) Solids have a definite shape and they cannot be compressible, liquids does not have a definite shape and can be compressible and gases also does not have a definite shape and they can be compressible.

c) Solids are more dense than liquids and gases, liquids are less dense than solids and gases are least dense than solids and liquids.

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

Ans → i) Aim → To show molecules constantly move in a random manner.

ii) Materials required → Water, lycopodium powder.

iii) Experiment

→ A beaker is taken and filled with water. Some lycopodium powder is added in the water.

→ The contents of the beaker is stirred with a glass rod. Few drops of this suspension is taken out put on a glass plate.

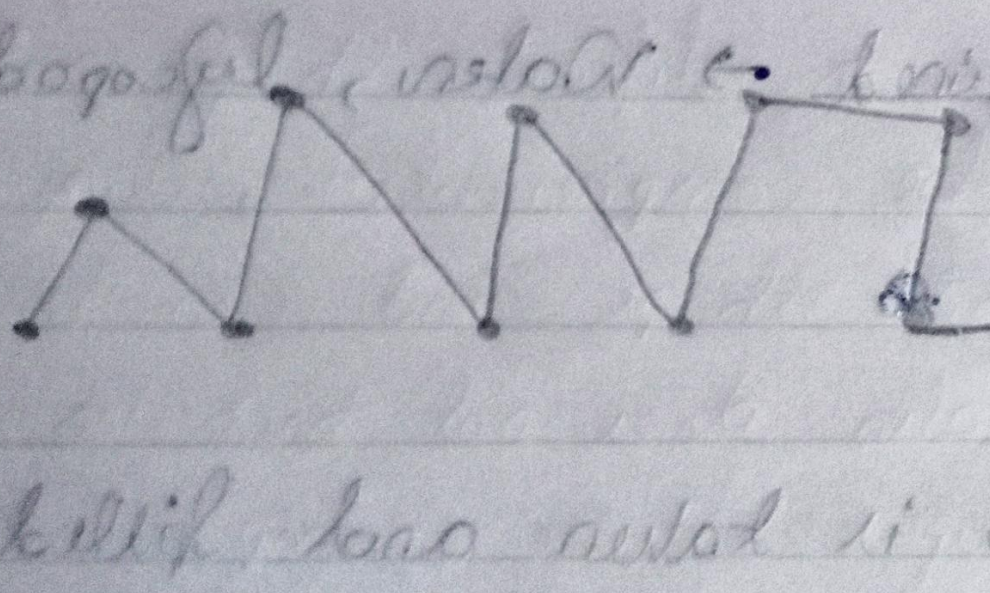
→ The glass plate is placed on a table and illuminated with a table lamp. Then, a microscope is taken and it is observed.

iv) Observation → We can see that the fine particles of the lycopodium powder move rapidly in a random manner.

v) Conclusion → The reason is that the molecules of water are in random motion which collide with the suspended fine particles of lycopodium powder and make them to move in a zig-zag path.

→ This activity shows that molecules constantly move in a random manner.

DIAGRAM



ZIG-ZAG PATH OF FINE PARTICLES OF LYCOPODIUM POWDER

3) Distinguish between the three states of matter - solid, liquid and gas on the basis of their molecular model.

Ans → i) Molecular model of solids

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

→ The molecules in a solid are rigid.

→ The molecules in a solid can only vibrate to and fro about their mean position.

ii) Molecular model of liquids

→ A liquid has a definite volume, but not a definite shape.

→ The molecules in a liquid are non-rigid.

→ The molecules in a liquid can move within the boundary of the vessel.

iii) Molecular model of gases

→ A gas has neither a definite volume nor a definite shape.

→ The molecules in a gas are rigid, homogeneous and perfectly elastic.

→ The molecules of a gas can move freely in the available space.

4) How does the density of a liquid or gas vary with temperature?

Ans → The density of a liquid or gas vary with temperature because when the temperature increases, volumes of most of the liquids also increases and the density decreases. Similarly, when temperature decreases, the volume of most liquids or gas decreases and increases the density.

b) Two objects of same mass are moving with velocities v and 4v respectively. Find the ratio of their Kinetic energies.

Ans → $K.E._1 = \frac{1}{2}mv^2$

$K.E._2 = \frac{1}{2}m(4v)^2$

$= \frac{4}{2}mv^2$

$= \frac{\frac{1}{2}\cancel{mv^2}}{\frac{4}{2}\cancel{mv^2}} = \frac{1}{4}$

$= 1:4$

7) Define Kinetic energy and Potential energy.

Ans → i) Kinetic energy of a body is the energy possessed by it due to its state of motion.

ii) Potential energy is the energy possessed by a body due its state of rest or position.

8) Define Pressure. State its S.I. unit.

Ans → Pressure is defined as the thrust per unit area.

$$\text{Pressure} = \frac{\text{Thrust}}{\text{Area}}$$

→ Its S.I. unit is newton / metre^2 or pascal.

9) Find the amount of work done if a force of 60N moves an object through a distance of 5m in the direction of force.

Ans → Force = 60N

Distance in the direction of force = 5m

~~Work done~~

Work done = Force × Distance in the direction of force

= 60N × 5m

= 300Nm

10) Define moment of force.

Ans → The moment of force is equal to the product of the magnitude of the force and the perpendicular distance of the force from the pivoted point.