Matter

Synposis

- Matter is the substance which occupies space and has mass.
- The three states of matter are

1. solid,
2. liquid
3. gas.

- Matter is composed of large number of molecules.
- A molecule is the smallest particle which can exist freely in nature by itself and it retains the properties of the substance.
- All molecules of a substance are identical, but the molecules of different substanes are different.
- A molecule is very small in size (10^{-10} m).
- The molecules are separated from each other with spaces called inter-molecular spacing.
- The molecules in a substance are held together by the forces acting between the molecules which are called the inter-molecular forces.
- The force of attraction between the molecules of the same sub¬stance is called the force of cohesion, while the force of attraction between the molecules of two different substances is called the force of adhesion.
- The forces of cohesion and adhesion are effective only when the separation between the molecules is 10^{-9} m. When the separation becomes more, they vanish.
- The molecules in a substance are not at rest, but they are con¬stantly in motion.
- In a solid, the molecules are rigid, the inter-molecular spacing is least, the inter-molecular forces are strongest and the molecules remain in their fixed positions. They vibrate to and fro about their mean positions, but they do not leave their positions, so a solid has a definite shape and a definite volume.
- In a liquid, the molecules are not rigid, the inter-molecular spacing is more than that in solids, the inter-molecular forces are weak and the molecules are free to move within the boundary of the liquid, so the liquid has a definite volume, but it does not have a definite shape.
- In gases, the molecules are not rigid, the inter-molecular spacing is more than that in solids and liquids, the inter-molecular forces are weakest and the molecules are free to move anywhere in space. So the gas has neither a definite volume nor a definite shape.

Activity – 2

Classify 20 objects around you as solids, liquids and gases

Solids : Ice, Aluminium, Silver, Calcium, Gold, Iron, Sodium, chloride, Sugar, Wood.

Liquids : Water, benzene, chloroform, oil, honey, glycerine, hydrochloric acid, alcohol, dettol.

Gases : Steam, Air, Oxygen, Hydrogen, Chlorine, Nitrogen, Ammonia, Helium, Argon.

Test yourself

A. Objective Questions

1. Write true or false for each statement

(a) The molecules of each substance are identical.
Answer. False

(b) The inter-molecular forces are effective at all distances between the two molecules.
Answer. False

(c) The molecules in a substance arc in random motion.
Answer. Tme

(d) In a gas, the molecules can move anywhere in space. .
Answer. Tme

(e) The liquids are less viscous than the gases.
Answer. False

2. Fill in the blanks

(a) 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) In a solid, the molecules **vibrate to and fro** but they remain at their fixed positions.
(e) The inter-molecular forces are the weakest in **gases.**
(f) A solid exerts pressure **downwards on its base.**
(g) The gases are **least** dense.
(h) A solid is **most** rigid.

3. Select the correct alternative

(a) The diameter of a molecule is approximately

1. 1 cm
2. 10 cm
3. **10^{-10} m**
4. 1 m

(b) The inter-molecular forces are strongest in

1. **solids**
2. liquids
3. gases
4. both (i) and (ii)

(c) The molecules

1. in solid, liquid and gas, move freely anywhere.
2. in a solid, move freely within its boundary.
3. **in a liquid, move within its boundary.**
4. in a gas, move only within its boundary.

(d) The solids are

1. **more dense**
2. less dense
3. least dense
4. highly compressible

(e) The inter-molecular forces in liquids are

1. as strong as in solids
2. stronger than in solids
3. **weaker than in solids**
4. weaker than in gases

5. **4. Match the following columns**

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

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

B. Short/Long answer questions

Question 1.
Define matter. What is its composition ?
Answer:
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 known as atoms.

Question 2.
Name the three states of matter.
Answer:
The three states of matter are solids, liquids and gases.
Solids —A solid has a definite shape and definite volume.
Example – wood, stone, iron, ice etc.
Liquid —A liquid has a definite volume but not definite shape.
Example — water, juice, milk, oil, etc.
Gases —A gas neither has definite shape nor a definite volume.
Example – air, hydrogen, oxygen, watervapour etc.

Question 3.
What is a molecule ?
Answer:
The smallest unit of matter which can exist independently is called molecule.
Example: Oxygen molecule (O_2) made up of two (O) atoms.

Question 4.
What is the approximate size of a molecule ?
Answer:
Matter is made up of molecules which are very small in size (~10^{-9} m).

Question 5.
One litre of water has 6.02×10^{26} molecules. Estimate the size of a molecule.
Answer:
The size of a particle (or molecule of matter is very small. 1 litre of water has 6.02×10^{26} molecules, so the volume of a particle of

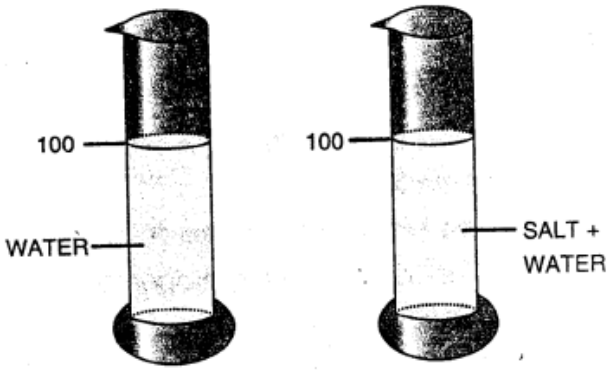
$$\text{water is } \frac{10^{-3}\,\text{m}^3}{6.0 \times 10^{26}} = 1.6 \times 10^{-30}\,\text{m}^3.$$

Thus the diameter of a water molecule is nearly 1.27×10^{-9} metre.

Question 6.
What do you mean by inter-molecular spacing ?
Answer:
Intermolecular space — The space between any two consecutive molecules of a substance is called intermolecular space

Question 7.
Describe a simple experiment to illustrate the existence of inter-molecular spacing.
Answer:
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 spaces between the particles of

water.



(a) Water alone (b) Salt added to Water

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

Question 8.
What do you mean by inter-molecular forces ?
Answer:
Intermolecular force of attraction — The force of attraction between the molecules (like molecules or unlike molecules) is called intermolecular force of attraction.

Question 9.
What are the forces of cohesion and adhesion ?
Answer:
The force of attraction between the molecules of similar kind is called force 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 between water molecules and glass.

Question 10.
State three characteristics of molecules of matter.
Answer:
The particles of matter called molecules, have the following characteristics:

1. They are vety small in size.
2. They have spaces between them.
3. They are in constant random motion.
4. They always attract each other.

Question 11.
State the approximate spacing between two molecules of a matter.

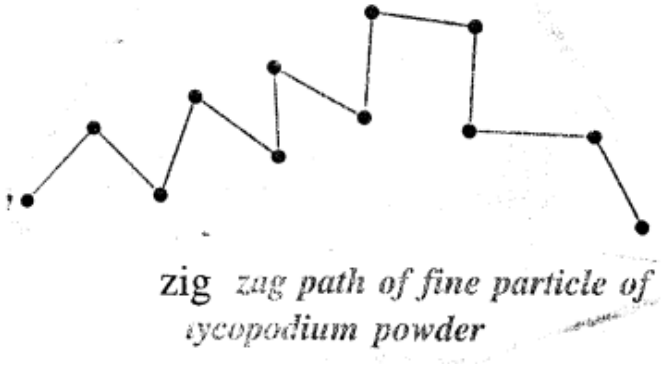
Answer:
The spacing between particles of a matter is called inter-molecular space.

Question 12.
How do the solids, liquids and gases differ in their following properties
(a) Size
(b) Shape
(c) Density
Answer:

	Solids	Liquids	Gases
Size	They have definite size	Indefinite	Indefinite
Shape	They have definite shape	Indefinite	Indefinite
Density	Highly dense	Less denser than solids	Less denser than liquids and solids

Question 13.
The molecules in a substance are in motion. What type of path do they follow ?
Answer:
The particles in a substance are not at rest (in motion),and they move randomly in all possible directions in a zig-zag Path

Question 14.
Describe a simple experiment to illustrate that molecules are not at rest, but they constantly move.
Answer:
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 figure below.



Question 15.
Write down five general properties of solids, liquids and gases.
Answer:
Solids:

1. The molecules here are very tightly packed having negligible or veiy less intermolecular space.
2. They have the strongest intermolecular force of attraction.
3. The molecules have very small vibration about their mean position i.e. small amplitude.
4. They have a definite shape and volume.
5. They are generally hard and rigid.
6. They are good conductors of heat.

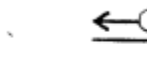
Liquids:

1. Molecules are less tightly packed.
2. The intermolecular force of attraction is less than that of 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.

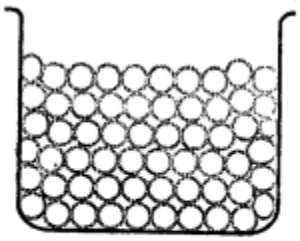
Gases :

1. The force of attraction between the molecules is the least.
2. The intennolecular space is the largest.
3. Neither have a definite shape nor a defmite volume.
4. The molecules move independently.
5. Worst conductors of heat.

Question 16.
Give the molecular model for a solid and use it to explain why a solid has a definite volume and a definite shape.
Answer:



Vibration of a molecule about its mean position

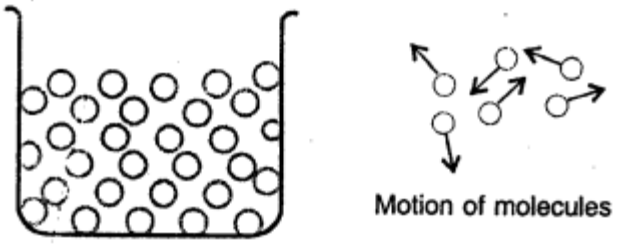


Molecules of a solid arranged closely and in a definite manner, not free to move about

Here the molecules are very tighty 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.

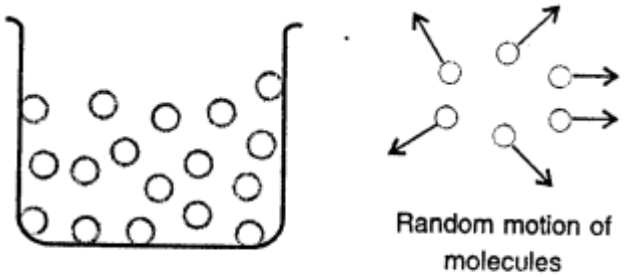
Question 17.
Describe the molecular modcl for a liquid. I-low does it explain that a liquid has no definite shape, but has a definite Volume ?
Answer:



Molecules of a liquid arranged lcss 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 donot 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.

Question 18.
A gas has neither a definite volume nor a definite shape. Describe the molecular model to explain it.
Answer:
Here the molecules are far apart from each other i.e. have the greatest intermolecular distance which result into the weakest intermolecular forces of attraction. The molecules as are not



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

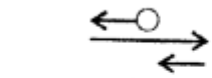
bound by any strong force move about freely and thus gases do not have a definite shape and also do not have any definite volume.

Question 19.
Distinguish between the three states of matter—solid, liquid and gas on the basis of

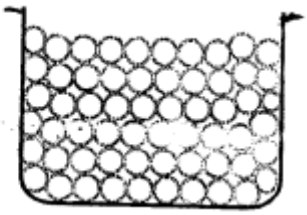
their molecular models.

Answer:

Solids:

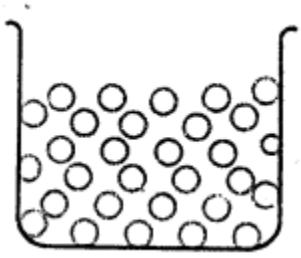


Vibration of a molecule about its mean position



Here the molecules are very tighty packed that there is no or very less inteimolecular 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.

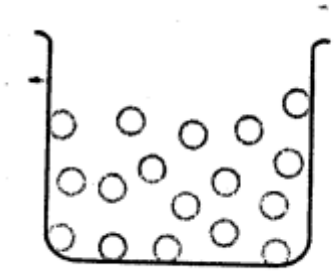
Liquids:

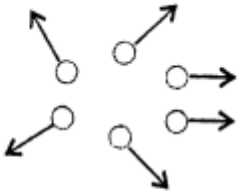


Motion of molecules

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 donot 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.

Gases :





Random motion of molecules

Here the molecules are far apart from each other i.e. 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.

Question 20.

Distinguish between solids, liquids and gases on the basis of their following properties :
(a) compressibility
(b) fluidity
(c) rigidity
(d) expansion on heating

Answer:

	Solids	Liquids	Gases
(a) **Compressibility**	Not compressible	Negligibly compressible	Highly compressible
(b) **Fluidity**	Not possible	Can flow	Can flow
(c) **Rigidity**	Highly rigid	Less rigid	Not rigid
(d) **expansion on heating**	Low	More than solids	More than liquids

Question 21.
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.
Answer:
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 melting point, is called melting or fusion i. e.

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

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

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

ADDITIONAL QUESTIONS

Question 1.
Define matter.
Answer:
Anything that has mass and occupies space is called matter.

Question 2.
What is volume ?
Answer:
The amount of space occupied by a matter is called its volume.

Question 3.
What is mass ?
Answer:
Mass is the quantity of matter contained in the body.

Question 4.
If an object weighs 6 kg on earth. What will be its weight on moon ?
Answer:
Weight of body on moon = 1 / 6 th of its weight on earth
∴ Body will weigh 1 / 6 × 6 = 1 kg on moon

Question 5.
If an object is taken to the moon from the earth what will be its mass ?
Answer:
Mass of a body does not change with change in gravity. So mass of a body will remain the same on moon.

Question 6.
Name the smallest particle from which matter is made up.
Answer:
The smallest particle from which matter is made up is atom.

Question 7.
What are molecules ?
Answer:
Molecules are made of atoms. Molecules exhibit the properties of that kind of matter and has independent existance.

Question 8.
Give one difference between atoms and molecules.
Answer:
Atoms may or may not have independent existance. Molecules have independent existance.

Question 9.
Define :
(a) Intermodular force of attraction.
(b) Intermodular space.
Answer:
(a) The molecules of matter are always in motion and attract each other with a force called intermodular force of attraction due to which they are held together.
(b) The molecules can move only when there are gaps or space between them, this space is called intermolecular space.

Question 10.
Classify the following into solids, liquids and gases. Oxygen, milk, common salt, wax, stone, water vapour, carbon-dioxide, sugar, mercury, coal, blood, butter, copper, coconut oil, kerosene.
Answer:
Solids : Common salt, Wax, Stone, Sugar, Coal, Butter, Copper.
Liquids : Milk, Mercury, Blood, Coconut, oil, Kerosene.
Gases : Oxygen, Water, vapour, Carbondioxide.

Question 11.
Why do solids, liquids and gases differ in their physical states?
Answer:

1. Intermolecular force of attraction.
2. Intermolecular spaces are two important properties of matter that account for the different states of matter.

Question 12.
What are fluids? Give two examples.
Answer:
Substances that can flow are called fluids. e.g. gases (oxygen, hydrogen), liquids (water, petrol, sulphuric acid).

Question 13.
Define interconversion of states of matter.
Answer:
The process by which matter changes from one state to another and back to original state, without any change in its chemical composition.

Question 14.
What are the two conditions for the interconversion of states of matter?
Answer:
Two conditions are : change in

1. Temperature
2. Pressure

Question 15.
How a liquid changes into its gaseous state ? Explain ?
Answer:
As a liquid is heated, its particles starts gaining energy and move more vigorously which increases the gaps between the particles and decreasing the force of attraction. Ultimately a liquid changes into gaseous state.

Question 16.
Water cycle is an example of inter conversion of states of water. Explain.
Answer:
Water from oceans, rivers lakes from leaves of trees (transperation) changes into vapours when temperature increases or evaporates and enters the atomsphere as clouds when temperature falls the vapours change into water and some of it in the form of snow fall on mountains and earth in the form of water and hales and this continues. Thus water cycle is example of inter convertion of states of water.

Question 17.
State the general properties of a solid.
Answer:
General Properties Of A Solid :

1. Solids are hard that is, they have a definite shape and volume.
2. Solids are generally incompressible.
3. Solids are rigid, that is, they do not flow.

Question 18.
What is the relation between intermolecular space and intermolecular force?
Answer:
The force of attraction between the molecules of a given substance is called intermolecular force and the space between these molecules is called intermolecular space.
The basic relation between the two is that they are inversely proportional to each other. More is the intermolecular force lesser is the intermolecular space and vice-versa.

Question 19.
Why liquids do not have a definite shape?
Answer:
Molecules of a liquid are held by weak intermolecular förces. This force is sirong enough to hold the molecules together but not strong enough to hold them at fixed positions. As a result liquids have a fixed volume but not shape.

Question 20.
What happens when a solid is heated ?
Answer:
When a solid is heated, its molecules gain energy and vibrate faster. A stage comes ,when they overcome intermolecular force of attraction and start moving from each other. This results in melting of solid.

Question 21.
Give reasons for the following.
Answer:

1. Gases can be compressed easily.
   Ans. The reason for this property of gases is that there is very large intermolecular space between gas molecules. On mere applying pressure, they are easily compressed.
2. Liquids can flow easily.
   Ans. In liquids intermolecular force is weaker than that of solids. So molecules in a liquids can slip over one another and liquids can flow uniike solids.
3. We need to classify things.
   Ans. We need to classify things in order to distinguish them. In this way, things can be categorized and can be easily studied.
4. Pure substances have fixed melting or boiling points.
   Ans. Pure substances consists of only one kind of matter. All the particles of a pure substance are alike. It has a definite composition and similar properties. This is the reason that pure substances have fixed melting or boiling points.
5. Electricity is not considered matter.
   Ans. Electricity neither has mass nor it occupies space. Beside it can not be seen by our eyes. This is why electricity is not considered mattet

Question 22.
Define the following ternis.

1. Matter
2. Intermolecular force
3. Element
4. Atom
5. Molecule

Answer:

1. **Matter** — Anything that has mass and occupies space is called matter.
2. **Intermolecular force** — The force of attraction between the molecules of a given substance is called intermolecular force.
3. **Element** — It is defined as that pure substance which contains only one type of atoms e.g. hydrogen, chlorine.
4. **Atom** — An atom is the smallest part of an element that takes place in a chemical reaction.
5. **Molecule** — A molecule is a smallest part of a compound that exists independently.

Question 23.
Write your observation and conclusion for the following:
(1) When a small stone is gently dipped into a glass filled with water.
(2) When one of the balloons suspended to the metre scale is punctured while other remains inflated ?
Answer:
(1) You will see that some water flows out of the tumbler and collects in the bowl.

Remove the stone from the tumble. The level of water in the tumbler comes down. Now, pour the water collected in the bowl back into the tumbler. The glass tumbler is filled again. This is because the stone occupied space and therefore drives the water out of the tumbler. This proves that not only solids but liquids also occupy space.
(2) Take two similar balloons and inflate them equally. Suspend one balloon to the left of a metre scale and the other one to the right of it, as shown in the figure below. Balance the scale in the middle with the help of a peg.

Question 24.
Give reasons :
(a) Why do liquids and gases flow but solids do not ?
(b) A gas fills up the space available to it.
(c) The odour of scent spreads in a room.
(d) We can walk through air.
(e) Liquids have definite volume but no difinite shape.
Answer:
(a) The molecules of liquids and gases are far apart i.e. have more gaps, intermolecular attraction force is very less as compared to solids, hence liquids and gases can flow but solids do not as gaps in solid molecules is less and molecular force of attraction very strong.
(b) Intermolecular force of attraction is least and intermolecular spaces are very large, hence gases can fill up the space available to them.
(c) Scent fumes (molecules) being gases fill the spaces between air molecules and the molecules of air fill the spaces between scent molecules due to diffusion, fumes spread into a room.
OR
Due to inter-mixing of scent molecules and air molecules, scent fumes spread into the room.
(d) The molecules of air are far apart i. e. large gaps and we can walk through air easily.
(e) The molecules of liquid are loosely packed and intermolecular force of attraction is small but number of molecules in it remain the same. Hence liquids have definite volume but no definite shape.

Question 25.
Give reasons :
(a) When a teaspoon of sugar is added to half a glass of water and stirred, the water level in the glass does not rise.
(b) When an empty gas jar is inverted over a gas jar containing a coloured gas, the gas also spreads into the empty jar.
(c) A red ink drop added to small amount of water in a glass turns water red in some time.
Answer:
(a) Add one teaspoon of sugar to it and stir. The sugar disappear but the level of water in the glass does not rise that means the volume of water has not increased. Because the sugar particles are adjusted between the water molecules. The shows that there are intermolecular gaps in water.

(b) This shows that gases can fill up all the space that they get, and they have neither a fixed shape nor a fixed volume. They have no free surfaces, either.
(c) If we put a drop of red ink in a glass of water, its particles diffuse with particles of water slowly but continuously and the water turns red.

Question 26.
Differentiate between the following.
(a) Liquids and gases
(b) Atoms and molecules
Answer:
(a) Liquids and Gases

Liquids	Gases
Have definite volume but no definite shape	Have no definite shape or volume
Intermolecular force of attraction is weaker than that in solids	Intermolecular force of attraction is the weakest (almost negligible)
Molecules are not as tightly packed as in solids and intermolecular space is more than that in solids.	Intermolecular space is the maximum and the molecules are far apart.
Molecules have no fixed position	Molecules move around freely
Can be compressed slightly	Can be easily compressed
Are capable of flowing	Can flow in all directions.

(b) Atoms and Molecules
Atoms :
1. it is the smallest part of an element.
2. It does not have independent existence
Molecules :
1. It is the smallest part of a compound.
2. It has an independent existence.

OBJECTIVE TYPE QUESTIONS

1. Fill in the blanks

(a) Water is a matter because it has **mas** and occupies **space.**
(b) Any matter which has a definite **volume** but no definite shape is called a **liquid.**
(c) Fluid can flow.
(d) The molecules are at a greater distance in **gases** compared to liquids.

(e) Water boils at **100 °C.**
(f) The physical state of a substance, which has a fixed volume but no fixed shape is **liquid.**
(g) All matter is made up of tiny particles called **atoms.**
(h) Liquids have a definite **Volume.**
(i) The temperature at which a liquid boils is called the **boiling** point of that liquid.
(j) Molecules in a **solid** are packed very closely.
(k) Liquids have no definite **shape.**
(l) When a gas is cooled, its molecules **loose** energy.
(m) Matter is anything that has **mass** and occupies **space.**

1. Write whether the following statements are true or false.

(a) Only water can exist in three different states.
Answer. True
(b) If the container in which a gas is collected has an opening, the gas will flow out and spread itself indefinitely.
Answer. True
(c) Solids have the largest inter-molecular space.
Answer. False
(d) There is no difference between evaporation and boiling.
Answer. False
(e) All solids, on heating, first change to the liquid and then to the gaseous state always.
Answer. False
(f) The intermolecular force of attraction is the weakest in gases.
Answer. True
(g) A gas has no free surface.
Answer. True
(h) Intermolecular force of attraction is greater in gases than in liquids.
Answer. False

2. Write true or false for each statement. Rewrite the false statements correctly.

(a) Matter cannot exist in different states.
Answer. False.
Matter can exist in different states.

(b) If the intermolecular space is more than the intermolecular force will be weaker.
Answer. True

(c) Solids and liquids can flow.
Answer. False.
Gases and liquids can flow.

(d) Solids can be compressed easily.
Answer. False.
Solids cannot be compessed easily.

(e) The smallest part of an element capable of independent existence is called an atom.
Answer. True

(f) The intermolecular space in a gas is almost negligible.
Answer. False.
The intermolecular space in a gas is very large.

3. For each of the following statements, say whether it describes a solid, a liquid or a gas.

(a) Particles move about very quickly.
(b) Particles are quite close together.
(c) Particles are far apart and move in all directions.
Ans. (a) Liquid
(b) Solid
(c) Gas

4. Match the following

1.

Column A	Column B
(a) Solids	***(i)*** **Can flow in all directions.**
(b) Sublimation	***(ii)*** **The temperature at which a liquid changes into its gaseous state.**
(c) Boiling point	***(iii)*** **Any number of free surfaces.**
(d) Gases	***(iv)*** **Gaps between particles.**

(e) Intermolecular space (v) Change of state from solid to

Ans.

Column A	Column B
(a) Solids	(iii) Any number of free surfaces.
(b) Sublimation	(v) Change of state from solid to gas.
(c) Boiling point	(ii) The temperature at which a liquid changes into its gaseous state.
(d) Gases	(i) Can flow in all directions.
(e) Intermolecular space	(iv) Gaps between particles.

2. Match the columns.

1. iron and gold	**a. molecules are very far apart**
2. melting	**b. pure substance**
3. intermolecular space	**c. non-metals**
4. compound	**d. the space between the molecules**
5. gases	**e. change from solid to liquid**
	f. metals

Ans.

1. iron and gold	f. metals
2. melting	e. change from solid to liquid
3. intermolecular space	d. the space between the molecules
4. compound	b. pure substance
5. gases	a. molecules are very far apart

5. Name the phenomenon which causes the following changes

(a) Formation of water vapour from water.
(b) Disappearance of camphor.
(c) Conversion of ice into water.
(d) Conversion of water into steam.

Ans. (a) Formation of water vapour from water is **vaporation.**
(b) Disappearance of camphor is **sublimation.**

(e) Conversion of ice into water is **melting.**
(d) Conversion of water into steam is **boiling.**

6. Give two examples for each of the following
(a) Substances which sublime.
(b) Substances which do not change their states.
(c) Substances which are rigid and not compressible.
Ans. (a) Naphthalene, camphor, dry ice.
(b) Paper, sugar.
(e) Glass, stone, pen.

MULTIPLE CHOICE QUESTIONS

1. Which one is a kind of matter:

1. light
2. **petroleum**
3. sound
4. heat

2. The state of matter which has no definite shape or volume is called

1. solid
2. liquid
3. **gas**
4. water

3. There are large intermolecular gaps in

1. water
2. iron ball
3. common salt
4. **air** .

4. All kinds of matter

1. **occupy space and have definite mass**
2. have mass and definite shape
3. can change their states
4. have definite volume

5. A kind of matter which can sublime is

1. water
2. plastic
3. milk
4. **iodine**

6. A substance which can change its state

1. wood
2. **oxygen**
3. paper
4. cloth

7. The process by which a solid changes into a liquid is called

1. freezing
2. **melting**
3. condensation
4. evaporation

8. A solid is a state of matter that has

1. no definite shape.
2. large intermolecular space.
3. **high intermolecular force of attraction.**
4. no definite volume.

9. Which of the following is a property of the liquids ?

1. **they can flow**
2. they are malleable
3. they have a definite shape
4. they are rigid

10. Gases

1. cannot be compressed easily.
2. occupy the entire space of the container.
3. have definite shapes.
4. cannot flow.