

## Objective type questions

1. Fill in the blanks:

a) ~~water~~ Water is matter because it has mass and occupies space.

b) Any matter which has a definite volume but no definite shape is called a ~~water~~ liquid.

c) Liquids and gases can flow.

d) The molecules are at a greater distance in gases as compared to liquids.

e) Water boils at  $100^{\circ}\text{C}$ .

f) The physical state of a substance, which has neither fixed volume nor fixed shape is a gas.

2. Write whether the following are true or false.

a) Only water can exist in three different states. ~~False~~ True

b) If the container in which a gas is collected has an opening, the gas will flow out and spread itself indefinitely. True.

c) Solids have the largest inter-molecular space. False.

Correct: Solids have very small (negligible) inter-molecular <sup>space</sup>.

d) There is no difference between evaporation and boiling. ~~False~~ True False

Correct: There is a difference between evaporation and <sup>boiling</sup>.

e) All solids, on heating, first change to liquid and then to the gaseous state. ~~True~~ False

Some solids, on heating directly change into gas

f) The inter-molecular force of attraction is the weakest in gases. True.

g) A gas has no free surface. True

4. a) Liquids

b) Solids

c) gases

5. Column A

Column B

a) Solids

iii) can have any number of free surfaces

b) Sublimation

v) Change of state directly from solid to gas.

c) Boiling point

ii) The temperature at which a liquid changes into its gaseous state.

d) Crases

i) can flow in all directions

e) Intermolecular space

iv) Craps between particles.

6. a) Evaporation

b) sublimation

c) melting

d) boiling.

7. a) ~~Naphthalene~~ Naphthalene; dry ice.

b) Oxygen, nitrogen,

c) Glass, stone, pen.

Multiple Choice questions

1. Which one is a kind of matter?

Ans b) petroleum

2. The state of matter which has no definite

shape or volume is called. ⓐ

d) gas.

3. There are large intermolecular gaps in  
a) air.
4. All kinds of matter  
a) occupy space and have a definite mass
5. A kind of matter ~~at~~ which can sublime is  
a) iodine
6. A substance which can change <sup>its</sup> state  
b) oxygen
7. The process by which a solid changes into  
liquid is called  
b) melting.

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## Exercise-1

1. Define matter.

Ans- ~~Ans~~ Anything that occupies space and <sup>has</sup> mass is called as matter.

2) What are ~~the~~ two main types of matter? Give two examples for each type.

Ans- The two main types of matter are -

- \* ~~Natural matter~~ ex- Living matter, ex- Lotus, dog,
- \* Non-living matter, ex- ~~pen~~ air, water, plastic

3. Differentiate between living and non-living matter.

Ans- Living matter can grow, reproduce and move on their own, for example - plants <sup>like lotus</sup> and animals <sup>like dog</sup>. Non-living matter cannot grow, reproduce and move on their own, for example - natural non-living matter like air, water, artificial non-living matter like plastic, cement.

4. Select natural and man-made matter from the following list:

Wood, plastic, silk, medicines, detergents, coal, water, ceramic, cotton, glass, nylon, fruits

Ans- natural matter: Wood, silk, coal, water, cotton, fruits

man-made matter = plastic, medicines, detergents, ceramic, glass, nylon,

### Exercise 11

1) Name the smallest particle from which matter is made up of.

Ans- The smallest particle from which matter is made up of is atom.

2) What are molecules

Ans- Molecules are the smallest unit of matter. They exhibit all the properties of that kind of matter and is capable of independent existence,

3) Give one difference between atoms and molecule

Ans- Atoms may or may not have independent existence. While molecules have independent existence.

4) Define:

- Intermolecular force of attraction,
- Intermolecular space.

Ans- a) The molecules of matter are always in motion and attract each other with a force and this force is called intermolecular force of attraction due to which they are ~~to~~ together.

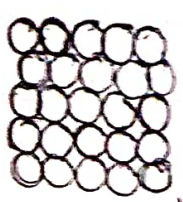
b) The molecules can move only when there are gaps or space between them. This space is called intermolecular space.

5. Name three states of matter, and define them.

Ans- The three states of matter are:

- 1) ~~st~~ Solid state
- 2) Liquids
- 3) Gases:

Solid state: The molecules are very close to each other hence intermolecular spaces are small and intermolecular force is strong.



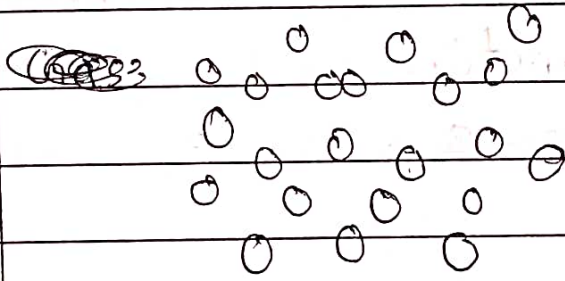
Hence solids have definite volume, rigidity, retain definite shape and are incompressible.

Liquids: The molecules are less closely packed have more intermolecular space than solid, less stronger forces than solids.





Hence liquids have definite volume but no definite shape. They take the shape of container in which they are put.



Gases: The molecules in the gases are far apart with weakest force of attraction. Hence gases have neither definite volume nor definite shape but easily compressible.

6. What are fluids? Give two examples.

Ans- Substances that can flow are called fluids. Both gases and liquids are fluids, e.g. gases (carbon dioxide, hydrogen), liquids (water, petrol and sulphuric acid).

7. Classify the following into solids, liquids and gases.

Oxygen, milk, common salt, wax, stone, L.P.G.,  
Carbon dioxide, sugar, mercury, coal, blood,  
butter, copper, coconut, oil, kerosene.

Ans	Solids	Liquids	Gases
	Common salt	Milk	Oxygen
	Wax	Mercury	L.P.G.
	Stone	Blood	Carbon dioxide
	Sugar	Coconut Oil	
	Coal	Kerosene	
	Butter		
	Copper		

8. Ans a) The molecules of liquids and gases are far apart i.e. have more gaps, intermolecular attraction force is very <sup>less</sup> as compared to solids hence liquids and gases can flow but solids do not as gaps in solid molecules is less ~~than~~ 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 ~~the~~ scent

molecules due to diffusion, fumes spread into a room.

d) The molecules of air are far apart, i.e. large gaps and we can walk through air easily.

e) The molecules of liquids 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.

f) When a teaspoon of sugar is added to half a glass of water and stirred, the water level in the glass remains unchanged because the sugar particles are adjusted between the water molecules as intermolecular gaps are more in liquids.

g) This is because gases can diffuse or flow in all directions.

h) When 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.

9. Ans- a) Cohesive force: The force of attraction between particles of the same substance is called cohesive force.

b) Diffusion: The phenomenon of intermixing of particles of one kind with another kind is called diffusion.

c) Brownian movement: The zig-zag motion of particles suspended in a medium is called Brownian movement.

10. Ans- When we invert the ~~to~~ bottle and blow air into the bottle through the side opening. It creates high pressure inside the bottles and the egg is kicked out of the bottle.

### Exercise - III

1). Ans- When a substance is heated, it can cause:

1. Interconversion of states of matter.
2. Thermal expansion of the substance.
3. Chemical change.

2) Ans a) The process by which matter changes from one state to another and back to its original state,

without any changes in its chemical composition

b) Two conditions are:

- 1) Change in temperature
- 2) Applying pressure.

3. Ans
- a) Fusion: The heating process by which a solid changes into the liquid state is called fusion.
  - b) Vaporisation: The heating process by which a liquid changes into its vapour state is called vaporisation.
  - c) Condensation: The process by which a substance in gaseous state changes into its liquid state is called condensation.
  - d) Sublimation: The change of solid on heating to vapours directly ~~and~~ and vice-versa without passing through the liquid state is called sublimation.
  - e) Diffusion: The phenomenon of intermixing or spreading of gaseous molecules is called diffusion.
  - f) Melting point: The fixed temperature at which a solid changes into a liquid at a given pressure is called its melting point. The temperature remains constant as long as the conversion is going on.

g) Boiling point: The fixed temperature at which a liquid starts changing into gaseous state is called its boiling point. The temperature remains constant till the whole of the liquid changes into gaseous state.

h) Liquefaction: Change of vapours on cooling to liquid is called liquefaction.

4) Ans- a) Solidification: The process of changing liquid into a solid state by cooling is known as solidification.  
Example: water  $\rightarrow$  ice.

Condensation: The process of changing a gas or vapour state to a liquid state by cooling is known as condensation. Example: steam  $\rightarrow$  water.

b) Melting: The fixed temperature at which a solid changes into a liquid at a given pressure is called its melting point.

eg. ice  $\rightarrow$  water

Boiling: The fixed temperature at which

a liquid starts changing into gaseous state is called as boiling.

c) Vapourisation: The process by which a substance changes from a liquid state to vapour state is called vapourisation or evaporation.

eg. water  $\rightarrow$  steam.

Gases - The substance which remain in the gaseous state under normal conditions of temperature and pressure are called gases.

eg., Oxygen, hydrogen, nitrogen.

d) Miscible: Liquids which mix with each other are called miscible liquids. Example: Water and alcohol.

4) Immiscible liquids: Liquids which do not mix with each other are called immiscible liquids.  
Example - water and oil.

5. a) During interconversion of state of matter, composition of substance remains the same, matter changes from one state to another and back to ~~it~~ the original state, while chemical reaction involves rearrangement of the molecular structure and composition changes.

b) In solids, there is a strong force of attraction between the molecules and the space between them is very negligible. The molecules are therefore, not free to move. They merely



move about their mean positions. But in <sup>the</sup> case of liquids, the molecules are not very closely packed. They do not attract each other as strongly as the molecules of solids. Thus, the intermolecular <sup>large</sup> spaces are larger and the molecules are able to move about more freely. This makes a liquid flow.

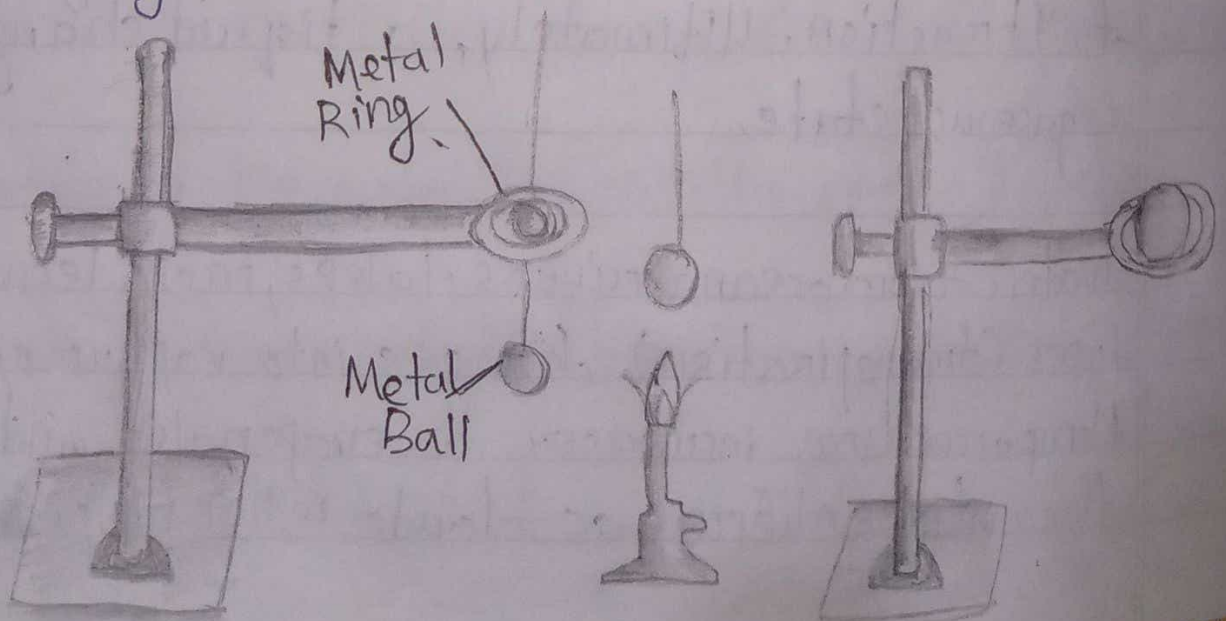
6. Ans- As a liquid is heated, its particles start gaining energy and move more vigorously which increases the gaps between particles and decreasing the force of attraction. Ultimately, a liquid changes into a gaseous state.

7. Water from oceans, rivers, lakes, from leaves of trees (transpiration) changes into vapour when temperature increases or evaporates and enters the atmosphere as clouds when temperature falls.

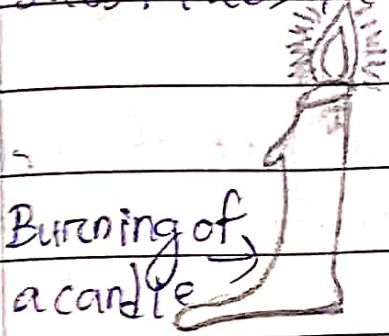
the vapours change into water and some of it in the form of snow fall on mountains and earth in the form of water and holes and this continues. Thus water cycle is example of interconversion of states of water.

8. Ans- When metal ball is heated, it expands. This can be proved by following experiment:

Take a metallic ring and ball. Try to pass the metal ball through the ring. The ball is able to pass through the ring. Now heat the ~~meat~~ metal ball for 5-6 minutes. The hot ball is not be able to pass through the ring. This shows that a solid expands on ~~hot~~ heating. Now cool the ball, it again passes through the ring. This shows that a solid contracts on cooling.



Q. Ans On heating, candle wax melts, then ~~the~~ turns into vapour which reacts with air to produce two new substances, carbon dioxide and water vapour.



Candle wax  $\xrightarrow{\text{heating}}$  carbon dioxide + water vapour.

Therefore, a candle on burning, becomes small and smaller and the part of wax which has undergone chemical change cannot be recovered.

Q) List the characteristics of pure substances.

Ans- The characteristics of pure substances are-

- Pure substances are of two types, i.e. ~~one~~ elements and compounds
- Elements are made up of only one kind of atoms and compounds are made up of only one kind of molecules.
- They have uniform composition throughout, i.e. they are homogeneous
- They have a definite set of chemical and physical properties.
- They have fixed melting and boiling points.
- Pure substances have characteristic colour, odour and taste.
- Pure substances cannot be broken into simpler substances by any physical means.

b) Differentiate between- i) elements and compounds, ii) homogeneous and heterogeneous mixtures.

Ans- i) elements - Elements are <sup>pure substances</sup> made up of only one kind of atoms. Ex- hydrogen, helium etc.

compounds - Compounds are ~~not~~ pure substances made up of one kind of molecules. Ex- Methane, water etc.

ii) homogeneous mixtures - The mixtures which are uniformly mixed are called homogeneous mixtures.  
heterogeneous mixtures - The mixtures which are not uniformly mixed are called heterogeneous mixtures.