EXERCISE-I

1. Define matter.

Ans⇒ Matter is anything that has mass and occupies space.

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

Ans⇒ The two main types of matter are:-

a) Living matter

b) Non-living matter

a) Living matter: Earth is home to all kinds of plants and animals. They can grow, move and reproduce on their own.
Examples: Plants, animals

b) Non-living matter: Most of the matter in the universe is non-living. It means that it grow, move or reproduce on its own. It can be natural or man-made.

→ Natural matter: It occurs in nature and can be used to make more useful substances, e.g., wood, coal, silk, water, stone, cotton, jute, cereals, fruits etc.

→ Man-made matter: It is produced artificially from natural matter, e.g.,

plastics, soaps, detergents, medicines, glass, nylon, ~~stell~~ steel, ceramic, etc.

3. Differentiate between living and non-living matter.

Ans⇒

Living Matter	Non-living matter
They can grow, move and reproduce on their own.	They can't grow, move and reproduce on their own.
They can only be natural.	They can either be ~~ti~~ natural or man-made.

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, Fruits, Cotton

Man-made matter: Plastic, Medicines, Detergents, Ceramic, Nylon, Glass

EXERCISE - II

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

Ans⇒ An atom is the smallest particle from which matter is made up of.

2. What are molecules?.

Ans⇒ A molecules is the smallest unit of matter which exhibits all the properties of ~~matter~~ that kind of matter and is capable of independent existence.

3. Give one difference between atoms and molecules.

Ans⇒

Atoms	Molecules
Only some atoms have independent existence while others do not.	All the molecules have independent existence.

4. Define:
a) Intermolecular force of attraction.
b) Intermolecular space.

Ans⇒ a) Particles of matter are held together by a force of attraction that exists between

them. This force is known as intermolecular force of attraction.

b) Particles of matter have space between them which is called intermolecular space.

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

Ans⇒ The three states of matter are.-

a) Solid
b) Liquid
c) Gas

a) Solid: The molecules are very close to each to ~~eac~~ other hence intermolecular spaces are small and intermolecular force is strong. Solids have definite volume, rigid, definite shape and are incompressible.

b) Liquid: Molecules are less closely packed, have more intermolecular spaces than solid, less stronger forces than solid. They have definite volume but no definite shape.

They take the shape of the container in which they are kept.

Gas: The molecules in the gases are far apart with ~~qu~~ weakest force of attraction. Hence gas has neither definite shape nor definite volume but easily compressible.

6. What are fluids? Give two examples.

Ans→ Substances that can flow are called fluids. Both gases and liquids are fluids.
Ex - Water, Hydrogen

7.

Solids	Liquids	Gases
Common Salt	Milk	Oxygen
Wax	Mercury	L.P.G
Stone	Blood	Carbondioxide
Sugar	Coconut Oil	
Coal	Kerosene	
Butter		
Copper		

8. Give reasons:

a) Liquids and gases flow but solids do not.

Ans⇒ The molecules of liquid 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) A gas fills up the space available to it.

Ans⇒ Intermolecular force of attraction is least and intermolecular spaces are very large, hence gases can fill up the space available to them.

c) The odour of scent spreads in a room.

Ans⇒ Scent fumes being gases fill the spaces between air molecules and the molecules of air ~~molecules~~ fill the spaces between scent molecules due to diffusion, fumes spread into a room.

d) We ~~won~~ can walk through air.

Ans⇒ The molecules of air are far apart i.e. large gaps and we ~~wal~~ can walk through easily.

definite

e) Liquids have a definite volume but no, shape.

Ans⇒ 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.

f) When a teaspoon of sugar is added to half a glass of water and stirred, the water level in the glass remains unchanged.

Ans⇒ 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 inter-molecular gaps are more in liquids.

g) When an empty gas jar is inverted over a gas jar containing a coloured gas, the gas also spreads into the empty jar.

Ans⇒ This is because gases can diffuse or ~~flow~~ flow in all directions.

h) A red ink drop added to a small amount of water in a glass turns the water red in some time.

When

Ans⇒ ~~When~~ we put a drop of red ink in a glass of water, its particles diffuse with particles of water slowly but continously and the water turns red.

9. Define:

a) Cohesive force

Ans⇒ The attraction between like particles is called cohesive force.

b) Diffusion

Ans⇒ The phenomenon of intermixing of particles of

one kind with another kind is called diffusion.

c) Brownian movement

Ans⇒ The zig-zag motion of particles suspended in a medium is called Brownian movement.

10. Why is an egg kicked out of a bottle ~~and~~ when air is blown inside the bottle.

Ans⇒ When we invert the bottle and blow air into the bottle through the side opening it creates high pressure inside the bottle and the egg is kicked out of the bottle.

Exercise - III

1. State the three effects of heat on matter.

Ans⇒ When a substance is heated it can cause
(i) Interconversion of states of matter.
(ii) Thermal expansion of the substance
(iii) Chemical change.

2.a) Define: interconversion of states of matter.

Ans⇒ The process by which matter changes from one state to another and back to original state, without any change in its chemical composition.

b) What are the two conditions for the interconversion of states of matter?

Ans⇒ Two conditions are:-
(i) Change in temperature.
(ii) By applying pressure.

3. a) Fusion

Ans→ Fusion: The heating process by which a solid changes into the liquid state is called fusion.

b) Vapourisation

Ans→ Vapourisation: The heating process by which a liquid changes into its vapour state is called vapourisation.

c) Condensation

Ans→ Condensation: The process by which a substance in gaseous state changes into its liquid state is called condensation.

d) Sublimation

Ans→ Sublimation: The change of solid on heating to vapours directly and vice-versa without

passing through the liquid state is called sublimation.

e) Diffusion

Ans⇒ Diffusion: The phenomenon of intermixing or spreading of gaseous molecules is called diffusion.

f) Melting point

Ans⇒ 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

Ans⇒ The fixed temperature at which a liquid starts changing into gaseous ~~is called~~ state is called its boiling point. The temp. remains constant till the whole of the liquid changes into gaseous state.

b) Liquefaction

Ans⇒ Change of vapours on cooling to liquid is called liquefaction.

4. Differentiate between

a) Solidification

The process of changing liquid into a solid state by cooling is known as solidification.
Ex- Water → Ice

Condensation

The process of changing a gas or vapour state to a liquid state by cooling is known as condensation.
Ex- Steam → Water

b. Melting

The fixed temp. at which a solid changes into a liquid at a given a pressure is called its melting point
Ex- Ice → Water

Boiling

The fixed temperature at which a liquid starts changing into gaseous state is called its boiling point.
Ex- Water → Steam

c. Gas

The substances which remain in the gaseous state under normal conditions of temperature and pe pressure are called gases.
Ex- Oxygen, Hydrogen

Vapour

The process by which a substance changes from a liquid state to vapour state is called vapourisation or evaporation.
Ex- Water changes into gaseous state on heating.

d. Miscible Liquids

Liquids which mix with each other are called miscible liquids.
Ex- Water and Alcohol

Immiscible Liquid

Liquids which do not mix with each other are called immiscible liquids.
Ex- Water and Oil

5. Give reasons:

a) How is interconversion of states of matter different from chemical reaction?

b) Why a solid does not flow, but a liquid flows?

Ans⇒ a) During interconversion of state of matter composition of substance remains the same matter changes from one state to another and back to 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 space between them is very negligible. The molecules are therefore, not free to move. They nearly vibrate about their mean positions. But in case of liquids, the molecules are not very closely packed. They do not attract each other as strongly as the molecules of solid. Thus, the intermolecular spaces are larger and molecules are able to move about more freely. This makes a liquid flow.

6. How does a liquid change into its gaseous state? Explain.

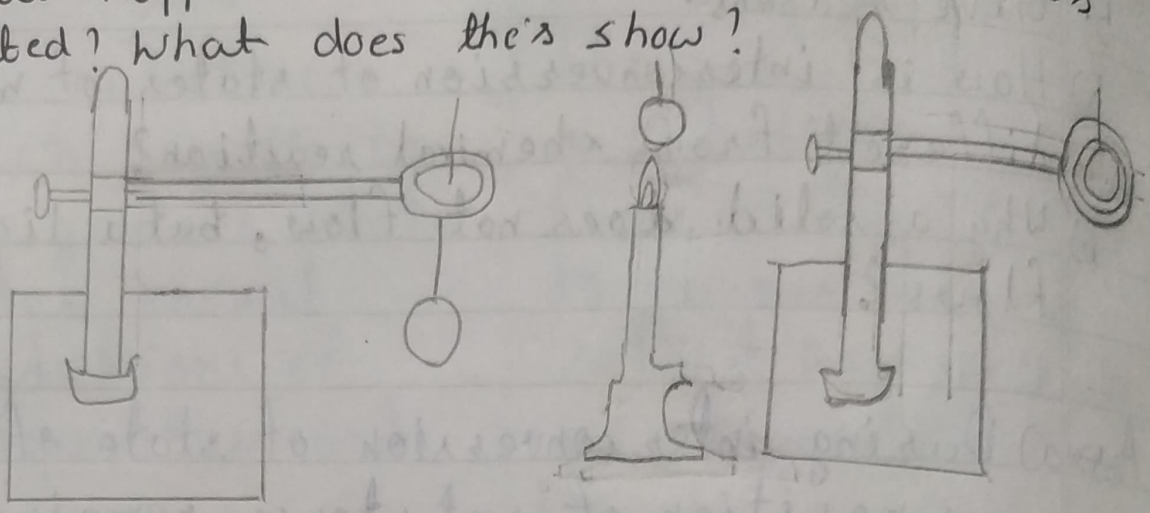
Ans⇒ As a liquid is heated, its particles starts gaining energy and move more vigorously which increases the gaps between particles and decreasing the force of attraction. Ultimately a liquid changes into gaseous state.

7. Water cycle is an interconversion of states of water. Explain.

Ans⇒ Water from oceans, rivers, lakes from leaves of tree (transpiration) changes into vapours when temperature increases or evaporates and enters the atmosphere as clouds when the 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 hailes and this continues. Thus water cycle is an example of interconversion of states of water.

8) What happens to a metal ball when it is heated? What does this show?

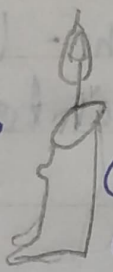
Ans:



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 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 heating. Now cool the ball, it again passes through the ring — This shows that a solid contracts on cooling.

Q. Why does a candle become smaller on burning with time?

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

Burning of a candle →  Candle wax → heating → Carbon-dioxide + Water Vapour

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

OBJECTIVE TYPE QUESTIONS

1) Fill In The Blanks.

a. 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 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°C.

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

2) Write whether the following statements are true or false.

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

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 the intermolecular ~~for~~ space. (False)

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

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

f. The intermolecular force of attraction is the weakest in gases. (True)

g. A gas has no free surfaces. (True)

4. a. Particles move about very quickly but do not leave the surface. [Liquid]

b. Particles are quite close together. [Solid]

c. Particles are far apart and move in all directions. [Gas]

5. Match the following:

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) Gases	i) Can flow in all directions.
e) Intermolecular space	iv) Gaps between particles.

6.a Formation of water vapour from water.
Vapourisation

b. Disapperance of camphor when exposed to air.
Sublimation

c. Conversion of ice into water.
Melting

d. Conversion of water into steam.
Boiling

7.a Substances which sublime.
Examples: Camphor, Dry ice

b. Substances which do not change their state.
Examples: Carbon, Hydrogen

c. Substances which are rigid and not compressible.
Examples: Glass, stone, Pen.

MULTIPLE CHOICE QUESTIONS

1. Which one is a kind of matter ?
Ans⇒ Petroleum

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

3. There are large intermolecular gaps in
Ans⇒ Air

4. All kinds of matter
Ans⇒ occupy space and have a definite mass.

5. A kind of matter which can sublime is
Ans⇒ Iodine

6. A substance which can change its state
Ans⇒ Oxygen

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

HW

1) List the characteristics of pure substances.

Ans⇒ The characteristics of pure substances are:-

a) Pure substances have a perfectly homogenous ~~perfect~~ nature.

b) Pure substances are made up of only one type of atoms (elements) or molecules (compounds).

c) Pure substances have a fixed composition.

d) Pure substances have a fixed density.

melting point, boiling point, physical and chemical properties.

2) Differentiate between a) Elements & Compounds.
b) Homogenous and Heterogenous mixture.

Ans) a.

Elements	Compounds
Element is defined as a pure substance made up of only one kind of atoms that cannot be converted into any-thing simpler than itself by any physical and chemical process.	Compounds are pure substances formed by the chemical combination two or more elements in a definite proportion by mass.
Ex- Iron, Carbon, Boron, Helium	Ex- Water, Ammonia, Carbondioxide,

b)

Homogenous Mixture	Heterogenous Mixture.
It is the mixture, in which the components are uniformly distrib-uted throughout its volume and cannot be seen separately.	It is the mixture, in which the components are not uniformly distributed throughout its volume and can be seen separately.
Ex - Tea, Milk, Juice.	Ex - Oil in water, Ice in water