

Class6

Chapter3 Matter

EXERCISE- I

Question 1.

Define matter.

Answer:

Anything that has mass and occupies space is called matter.

Question 2.

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

Answer:

The two main types of matter are:

Living matter: They can grow, move and reproduce on their own. Example : Plants, animals, human etc.

Non-living matter : They do not grow, move or reproduce on its own. It can be natural or man-made. Example: air, wood, plastic.

Question 3.

Differentiate between living and non-living matter.

Answer:

Living matter:

1. They can grow, move and reproduce on their own.
2. It is natural only.

Non-living matter:

1. They do not grow, move or reproduce on its own.
2. It can be natural or man-made.

Question 4.

Select natural and man made matter from the following

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

Answer:

Natural matter: Wood, silk, coal, water, fruits.

Man made matter: Plastic, medicines, detergents, ceramic, cotton, glass, nylon.

EXERCISE-II

Question 1.

Name the smallest particle from which matter is made up.

Answer:

The smallest particle from which matter is made up is atom.

Question 2.

What are molecules?

Answer:

Molecules are the smallest unit of matter which exhibit all the properties of that kind of matter and is capable of independent existence.

Question 3.

Give one difference between atoms and molecules.

Answer:

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

Question 4.

Define:

(a) Intermolecular force of attraction.

(b) Intermolecular space.

Answer:

(a) The molecules of matter are held together by a force of attraction called as intermolecular force of attraction.

(b) The molecules of matter have gaps or space between them called as intermolecular space.

Question 5.

Name the three states of matter and define them.

Answer:

The three states of matter are :

1. **Solid State**
2. **Liquid State**
3. **Gaseous State**

Solid State- solids have definite shape and volume and are incompressible.

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

Gaseous State- gases have neither definite volume nor definite shape but easily compressible.

Question 6.

What are fluids ? Give two examples.

Answer:

Substances that can flow are called fluids. Both gases and liquids are fluids, e.g- carbon dioxide, water.

Question 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.

Answer:

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

Question 8.

Give reasons

- (a) 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 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.
- (g) When an empty gas jar is inverted over a gas jar containing a coloured gas, the gas also spreads into the empty jar.
- (h) A red ink drop added to small amount of water in a glass turns the water red in some time.

Answer:

- (a) The molecules of liquids and gases are far apart and intermolecular force of attraction is very less as compared to solids, hence liquids and gases can flow but solids do not.
- (b) Intermolecular force of attraction is least and intermolecular spaces are very large, hence gases can fill up the space available to them.
- (c) Particles of gas have high kinetic energy and remain in continuous random motion due to which diffusion occurs and the scent spreads in all directions.
- (d) The molecules of air have large intermolecular spaces 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.
- (f) The sugar particles are adjusted between the water molecules as inter-molecular 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.

Question 9.

Define:

(a) cohesive force

(b) diffusion

(c) Brownian movement

Answer:

(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 due to its kinetic energy is called Brownian movement.

Question 10.

Why is an egg kicked out of a bottle when air is blown inside the bottle?

Answer:

When we invert the 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

Question 1.

State the three effects of heat on matter.

Answer:

When a substance is heated, it can cause

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

Question 2.

(a) Define : interconversion of states of matter.

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

Answer:

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

(b) Two conditions are :

1. Change in temperature
2. By applying pressure

Question 3.

Define the following terms:

(a) Fusion

(b) Vaporisation

(c) Condensation

(d) Sublimation

(e) Diffusion

- (f) Melting point
- (g) Boiling point
- (h) Liquefaction

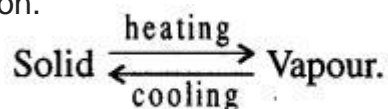
Answer:

(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 on cooling is called condensation.

(d) **Sublimation**: The process by which solid changes into gaseous state directly on heating and vice-versa without passing through the liquid state is called sublimation.



(e) **Diffusion** : The phenomenon of intermixing of molecules one kind with another kind 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.

(g) **Boiling point**: The fixed temperature at which a liquid changes into gaseous state at a given pressure is called its boiling point.

(h) **Liquefaction** : The process of changing of vapours on cooling into liquid is called liquefaction.

Question 4.

Differentiate between:

- (a) Solidification and condensation
- (b) Melting and boiling
- (c) Gas and vapour
- (d) Miscible and immiscible liquids.

Answer:

(a) **Solidification** : The process of changing liquid into a solid state by cooling is known as solidification. Example : water → ice.

Condensation : The process of changing a gaseous state to a liquid state by cooling is known as condensation. Example : steam → water.

(b) **Melting** : The process in which a solid changes into a liquid on heating at a given pressure is called melting. e.g. ice → water.

Boiling : The process in which a liquid starts changing into gaseous state on heating at a given pressure is called boiling. e.g. water → steam.

(c) **Vapour** : a substance that changes from a liquid state to gaseous state by changing the conditions of temperature and pressure is called vapour. e.g. Water vapour.

Gas : The substance which remain in the gaseous state under normal conditions of

temperature and pressure are called gases. e.g. Oxygen, hydrogen, nitrogen.

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

Immiscible liquids : Liquids which do not mix with each other are called immiscible liquids. Example Water and oil.

Question 5.

Give reasons :

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

Answer:

During interconversion of state of matter, matter changes from one state to another and back to the original state without any change in chemical composition while chemical reaction involves re-arrangement of the molecular structure and composition changes.

Question 6.

How does 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 7.

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

Answer:

Water from oceans, rivers, lakes etc. changes into vapours when temperature increases or evaporates and enters the atmosphere as cloud. When temperature falls the vapours change into water and come back to earth. Thus water cycle is example of interconversion of states of water.

Question 8.

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

Answer:

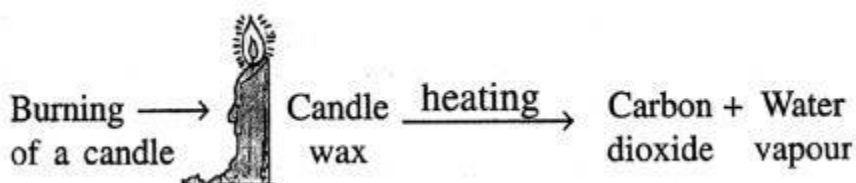
When metal ball is heated, it expands. This shows that solids expand on heating.

Question 9.

Why does a candle become smaller on burning with time?

Answer:

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



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

OBJECTIVE TYPE QUESTIONS

Question 1.

Fill in the blanks :

- (a) Water is a 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** 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**.

Question 2.

Write whether the following statements are true or false.

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

Answer:

- (a) True
- (b) True
- (c) False
- (d) False
- (e) False
- (f) True
- (g) True

Question 3.

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

- (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**

Question 4.

Match the following :

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) Can have any number of free surfaces.
(d) Gases	(iv) Gaps between particles.
(e) Intermolecular space	(v) Change of state from solid to gas.

Ans.

Column A	Column B
(a) Solids	(iii) Can have 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.

Question 5.

Name the phenomenon which causes the following changes:

- (a) Formation of water vapour from water.
- (b) Disappearance of camphor when exposed to air.
- (c) Conversion of ice into water.
- (d) Conversion of water into steam.

Answer:

- (a) Formation of water vapour from water is **vaporisation**.
- (b) Disappearance of camphor is **sublimation**.
- (c) Conversion of ice into water is **melting**.
- (d) Conversion of water into steam is **boiling**.

Question 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.**

Answer:

- (a)** Naphthalene, camphor, dry ice.
- (b)** Oxygen, hydrogen, nitrogen
- (c)** Glass, stone, pen.

MULTIPLE CHOICE QUESTIONS

1. Which one is a kind of matter :

- (a) light
- (b) petroleum**
- (c) sound
- (d) heat

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

- (a) solid
- (b) liquid
- (c) gas**
- (d) water

3. There are large intermolecular gaps in

- (a) water
- (b) iron ball
- (c) common salt ..
- (d) air**

4. All kinds of matter

- (a) occupy space and have a definite mass**
- (b) have mass and a definite shape
- (c) can change their states
- (d) have a definite volume

5. A kind of matter which can sublime is

- (a) water
- (b) plastic
- (c) milk
- (d) iodine**

6. A substance which can change its state

- (a) wood

(b) oxygen

(c) paper

(d) cloth

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

(a) freezing

(b) melting

(c) condensation

(d) evaporation

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Class: 6 Subject: Chemistry
Chapter-3 Matter (Inside question answers)

- **What is Big Bang?**

→ Most scientist believe that all the matter in the universe was created in an explosion called Big Bang which releases large amount of energy.

- **How do we detect the leakage of LPG?**

→ Due to the process of diffusion, the had on leaking spreads in the air and it's smell can be detected.

- **What is a chemical change?**

→ A chemical change is a permanent change in which new substances are formed from the substances used. The properties of new substances are entirely different from those of original substances.

- **Give the principle in which the thermometer works?**

→ The thermometer works on the principle that a liquid expands on heating and contracts on cooling.

- **How can we test the purity of a substance?**

→ A pure substance has a fixed boiling and melting point which can be used to test the purity.

- **Give reason**

a. Nathalene balls kept with clothes become smaller with time.

→ Nathalene sublimates and slowly gets converted into vapour.

b. Wet ink becomes dry after a short time.

→ Wet ink contain water which turns into vapour and evaporates into the air.

c. Boiling is an extreme form of vaporization.

→ On heating a liquid, the particles gain energy and movement increases. Intermolecular space increases and intermolecular attraction decreases. The liquid finally changes into vapour.