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MATTER

EXTRA QUESTIONS

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Q) What do you mean by matter?

Ans- Anything that has mass and occupaies space is called mater.

Q) Describe mono atomic and diatomic molecules along with examples?

Ans- Monoatomic refer to substances composed of particles containing single attoms
Ex - Helium, Neon

Diatomic refer to substances composed of molecules containing two atom bonded to each other.
Ex - Hydrogen, Oxygen, Nitrogen

Q) Give an example that shows matter offers resistance?

Ans- Matter is anything that has mass and occupies space. It is said that matter offers resistance because we cannot displace an object from one place to anothe without

applying some force.
ex - We have to apply force to pick a stone from the ground.

OBJECTIVE TYPE QUESTIONS

1. Fill in the blanks :-

a) Water is matter because it has weight and occupies space

b) Any matter which has a definite volueme but no definite shape is called a liquid

c) liquid and gas can flow

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

e) Water boils at 100°

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

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2. Write wheather the following statements are True or false :-

(a) Only water can exist in three different state : True

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

(c) Solids have the largest intermolecular space : False

(d) There is no difference between evaporation and boilling : false

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

(f) The intermolecural force of attraction is the weakest in gases : True

(g) A gas has no free surface : True

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.

4. Match the following

(a) Solids	(i) Can flow in all directions
b) Sublimation	(ii) The temprature at which a liquid changes into its gaseous state
d) Boiling Point	(iii) Can have any number of free surface.

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d) Gases — (iv) Gaps between particles.

e) Intermolecular space — (v) change of state directly from solid to gas.

a - iii
b - v
c - ii
d - i
e - iv

5. Name the phenomenon which causes the following changes :-

a) Formation of water vapour from water - Vaporisation

b) Disappearance of camphor when exposed to air - Sublimation.

c) Conversion of ice into water - melting

d) Conversion of water into steam - boiling

6. Give two examples for each of the following

a. Substances which sublime - Naphthalene, camphor, dry ice.

b. Substances which donot change their state — oxygen, hydrogen, nitrogen

c. Substances which are rigid and not compressible — Glass, stone, pen

MULTIPLE CHOICE QUESTIONS

1. Which one is a kind of matter? : Petroleum
2. The state of matter which has no definite shape or volueme is called : gas.
3. There are large intermolecular gaps in - air
4. All Kinds of matter : Occupy space and have a definite shape.
5. A Kind of matter which can sublime is : iodine.
6. A substance which can change state : oxygen
7. The process by which a solid change into a liquid is called : melting

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MATTER

EXERCISE - I

1. Define matter.

Ans- Anything that has mass and occupies space is called matter.

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

Ans. The two main types of matter are :

* Living matter : The earth is home to all kinds of plants and animals. They can grow, move and reproduce on their own.
Ex - plant, animals, human.

* Non-Living matter : Most of the matter in the universe is non-living. It means that it does not grow, move or reproduce on its own. It can be natural or man made.
Ex - Air, water, star, plastic, Cement, etc.

3. Differentiate between living and non-living matter.

Ans.

Living matter	Non-living matter
*The earth is home to all kinds of plants and animals. They can grow, move and reproduce on their own.	* Most of the matter in the universe is non-living. It means that it does not grow, move or reproduce on its own.
* It is natural only	* It can be 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 made: Wood, Silk, Coal, water, fruits.

Man made: Plastic, medicines, detergents, Ceramic, cotton, glass, nylon.

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EXERCISE - II

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

Ans- Atom is the smallest particle from which matter is made up of.

2. What are molecules?

Ans- A molecule is the smallest unit of matter which exhibits all the properties of that kind of matter and is capable of independent existence.

3. Give one difference between atoms and molecules.

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

4. Define :

(a) Intermolecular force of attraction : 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 held together.

(b) Intermolecular Space :- The molecules can move only when there are gaps or space between them, this space is called intermolecular space.

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

Ans- Solid state :- The molecules are very close to each other so the intermolecular space are small and intermolecular force is strong. Hence Solids have definite volume, rigid, retain definite shape and are incompressible.

Liquid state :- The molecules are less closely packed and have more intermolecular spaces than Solid, less stronger

forces than Solid. Hence liquids have definite volume but no definite shape. They take the shape of Container in which they are put.

Gas state : 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.
Ex- Carbon dioxide, hydrogen
Water, Petrol, Cooking oil.

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

Oxygen, milk, Common Salt, wax, stone, LPG, Carbon dioxide, Sugar, mercury, Coal, blood, butter, Copper, Coconut oil, Kerosene.

Ans. Solid : Common salt, wax, stone, Sugar, Coal, butter, Copper.

Liquid : milk, mercury, blood, Coconut oil.

Gas : Oxygen, LPG, Carbon dioxide.

8. Give reasons :

(a) Liquids and gases flow but solids do not. The molecules of liquids and gases are far apart. They have more gaps, inter-molecular attraction force is 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 is very strong.

(b) A gas fills up the space available to it. The 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.
Scent fumes (molecules) being gases fill the spaces between air molecules and the molecules of air fill the space between Scent molecules due to diffusion, fumes spread into a room.

(d) We can walk through air.
The molecules of air are far apart so we can walk through air easily.

(e) Liquids have a definite volume but no definite shape.
The molecules of liquid are loosely packed and intermolecular force of attraction is small but number of molecules in it remain the same. So the 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.
When a teaspoon of sugar is added to a 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. This is because gases can diffuse in or 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 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. Define :
Diffusion
(b) ~~cohesive force~~ : The phenomenon of intermixing of particles of one kind with another kind is called diffusion.

(b) Cohesive force : The force of attraction between particles of the same substance is called Cohesive force.

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

10. Why is an egg kicked out of a bottle 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.

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EXERCISE – III

1. state the three effects of heat on matter.

Ans. When a substance is heated, it can cause–
* interconversion of states of matter.
* Thermal expansion of the substance.
* chemical change.

2. (a) Define : interconversion of states of matter – 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 inter-conversion of states of matter?

Ans. – change in temperature
– By applying pressure.

3. Define the following terms :

(a) fusion : The heating process by which a Solid changes into the liquid state is called fusion.

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(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 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.

(g) Boiling point :- The fixed temperature at which a liquid starts changing into gaseous state is called its boiling point.

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

4. Differentiate between :-

(a) Solidification	Condensation
* The process of changing liquid into a solid state by cooling is known as Solidification.	* The process of changing a gas or vapour state to a liquid state by cooling is known as condensation.
* Ex- water to ice.	* Ex- steam to water.

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(b)

Melting	Boiling
* The fixed temperature at which a solid changes into a liquid at a given ~~temperature~~ pressure is called its melting point.	* The fixed temperature at which a liquid starts changing into gaseous state is called its boiling point.
* Ex - ice to water.	* Ex - water to steam.

(c)

Gas	Vapour
* The substance which remains in the gaseous state under normal conditions of temperature and pressure are called gases.	* The process by which a substance changes from a liquid state to vapour state is called vapourisation or evaporation.
* Ex - oxygen, hydrogen, nitrogen.	* Ex - water to steam.

(d)

Miscible liquids	Immiscible liquids
* Liquids which mix with each other are called miscible liquids.	* Liquids which dont mix with each other are called immiscible liquids.
* Ex - water and alcohol.	* Ex - water and oil.

5. How is interconverstion of states of matter different from a chemical reaction?

Ans- During interconverstion of states of matter, Composition of Substances remains the Same and the matter changes from one state to another and back to the original state.

But chemical reaction involves re-arrangement of the molecular structure and composition changes.

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 the particles and decreases the force of attraction. And ultimately a liquid changes into gaseous state.

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

Ans- Water from oceans, rivers, lakes, leaves of trees (transpiration) changes into vapour when temperature increases. It evaporates and enters the atmosphere as clouds and when the temperature falls the vapours change into water. Some water fall in form of snow, rain or hales.

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

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 metal ball for 5-6 mins. The hot ball is not 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 also shows that solids contracts on cooling.

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

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

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

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ASSIGNMENT

Answer the following questions :-

1. List the characteristics of Pure Substances.

Ans- The characteristics of ~~Pure~~ Pure Substances are :-

* 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.
* They have a definite set of physical and chemical properties.
* They have fixed melting and boiling point.
* Pure substances have characteristics colour, odur and taste.
* Pure Substances cannot be broken into simpler substances by any physical means.

2. Differentiate between elements and Compounds.

Elements	Compounds
i) They are pure Substances which have only one kind of atom. Ex – Na, H, O, Cl	i) They are pure Substances that may or may not have one kind of atom. Ex – H_2O

ii) They have properties different from compounds they make. Ex- Hydrogen and oxygen are combustible but water is not.	ii) They have properties different from elements that they are made of. Ex - Hydrogen and oxygen are gases, but they make up water which is liquid.
iii) They cannot be broken down further, they are the basic unit.	iii) They can be broken down, but only chemically
iv) The atoms of elements exist independently	iv) The Components when Combined chemically in a definite proportion. Can exist independently.

3. Differentiate between homogeneous and heterogeneous mixtures.

Homogeneous	Heterogeneous
i) A homogeneous mixture is that mixture in which the ~~Compounds~~ Components mix with each other and	i) A heterogeneous mixture is that mixture in which the Composition is not uniform throughout and

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its Composition is uniform throughout the Solution.	different Components are observed.
ii) Components of homogeneous mixture Cannot be seen through naked eyes.	ii) Components of heterogenous mixtures can be seen through naked eyes.
iii) In this mixture the Component Sizes are atomic / molecular level.	iii) Here, in this mixture the size of particles are large.
iv) Components of homogeneous mixtures Cannot be separated easily.	iv) Components of heterogeneous mixtures can be separated easily.
v) The Constituent particles in a homogeneous mixtures possess the same physical properties.	v) The Constituent particles in hetengeneous mixtures possess different physical properties.
vi) Ex- Salt Solution, Sugar Solution, air	vi) Ex- mixture of Salt and Sugar, grains and pulses along with dirt particles.