Chapter -3

Exercise - I

1. Matter is anything that occupies space and has mass.
2. Matter is of two types:
   (a) Living: ~~cow, dog, humans etc.~~ plants, animals
   (b) Non-living: ~~chair, desk, air etc.~~ natural, man-made
3. (i) Living matter: Matter which has life is known as living matter. They can grow, move and reproduce on their own. Living matter is of two types:
   (a) Plants: Eg - lotus, banyan tree, etc.
   (b) Animals: Eg - dog, cat, humans, etc.

   (ii) Non-living matter: Most of the matter in universe is non-living. It means that it does not grow, move or reproduce on its own. It can be natural or man-made.
   (a) Natural matter: eg - wood, coal, silk, water, etc.
   (b) Man-made matter: eg - plastics, soaps, detergents, etc.

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14. Natural - Wood, silk, coal, water, cotton, fruits.
Man-made - Plastic, medicines, detergents, ceramic, glass, nylon.

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Q) Give an example that shows matter offers resistance.

Ans:- If we try to swim in fast flowing water or walk in an air storm, we will experience resistance.

Ex-II

1. Atoms The smallest particle from which matter is made up of is atom.

8. (a) The intermolecular space between the molecules of ~~solids~~ liquids and gases is more than that in solids. The intermolecular force of attraction between the molecules of liquids and gases is less than that in solids. Hence, liquids and gases ~~can~~ flow but solids do not.

(b) In case of gases, the intermolecular force of attraction is very less. The molecules hardly attract each other. The ~~intermolecular~~ intermolecular ~~of~~ space between the molecules is the most. The molecules lie far apart from each other. Hence, they neither have a definite volume nor a definite shape. So, a gas fills up the space available to it.

(c) Gases diffuse easily because the particles of gas have enough space between them which allows them to move freely and to mix up easily. Hence, the odour of scent spreads in a room.

(d) The intermolecular force of attraction between the molecules of gases is the least and the intermolecular space between the molecules is the most. Hence, gases are less viscous than liquids. So, we can walk through air.

(e) The intermolecular force of attraction between the molecules of liquids is less than that in solids and the intermolecular space between the molecules of liquids is more than that in solids. Hence, liquids have a 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 smaller particles of sugar occupy the space between the bigger particles of water. The sugar particles are adjusted between

the water molecules due to intermolecular space between water molecules because intermolecular,

(g) When an ~~mm~~ empty gas jar is inverted over a gas jar containing a coloured gas, the gas ~~also spreads~~ into the empty jar because of diffusion. ~~dif~~ diffuse very quickly ~~due to~~ because the intermolecular force of attraction between the molecules of gases is the least.

(h) A red ink drop added to a small amount of water in a glass turns the water red in some time because of diffusion. liquids diffuse slowly than gases because the intermolecular force of attraction between the molecules of liquids is more than that in gases.

9. (a) Cohesive force: The force of attraction between like particles or molecules is called cohesive force. Ex: The force of cohesion between the molecules of water.

(b) Diffusion: The phenomenon of intermixing of particles of one kind with another kind is called diffusion. Liquids and gases diffuse.

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

20.7.21

~~Melting point~~: The temperature at which a ~~solid~~ melts and

Activity 1

- List five objects made by using each of the following materials

1. Wood - Bed, door,
2. Paper - paper bag
3. Plastic - polythene, plastic bottle, copy cover, wire pen,
4. Metals - necklace, bracelet, earring,
5. Leather - shoes, jacket, bag
6. Cloth - ~~ski~~ dress, sarees, bedsheets, curtains, bag

20.7.21

Exercise - II

2. Molecules are the smallest unit of matter. They exhibit all the ~~pro~~ properties of

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that kind of matter and is capable of independent existence.

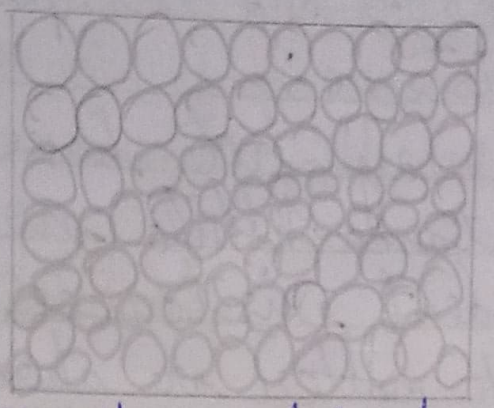
3. Atoms may or may not have ~~int~~ independent existance. While molecules have independent existence.

4. (a) The molecules of matter are always in motion and attract each other with a force, and his force is called intermolecular force of attraction ~~and~~ due to which they are held together.

(b) The molecules can move only ~~is~~ when there are gaps or space ~~to~~ between them, this space is called intermolecular space.

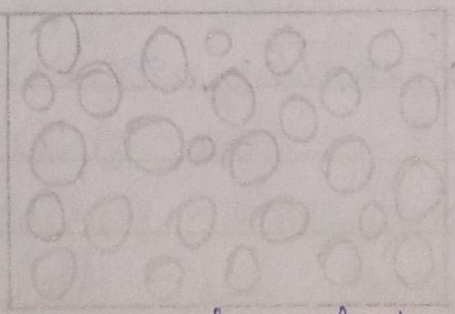
5. The three states of matter are:
1. Solids
2. Liquids
3. Gases

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



~~He~~ Hence solids have definite volume, ~~rigit~~ rigid, retain definite shape and are incompressible.

Liquids: The molecules are less ~~co~~ closely packed and have more intermolecular spaces than solid, less ~~st~~ stronger forces than solids.



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

Gases: The molecules in the gases are far apart with weakest force of attraction.

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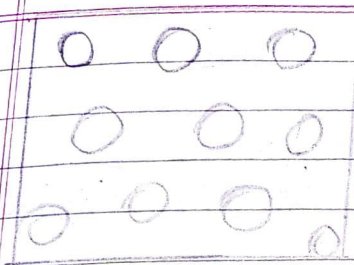

Hence gases have neither definite volume nor definite shape but easily compressible.

6. Substances that can flow are called fluids. Both gases and liquids are fluids, eg. gases (carbon dioxide, hydrogen), liquids (water, petrol and sulphuric acid).

7.

Solids	Liquids	Gases
Common salt	Milk	Oxygen
Flax	Mercury	L.P.G.
~~Salt~~ Stone	Blood	Carbon dioxide
Sugar	Coconut oil	
coal	Kerosene	
Butter		
Copper		

10. When we invert the bottle and blow air into the bottle through the side opening. It ~~created~~ creates high pressure inside the bottles at the egg is ~~kick~~ kicked out of the ~~B~~ bottle.

Exercise – III

3. (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 vice-versa without passing through the liquid state is called sublimation.

Solid $\underset{\text{Cooling}}{\overset{\text{Heating}}{\rightleftharpoons}}$ Vapour.

(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 ~~pow~~ point: The fixed temperature at which a ~~solid changes~~ 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: ~~Th~~ Change of vapours on cooling to liquid is called ~~liquefaction~~ liquefaction.

4. (a) Solidification: The process of changing liquid into ~~a~~ a solid state by by cooling is known as solidification.
Example: water ⟶ ice.
Condensation: The process of changing a gas or vapour state to a liquid state by cooling is known as condensation.
Example: steam ⟶ water.

(b) Melting: The fixed ~~tem~~ temperature at which a solid changes into a liquid at a given pressure is called its melting point.
Example: ~~water~~ ice ⟶ water.

Boiling: The fixed temperature at which a liquid starts changing into gaseous state is called its boiling point.
Example: water → steam.

(c) Vapourisation: The process by which a substance changes from a liquid state to vapour state is called vaporisation or evaporation.
Example: Water changes into gaseous state on heating.
Gas: The substance which remain in the gaseous state under normal conditions of temperature and pressure are called gases.
Example: Oxygen, hydrogen, nitrogen.

(d) Miscible: Liquids which mix with each other 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.

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

(b) In solids there is a strong force of attraction between the molecules at the ~~space~~ space between them is very ~~negligible~~ negligible. The molecules are therefore, not free to move. They merely vibrate about their mean positions. But in the 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 spaces are larger and the molecules are able to move about more freely. This makes a liquid flow.

6. 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.

7. Water from oceans, rivers, lakes from leaves of trees (transpiration) changes into vapours 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 in the form water and lakes and this continues. Thus water cycle is example of interconversion of states of water.

8. When metal ball is heated, it expands This can be proved by following experiment:
Take a metallic ball and ring. Try to pass the metal ball through the ring. The ball is able to pass through the ring. Now heat the metal ball for

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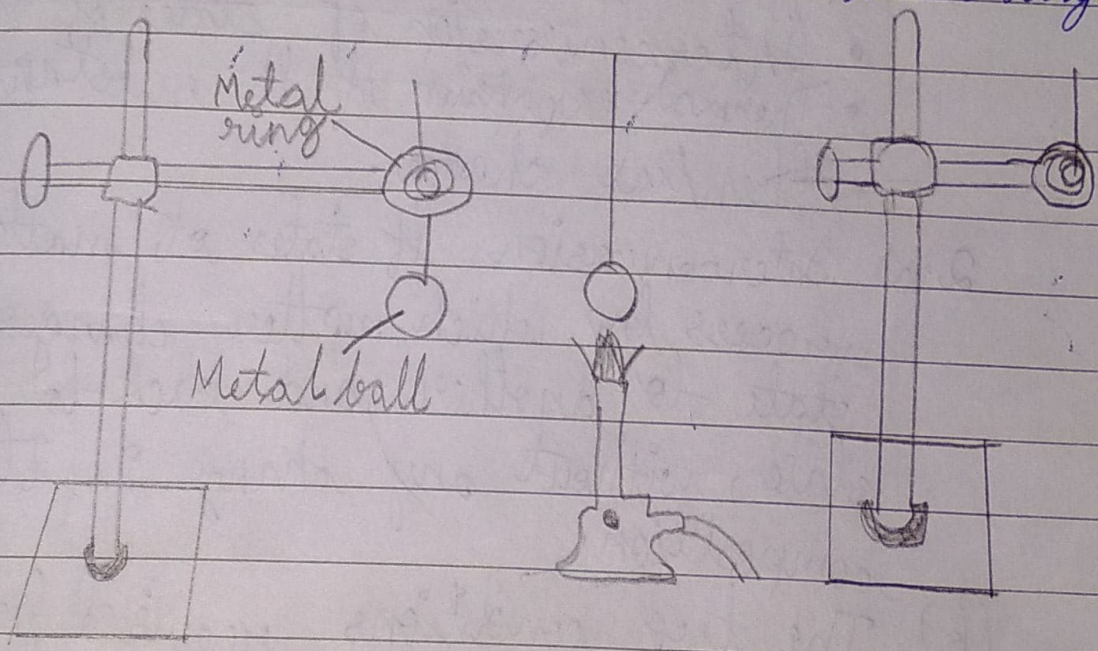
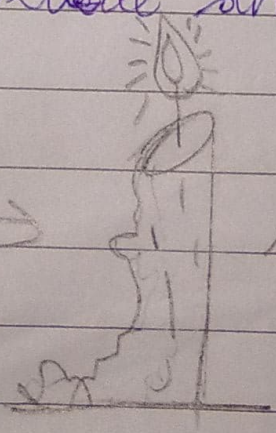
5-6 minutes. The hot ball is not able to pass through the ring. This shows that a solid expands on heating. Now cool the ball, it again passes through the ring. This shows that a solid contracts on cooling.



9. On heating, candle wax melts, then turns into vapour which reacts with air to produce two new substances, carbondioxide 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 chemical change cannot be recovered.

1. Effects of heat on matter:
   - Interconversion of states of matter.
   - Thermal expansion of the substance.
   - Chemical change.

2. (a) Interconversion of states of matter is the process by which matter changes from one state to another and back to the original state, without any change in its chemical composition.

   (b) The two conditions required for the interconversion of states of matter are:
   1. change in temperature.
   2. applying pressure.

Chapter - 4

Homework

2. (a) Characteristics of pure substances:

- Pure substances have a perfectly homogeneous nature.
- Pure substances are made up of only one type of atoms (elements) or molecules (compounds).
- Pure substances have a fixed composition.
- Pure substances have a fixed density, melting point, boiling point, physical and chemical properties.

3. (i)

Elements	Compounds
• They are made up of only one kind of atoms.	• They are made up of only one kind of molecules.
~~• Example~~	≡
• Elements cannot be broken down into simpler ~~substances~~ substances.	• Compounds can be broken down into simpler substances.

• Elements are the basic substances from which all other substances are made.	• Compounds are made up of elements.
• The number of elements are fixed. (118 elements)	• The number of compounds are endless.
• Elements are represented by symbols.	• Compounds are represented by chemical formula.
• Example: Oxygen(O), iron(Fe), copper(Cu), gold(Au), etc.	• Example: Water(H_2O), Sodium chloride(NaCl), Hydrogen chloride(HCl), etc.

(ii)

Homogeneous	Heterogeneous
• It is the mixture, in which the components are uniformly distributed 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 easily seen separately.
• Eg: tea, honey, milk, etc	• Eg: soil, oil in water, etc.

Book Exercise

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. True / 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) False

(d) False

(e) False

(f) True
(g) True

3. (a) Liquids
(b) Solids
(c) Gases

4.

Column A		Column B
(a) Solids	-	(iii) Can have any no. 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.

5. (a) Evaporation
(b) Sublimation
(c) Melting
(d) Boiling

6. (a) Camphor, Iodine, dry ice
(b) Wood, wax, oxygen
(c) Wood, diamond, glass

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1. (b) petroleum
2. (c) gas
3. (d) air
4. (a) occupy space and have a definite mass
5. (d) Iodine
6. (b) Oxygen
7. (b) melting

Q) What do you mean by matter?

Ans:- Matter is anything that ~~occur~~ occupies space and has mass.

Q) Describe mono atomic ~~or~~ and diatomic molecules along with examples.

Ans:- Molecules consisting of only one atom are known as monoatomic molecules.
Ex- ~~Hydroge Ro~~ Xenon, Radon, Helium, Argon, Neon, Krypton.
Molecules consisting of two atoms are known as diatomic molecules.
Ex- Oxygen (O_2), Hydrogen (H_2), ~~Hiber~~ Nitrogen (N_2), etc.