

STEPPING STONE
SCHOOL (HIGH)

CLASS : VII

Subject:

Topic: Answers to worksheets

Dated: 27.04.2020 to 1.05.2020

11.05.2020 to 15.05.2020

Answers to Worksheet No.:1

Date :28/4/2020

1.a)Element : It is defined as a substance which cannot be sub divided into two or more simpler substance by any chemical means

b)Atom : It is defined as the smallest you need or finally men which may or may not have an element, which may or may not have an independent existence ,but always takes part in a chemical reaction.

c) Molecules: A molecule is a particle made up of 2 or more atoms that are chemically bonded. Eg Hydrochloric acid.

d) Matter It is defined as any substance that has mass and takes up space by having volume.

2. The properties of metals are as follows:

- i) It can neither be created nor destroyed**
- ii) It is composed of a particular materials which can either homogeneous or heterogeneous.**
- iii) The matter has volume , mass and weight as per their state.**

3.

ARRANGEMENT OF MOLECULES IN A SOLID (SAY A STEEL WEIGHT)

- 1. In solids, the molecules are very tightly packed.*
- 2. As the intermolecular spaces are very small, therefore, the molecules attract one another with a strong force.*
- 3. The intermolecular force of attraction holds molecules at one particular place.*
- 4. Because of the fixed position of the molecules, the solids have a definite shape and definite volume.*
- 5. As the molecules attract each other with a very strong force, therefore, it is difficult to tear them apart. Thus, the solids are rigid and hard.*



4. The molecule or forces are forces that bind the particles together to form molecules , they are two fundamental forces strong force keep elemental particles together and weak force keeps atoms together.

5. Liquid can flow easily while a solid cannot, because the atoms of liquid are loosely packed and their intermolecular forces of attraction are not so strong but solid particles are very tightly packed and have strong force of intermolecular.

6. The particles in a liquid are close together but they are able to move /slide/ flow past each other. The particles in a gas are fast moving and are able to spread apart from each other.

7. Yes we can store gas in a container.

Answers to Worksheet No.:2

Date :29/4/2020

- 1) i) volume ii) mass iii) three iv) freezing v) mass
vi) hard material vii) CNG viii) intermolecular forces
x) an element or a compound.

2. 1) Liquids have their molecules separated from each other thus the molecules of liquid do not stick to each other like in solids. Hence it shows tendency to flow. Therefore we need to store them in a container so that they won't flow out everywhere.

2 a)

(a) Solid : A solid is that state of matter which has a fixed shape, mass and volume. It suffers very small changes in volume by changing the temperature. It can not be compressed,

b)

General Characteristics of Solid State

- Definite mass, volume, and **shape**.
- Short Intermolecular distance.
- Strong Intermolecular Forces.
- The constituent particles remain fixed at their positions and can only oscillate about their mean positions.
- Solids are incompressible and rigid.

3a

(b) Liquid : It has a definite mass and volume but lacks a shape of its own. It takes up the shape of the containing vessels. It can be compressed to an extent,

b

Now we can conclude that liquids have following properties :

- (a) The liquids have **no definite shape**. They take the shape of the containing vessel.
- (b) Liquids have a **definite volume**.
- (c) Liquids always need some container as otherwise they start **flowing**.
- (d) Liquids have only one definite **free surface** at the top of vessel in which they are contained. This surface is always flat.
- (e) Liquids **cannot be compressed**, i.e., their volume does not change with the forces of compression.

4)a)

(c) Gas : It is a state of matter which has only definite mass but no definite shape and volume. It takes up the shape of the container
e.g. – Carbon dioxide, oxygen, etc.

b)

- (a) *Gases have **no definite shape**. They take the shape of the containing vessel.*
- (b) *Gases have **no definite volume**. They have a property to fill the entire space available to them.*
- (c) *Gases can be **compressed**.*
- (d) *Gases have **no free surface**.*
- (e) *Gases have very very large intermolecular spaces as compared to solids and liquids.*

5)

DIFFERENCES BETWEEN THE THREE STATES OF MATTER

The following table shows the differences between the three state of matter.

Table 1.1: Differences between the Three States of Matter

Properties	Solids	Liquids	Gases
Shape	Solids have a fixed shape.	Liquids do not have a fixed shape. They take the shape of the containers they are stored in.	Gases do not have a definite shape.
Volume	Solids have a definite volume.	Liquids have a definite volume.	Gases do not have a definite volume.
Density	Solids possess high density.	Liquids possess low density.	Gases possess very low density.
Compressibility	Solids are incompressible.	Liquids cannot be compressed.	Gases are highly compressible.
Flow	Solids cannot flow.	Liquids can flow from a higher level to a lower level.	Gases can flow in all directions.
Interparticle force of attraction	The interparticle force of attraction is strong in solids.	The interparticle force of attraction in liquids is less as compared to solids.	The interparticle force of attraction is very weak in gases.
Interparticle space	The interparticle space between the particles in solids is very less.	The interparticle space between the particles in liquids is more than that in solids.	The interparticle space between the particles in gases is very large as compared to solids and liquids.

3)

Write 'True' or 'False' for the following statements :

Statement	True/False
1. The largest intermolecular spaces are in case of gases.	<u>True</u>
2. A gas has a definite shape and definite volume.	<u>False</u>
3. A liquid has a definite volume, but no definite shape.	<u>True</u>
4. Gases are highly compressible.	<u>True</u>
5. The intermolecular forces are smallest in case of gases.	<u>True</u>

4)

Match the statements in Column A, with those in Column B.

Column A	Column B
1. Force of attraction in between the molecules of matter.	(a) Matter 3
2. Spaces in between the molecules of matter.	(b) Solid 4
3. Any material which occupies space and has mass.	(c) Liquid 5
4. A state of matter which is incompressible.	(d) Intermolecular force 1
5. A state of matter which can have only one free surface.	(e) Intermolecular spaces 2

Answer of worksheet:3

Date:30/4/2020

1.i) Compound: A compound is a substance formed when two or more chemical elements are chemically bonded together. Example: water and carbon dioxide.

ii) Pure substance : It is defined as a substance that are made up of only one type of atom or molecule. It is any homogeneous mixture. Example iron and steel.

iii) Yes water is a compound. Its constituents are hydrogen and oxygen.

iv) Compounds have different properties from the elements that made them. The atoms of different elements and held together in compound by chemical bonds. Chemical bonds can hold atoms together in large networks or in small groups.

v) Define:

i) Atom: An atom is the smallest constituent unit of ordinary matter that constitute a chemical element .Example hydrogen (H).

ii) Chemical bond: It is an attractive force between atoms that cause multiple atoms to come together in a specific pattern to form a compound.

iii) Inter particle force : It can be defined as the force of attraction exists between the particles.

iv) Intermolecular space: It is the space between the microscopic bodies example atoms or molecules.

v) Plasma: Gases on heating to tens of thousands of degree of Celsius changes into another state of matter called plasma

vi) Viscous liquids: Liquid such as honey, coconut oil, animal fat are sticky and difficult to pour out. It is because there is more friction between the layers of the molecules of this liquids. Such liquids are called viscous liquids.

Vi)

Atom	Molecule
1. It is the smallest part of an element.	1. It is the smallest part of a compound.
2. It does not have independent existence.	2. It has an independent existence.

2. a) Melting. b) Intermolecular forces of attraction. c) Solid
d) Sublimation. e) Condensation.

3. a) In Solids, atoms are rigidly arranged with little interatomic space .This is why fluid can flow and solids cannot. They can only be heaped.

b) Liquids and gasses are called fluids because they can be made to flow, or move. In any fluid, the molecules themselves are in constant ,random motions, colliding with each other and with the walls of the container.

c) Gas particles spread out to fill a container evenly, unlike solids and liquids when more gas particles enter a container, there is a less space for particles to spread out, and they became compressed. They exert more force. This force is called pressure.

d) The molecules in a solid are in fixed positions and are close together. Although the molecules can still vibrate, they cannot move from one part of the solid to another part. As a result, a solid does not easily change its shape or its volume.

e) The atoms, ions or molecules that make up the solid or liquid are very close together. There is no space between the individual particles so they cannot pack together. Gases are compressible because most of the volume of a gas is composed of large amount of empty space between the gas particles.

Answer of worksheet:4
Date:12/5/2020

1)

The **difference between mass and weight** is that **mass** is the amount of matter **in a** material, while **weight** is a measure of how the force of gravity acts upon that **mass**. **Mass** is the measure of the amount of matter **in a** body. ... **Weight** usually is denoted by W. **Weight** is **mass** multiplied by the acceleration of gravity

2)

The **particles of matter** are very, very small. The **particles of matter** have space between them. The **particles of matter** are constantly moving. The **particles of matter** attract each other.

3)

(a) Solid : A solid is that state of matter which has a fixed shape, mass and volume. It suffers very small

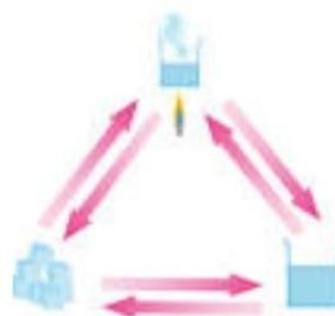
Intermolecular space is the **space** between two molecule or atom. In solids it is very little, in liquids is more the solids but less than liquids and in gases its the maximum. **Intermolecular** forces are forces of attraction or repulsion which act between neighboring particles (atoms, molecules or ions).

e.g. = Carbon dioxide, oxygen, etc.

4)

5)

We can **change** a **solid** into a **liquid** or **gas** by **changing** **its** temperature. This is known as **changing its state**. Water is a **liquid** at room temperature, but becomes a **solid** (called ice) if it is cooled down.



6)

Solids

Coal

Wood

Wax

Sugar

Liquids

Kerosene

Milk

Blood

Gases

Oxygen

Water vapour

7)

8)

A fluid is any substance that flows or deforms under applied shear stress. Fluids comprise a subset of the states of matter and include liquids, gases, and plasma.

eg- water and blood

9)

Intermolecular space is the **space** between two molecule or atom. In solids it is very little, in liquids is more the solids but less than liquids and in gases its the maximum. **Intermolecular** forces are forces of attraction or repulsion which act between neighboring particles (atoms, molecules or ions).

10)i) Naphthalene and iodine

ii) oxygen and carbon dioxide

iii) Glass and pen

No of worksheet:5

Date:13/5/2020

1) **Undesirable change:** Those changes that we do not want to take place and is harmful to us is called an undesirable change. Eg: Rusting of iron, souring of milk

2)

This process is **called melting** and it is **reversible**.

This is because when **ice** has turned to water after heating,when we place the same **melted** water and begin to freeze it,we will find that it is slowly being converted into **ice**. Hence,proving that **melting of ice** is a **reversible** process!



3) **Endothermic changes:** A change in which heat is absorbed is called and endothermic change. Eg: Cooking of food and melting of ice

4) **Fast changes :** The changes that occur in a very short span of time are called fast changes. Eg: Bursting of crackers and burning of a paper.

5) Non periodic changes: The changes that do not take place at regular intervals of time are called non periodic changes. Eg: water becoming an ice and burning of matchsticks.

2) i) Reversible

ii) Reversible

iii) Irreversible

iv) Irreversible

v) Irreversible

3) When a substance under goes change in its physical properties , the change is said to be a physical change. Eg: Melting of butter and freezing of water.

4) Characteristics of physical change

- No new substance is formed in a physical change.
- The change is temporary and it can be reversed by changing the conditions in most cases.
- The chemical composition of the original substance does not change.
- There may or may not be a change in the properties such as state, size, shape, colour and smell of the substance that undergoes physical change.
- There may or may not be a change in the energy possessed by the original substance.

Answer of worksheet:6

Date:14/5/2020

1) Freezing: The process in which a liquid on cooling changes into a solid is called freezing. During freezing the temperature remains constant. Eg: When water is kept in freezer it changes into ice.

2)

Evaporation	Boiling
<ol style="list-style-type: none">1. Evaporation is a slow process.2. Evaporation takes place from the surface of the liquid.3. Evaporation takes place at all temperature.	<ol style="list-style-type: none">1. Boiling is a fast process.2. Boiling takes place from all parts of the liquid.3. Boiling takes place at a fixed temperature on heating.

3.

Factors Affecting Evaporation

There are certain factors that affect the rate of evaporation. They are as follows.

- **Surface area:** Evaporation is a surface phenomenon, therefore, the rate of evaporation increases with increase in surface area. For example, if you keep water in a wide-mouth bowl and a glass, and place both of them under the sun, water will evaporate faster from the bowl than the glass because the former has greater surface area.
- **Temperature:** The rate of evaporation increases with the increase in temperature. Water evaporates faster on a hot day than on a cold day.
- **Humidity:** Humidity is the amount of water vapour or moisture present in the air. The rate of evaporation decreases with increase in humidity. In other words, if air already has sufficient amount of moisture, then it cannot absorb more of it. Hence, the rate of evaporation decreases.
- **Speed of air:** The rate of evaporation increases with increase in the speed of air. In other words, evaporation is faster on a windy day than on a calm day.

4.

Sublimation

The process in which a solid directly changes into vapour on heating without passing through the liquid state is called sublimation. For example, we keep naphthalene balls in cupboards to protect woollen clothes from insects because naphthalene sublimates at room temperature.

Sublimation is a physical change as the vapour formed can be cooled to get back the solid. Also no new substance is formed.

5. Chemical changes: When two or more substances react in such a way that there is formation of one or more new substances, the change is called chemical change. Eg: Germination of seed and digestion of food

6

Characteristics of a Chemical Change

- A chemical change is permanent and irreversible.
- It always involves formation of one or more new substances.
- There is a change in the net energy of the system during a chemical change.
- The composition and properties of the new substance formed are completely different from the original substance.
- There is a change in the mass of the substance undergoing a chemical change.

Irreversible Change

A change in which we cannot get back the initial substance by reversing the action is called an irreversible change.

7.

Chemical changes are of vital importance in our everyday life. Some of these changes are natural and some are man-made.

- A number of processes which take place in living things are chemical changes. These changes are important to sustain life.

Examples: > Plants prepare their own food by a process called photosynthesis.

> Respiration helps us to release energy needed by the cells of the body.

> During the process of digestion, food undergoes a number of chemical changes and provide energy to our body.

- Combustion is a type of chemical change which produces heat energy used for both domestic and industrial purposes.
- Soaps and detergents are produced due to chemical changes.
- A number of useful metals like iron, aluminium, copper, etc. are extracted from their combined states by chemical processes.

i) Reversible

ii) Chemical

iii) Energy

iv) Temperature.
