CH:3 MATTER

Q.1 CHOOSE THE CORRECT ANSWER:

1. The smallest particle which makes up matter is a/an _____.

(a) atom

(b) molecule

(c) element

(d) particle

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

(a) freezing

(b) melting

(c) condensation

(d) liquefaction

3. There are large molecular spaces in _____.

(a) solid

(b) liquid

(c) gases

(d) all of these

4. Intermolecular forces of attraction is maximum in _____.

(a) solids

(b) liquids

(c) gases

(d) all of these

5. An example of sublimable substance is _____.

(a) water

(b) plastic

(c) iodine

(d) glass

6. The SI unit of mass is _____.

(a) gram

(b) kilogram

(c) newton

(d) all of these

7. The state of matter that cannot be compressed easily is _____.

(a) solid

(b) liquid

(c) gas

(d) liquid and gas

8. The spontaneous mixing of the particles of two or more substances is called _____.

(a) compressibility

(b) diffusion

(c) attraction

(d) repulsion

9. The increase in size of a substance on heating is called _____.

(a) contraction

(b) attraction

(c) expansion

(d) diffusion

10. A chemical change is the change in _____.

(a) state of matter

(b) size of matter

(c) contraction

(d) composition

Q.2 FILL IN THE BLANKS:

1. The state of matter with definite shape and definite volume is called the solid state.

2. The state of matter that has maximum compressibility is the gaseous state.

3. Liquid and gases can flow.

4. Boiling point of water is 100˚C.

5. Intermolecular force of attraction is least in the gaseous state.

6. Air has mass and occupies space.

7. The volume of any substance decreases when cooled.

8. Sugar changes its colour to become caramel which is a liquid substance.

Q.3 WRITE TRUE OR FALSE:

1. Gas molecules can move freely in all directions. – True

2. Molecules are very closely packed in liquids. – False

3. The process of conversion of a solid into a liquid is called boiling. - False

4. All matter is made up of tiny, invisible moving particles called atoms. – True

5. A liquid has definite volume. – True

Q.4 MATCH THE FOLLOWING: (Direct Answers)

1. Atom – Tiny particles of matter.

2. Solid – Have definite shape and volume.

3. Vapourisation – Change of state from liquid to gas.

4. Gas – Have least intermolecular force of attraction.

5. Intermolecular Space – Gaps between the molecules.

6. New substance – Chemical change

Q.5 ANSWER THE FOLLOWING QUESTIONS:

1. What do you understand by matter? Name three states of matter.

A.1 Matter is anything that occupies space and has mass.

The three states of matter are:

1. Solid
2. Liquid
3. Gas

2. Differentiate between solids, liquids and gases in terms of intermolecular space between the molecules:

A.2

SOLIDS	LIQUIDS	GASES
Molecules are closely packed.	Molecules are not so closely packed.	Molecules are far apart.
Intermolecular space is negligible.	Intermolecular space is more.	Intermolecular space is maximum.

3. Why are solids not able to flow?

A3. In solids the molecules are packed very close to each other and the intermolecular attractive force between the molecules is very strong. Thus the solids are not able to flow.

4. Define the following terms:

(a) Melting: The process of change of solid state of matter into its liquid state is called melting.

(b) Sublimation: The process of changing the solid state directly into its gaseous state is called sublimation.

(c) Vapourisation: The process of changing the liquid state into its gaseous state is called boiling or vapourisation.

(d) Freezing: The process of changing the liquid state into its solid state is called freezing or solidification.

(c) Condensation: The process of changing the gaseous state into its liquid state is called condensation or liquefaction.

5. What is meant by diffusion?

A.5 Diffusion is the spontaneous mixing of particles of two or more substance as a result of the natural movement of the molecules within the substance.

6. Why can gases be compressed?

A.6 Gases can be compressed easily as the intermolecular spaces between the molecules can be decreased by applying a force.

7. How can you show that air occupies space?

A.7 Take a balloon and blow air into it. You will notice that the size of the balloon increases. This shows that air occupies space.

[NOTE: Draw figure 3.4(a) Deflated balloon]

8. Describe an experiment to prove that air has mass?

A.8 Take two inflated balloons of the same size suspend one balloon on the left side of a metre scale and the other one on the right side. Balance the scale on the knife.

Now puncture one of the balloon with the help of needle. You will notice that air escapes from the balloon and the metre scale tilts towards the inflated balloon.

This experiment shows that air has mass.

[Note: Draw the figure from experiment-1]

9. How can you show that gases can diffuse easily?

A.9 Take a perfume bottle and open it. The fragrance of perfume spreads all over room. This is because of diffusion. It is the process of intermingling of perfume vapours with molecules of air.

This experiment proves that molecules of gas diffuse easily and move freely in all directions.

10. Does the chemical composition of matter change during the change of state? Explain with help of example:

A.10No, the chemical composition of matter does not change during the change of state. For example:

(1) Liquid state of water can be changed into gaseous state by raising the temperature to its boiling point. (100˚C)

(2) Water can be changed into its solid state by lowering its temperature to its freezing point. (0˚C)

11. State three properties of solids, liquids and gases:

A.11

SOLID	LIQUID	GAS
Solids have a definite shape and definite volume.	Liquids do not have definite shape but definite volume.	Gases do not have definite shape nor definite volume.
Solids cannot be compressed.	Liquids can be compressed slightly.	Gases have maximum compressibility.
Solids cannot	Liquids can flow	Gases can flow in

flow.	from a higher level to lower level.	all directions.

12. Describe an experiment to show that matter expands on heating.

A.12 Ring and ball apparatus has a brass ball and a ring attached to a long handle/stand. At room temperature, the ball freely through the ring.

Heat the ball in a flame and try to pass it through the ring. You will find that the ball will no longer passes through the ring. When the ball is cooled to room temperature, it will again pass through the ring.

This experiment proves that a solid expands on heating and contracts on cooling.

[Note: Draw the figure from experiment-6]

13. What do you understand by chemical change? Explain with the help of example:

A.13 Some substances can undergo complete change of composition of matter and form new substance such changes are called chemical change.

Example: (1) White sugar when heated changes to a golden brown liquid caramel.

(2) Red coloured powdered mercuric oxide on heating leaves behind silvery liquid mercury.

*__***ASSIGNMENT***__: Draw diagrams to show arrangement of molecules in a solid, liquid and gases and write any three properties.

(1) Solid-

- Solids are rigid.
- They have definite shape and volume.
- They cannot be compressed easily.

{figure 3.5}

(2) Liquids-

- They have definite volume.
- They can flow.
- They can be compressed slightly.

{figure 3.7}

(3)Gases-

- Gases have neither definite shape nor definite volume.
- Gases can flow and move in any direction.
- Gases can be compressed easily.

{figure 3.10}