

SUBJECT : CHEMISTRY

CLASS : VIII

CHAPTER I : PARTICULATE NATURE OF MATTER

SYNOPSIS - 1

NCERT FOLDER

VERY SHORT ANSWER TYPE (2 MARKS)

1. Define "constituent particles" of matter.

Ans: All visible matter (chalk, water, air) is made up of countless atoms / molecules. These are the basic units from which larger substances are built.

2. Is grinding chalk a physical or chemical change?

Ans: Physical change - No new substances are formed.

3. What does the sweetness of water after stirring sugar indicate about sugar particles?

Ans: The sugar particles spread out evenly and occupy the interparticle spaces between water molecules.

4. Name the force between particles of same kind.

Ans: This force is called cohesive if the particles are of the same kind.

5. Name the force between particles of different kinds.

Ans: This force is called adhesive if the particles are of the different kinds.

6. Which state of matter has negligible inter-particle forces?

Ans: Gases. They are far apart and move freely in all directions.

7. What is the melting point?

Ans: It is defined as the minimum temperature at which a solid melts to become a liquid at normal atmospheric pressure.

8. Give one everyday example of diffusion in gases.

Ans: The spread of perfume or incense smell in a room.

9. What happens to particle motion when a substance is heated?

Ans: On heating, the particles of a substance gain energy and move faster.

10. Name the three kinds of particle motion in kinetic energy.

Ans: Translational motion, Rotational motion and Vibrational motion.

SHORT ANSWER TYPE (3 MARKS)

1. Distinguish between atoms and molecules with one example each.

ATOMS

The smallest particle of an element that retains its properties.

Example: Helium (He)
atom

MOLECULES

A group of two or more atoms chemically bonded together

Example: Water
molecule

2. Why does the top layer of water taste sweet after stirring sugar but not before?

Ans: The top layer tastes sweet after stirring because the dissolved sugar particles spread evenly throughout the water, whereas before stirring the sugar is concentrated at the bottom.

3. Explain why gases are highly compressible whereas liquids are only slightly compressible.

Ans: Gases are highly compressible because there are large empty spaces between particles that can be reduced by pressure.

Liquids are practically incompressible compared with gases because the particles are already close together, there's little space left to squeeze out. Applying pressure causes only a small decrease in volume.

4. State two consequences of large interparticle spacing in gases.

Ans:

- * Gases are highly compressible because the large empty spaces between the particles can be reduced when pressure is applied.

- * Gases diffuse rapidly because the particles can move freely and mix quickly with other gases.

5. Differentiate between melting point and Boiling point.

Ans:

Melting Point

- * It is the temperature at which a solid starts melting.

Boiling Point

- It is the temperature at which a liquid starts boiling.

* Heat energy is used to overcome the forces holding solid particles together.

* Change of state:
Solid $\rightarrow$ liquid

Example: Wax melts when heated to its melting point.

Heat energy is used to overcome the forces holding liquid particles together.

Change of state:
Liquid - Gas

Example: Water turns into steam at its boiling point.

6. What is evaporation? State any factors that increase its rate.

Ans: Evaporation is the process by which a liquid changes into vapour (gas) from its surface at any temperature below its boiling point.

Evaporation takes place at all temperatures but becomes faster when the temperature is higher, the surface area is larger, or air movement is greater.

7. Justify: "Liquids have no fixed shape but definite volume".

Ans: For example, if the same quantity of water is poured into containers of different shapes, the shape changes each time, but the amount of water remains unchanged. This shows that liquids have a fixed volume but no fixed shape.

8. Why does Potassium Permanganate spread faster in hot water than in cold water?

Ans: The rate at which particles spread

of potassium permanganate spreads fastest in hot water and slowest in cold water. This shows that heating increases the movement of particles.

9. Explain why gases and liquids both flow but solids do not.

Ans: In solids particles have low thermal energy. They are packed closely and can only vibrate about fixed positions. Strong forces of attraction restrict their movement.

10. Give three differences between diffusion in gases and diffusion in liquids.

Ans:

Diffusion in Gases

- * Diffusion occurs very fast
- * Gas particles are far apart.
- * Particles move more freely

Diffusion in liquids

- Diffusion occurs more slowly
- Liquid particles are closer together.
- Particles movement is more restricted.

LONG ANSWER TYPE (5 marks)

1. Compare the properties of solids, liquids and gases on the basis of shape, volume, compressibility, diffusion and interparticle forces.

PROPERTIES	SOLIDS	LIQUIDS	GASES
1. Shape and volume	Have a definite shape and a definite volume	Have no definite shape but have a definite volume	Have neither a definite shape nor a definite volume

Properties	Solids	Liquids	Gases
2. Compressibility	Cannot be Compressed	Can be Very slightly Compressed	Can be easily Compressed.
3. Diffusion	Very slow	Slow	Very fast
4. Inter Particle forces	Have very strong inter-molecular forces of attraction	Have weaker intermolecular forces of attraction than Solids	Have negligible inter-molecular forces of attraction.

2. Explain why gases are more easily compressible than Solids and liquids. Give one use of this property.

Ans:

Gases are more easily compressible than Solids and liquids because gas particles are Very far apart and have large empty spaces between them. When Pressure is applied, these empty spaces can be reduced, causing the gas volume to decrease.

In liquids and Solids, Particles are packed closely together with very little empty space. so they cannot be compressed much.

Use:

Compressed gases are stored in LPG cylinders (or oxygen cylinders) allowing a large amount of gas to be stored in a small space.

3. Why does the smell of Perfume spread in a room within a few minutes? Give example activity that proves?

Ans: The smell of perfume spreads throughout a room within a few minutes because of diffusion. Perfume Vapour particles move rapidly in all directions and mix with the air particles, causing the smell to spread.

Activity:

Open a bottle of perfume in one corner of a room. After a short time, people standing in different parts of the room can smell it. This shows that gas particles diffuse through the air.

4. Explain the postulates of the Kinetic theory of matter.

Postulates of the Kinetic theory of matter:

Ans:

- * All matter is made up of tiny particles, called atoms or molecules.
- * The particles are in constant motion and keep moving all the time.
- * There are spaces between the particles, known as interparticle spaces.
- * Particles attract one another with inter-molecular forces.
- * The Kinetic energy of particles increases when heated, so they move faster at higher temperatures.

5. Why does a solid have a definite shape, but a gas has neither a definite shape nor a definite volume?

Ans:

In solids, particles are packed very closely and are held together by strong interparticle forces. This close packing gives solids a definite shape and volume and makes them rigid.

In gases, the particles are far apart and the force of attraction between them are negligible. This allows the particles to move freely in all directions, so a gas takes the shape and volume of the container in which it is kept. In short, gases have neither a fixed shape nor a fixed volume.

Classwork Writing :

Synopsis - 1

VSA : 3, 10

SA : 1, 2, 5, 10

LA : 2, 3, 4