# Nature of Matter - Long Questions with Answers

**1. Explain the three states of matter in detail.**
Matter exists in three main states: solid, liquid, and gas. Solids have a fixed shape and volume due to strong intermolecular forces. Liquids have a fixed volume but take the shape of their container because their particles can move freely. Gases have neither fixed shape nor volume as their particles are far apart and move randomly.

**2. Describe the characteristics of solid, liquid, and gas.**
Solids have definite shape and volume, high density, and low compressibility. Liquids have definite volume but no fixed shape, moderate density, and slight compressibility. Gases have no fixed shape or volume, very low density, and high compressibility.

**3. Explain the process of change of state of matter.**
Change of state occurs due to change in temperature or pressure. Heating a solid turns it into liquid (melting), and further heating converts it into gas (vaporization). Cooling reverses the process: gas to liquid (condensation) and liquid to solid (freezing).

**4. What is diffusion? Explain with examples.**
Diffusion is the movement of particles from a region of higher concentration to lower concentration. It occurs in all states of matter but is fastest in gases. For example, the smell of perfume spreading in a room is due to diffusion.

**5. Explain evaporation and factors affecting it.**
Evaporation is the process by which a liquid changes into vapor at any temperature below its boiling point. Factors affecting evaporation include temperature (higher increases rate), surface area (larger increases rate), humidity (lower increases rate), and wind speed (higher increases rate).

**6. What is sublimation? Give examples.**
Sublimation is the direct conversion of a solid into gas without passing through the liquid state. Examples include camphor, naphthalene balls, and dry ice.

**7. Explain the kinetic theory of matter.**
The kinetic theory states that matter is made up of small particles that are constantly in motion. The energy of these particles increases with temperature, leading to changes in state and behavior of matter.

**8. What is density? How is it related to states of matter?**
Density is defined as mass per unit volume. Solids generally have high density, liquids have moderate density, and gases have very low density due to the arrangement of particles.

**9. Explain compressibility of gases.**
Gases are highly compressible because there is a large amount of empty space between particles. Applying pressure brings particles closer, reducing volume.

**10. Describe plasma and Bose-Einstein condensate.**
Plasma is a high-energy state of matter where atoms are ionized into charged particles, found in stars. Bose-Einstein condensate is formed at extremely low temperatures where particles occupy the same quantum state and behave as a single entity.

# Nature of Matter - Short Questions with Answers

**1. What is matter?**
Anything that has mass and occupies space is called matter.

**2. What are the three states of matter?**
Solid, liquid, and gas.

**3. What is a solid?**
A state of matter with definite shape and volume.

**4. What is a liquid?**
A state of matter with definite volume but no fixed shape.

**5. What is a gas?**
A state of matter with neither definite shape nor volume.

**6. What is diffusion?**
The movement of particles from a region of higher concentration to lower concentration.

**7. What is density?**
Mass per unit volume of a substance.

**8. What is melting point?**
The temperature at which a solid changes into a liquid.

**9. What is boiling point?**
The temperature at which a liquid changes into a gas.

**10. What is evaporation?**
The process of a liquid changing into vapor at any temperature.

**11. What is condensation?**
The process of gas changing into liquid.

**12. What is sublimation?**
Direct change of solid into gas without passing through liquid state.

**13. What is plasma?**
A highly ionized state of matter with free electrons.

**14. What is compressibility?**
The ability of a substance to decrease in volume under pressure.

**15. What is intermolecular force?**
Forces of attraction between molecules.

# Nature of Matter - One Word Questions with Answers

1. Smallest unit of matter – _____
Answer: Atom

2. Particles of matter are always in _____
Answer: Motion

3. Force of attraction between particles is called _____
Answer: Intermolecular force

4. State of matter with fixed shape and volume – _____
Answer: Solid

5. State of matter with no fixed shape – _____
Answer: Liquid

6. Process of solid changing directly to gas – _____
Answer: Sublimation

7. Process of gas changing to solid – _____
Answer: Deposition

8. SI unit of temperature – _____
Answer: Kelvin

9. Movement of particles from high to low concentration – _____
Answer: Diffusion

10. Intermixing of particles is called _____
Answer: Diffusion