LESSON-I MATTER

Give Reasons:

1. Wall paints are always in liquid form.

Wall paints are always in liquid form because of the liquid state. The paints can be spread evenly on the walls and will be dried quickly.

2. Solids have rigid structure.

Solids have rigid structure because of the strong intermolecular force of attraction present in the solid which make the solid very rigid.

3. **Gases can spread out more readily than liquids.**

Gases can spread out more readily than liquids because the spaces between the constituent particles in gases are higher than in liquids.

4. **Gases can be compressed to a great extent.**

The constituting particles of gases are loosely packed with lot of free space in between the molecules. So gases can be compressed to a great extent.

5. **The shape of a liquid changes according to the vessel it is kept in.**

Liquids do not have definite shape because when liquids are poured into a container the boundary of the container holds it. So liquids take the shape of the container.

Distinguish Between:

1.

Atom	Molecule
An atom is the basic unit of matter. Atoms may or may not exist on its own.	Particle formed when two or more atoms joined together. Molecules can exist on its own.

2.

Mass	Volume
The amount or quantity of matter in an object is known as mass.	The amount of space occupied by an object is known as its volume.

3.

Liquids	Gases
Liquids are materials that have a fixed volume but no definite shape. Liquids can flow from higher level to a lower level.	Gases are materials that have neither a fixed shape nor a definite volume. Gases can flow in all directions.

4.

Compressibility	Fluidity
Compressibility is the measure of how much a given volume of matter can be decreased by applying pressure.	The ability or tendency of a substance to flow easily.

Answer the following Questions:

1. **What is matter composed of?**
   Matter is composed of small particles called molecules. The molecules are made up of further smaller units called atoms.
2. **Write the general characteristics of matter.**
   - Matter has mass
   - Matter occupies space or has volume
   - Matter exists in three different states, depending upon the arrangement of its particles.
3. **What do you mean by intermolecular space?**
   Atoms are molecules which constitute matter are held together by a force of attraction between them. This force of attraction is known as intermolecular force of attraction.
4. **Name the three states of matter.**
   The three states of matter are solids, liquids and gases.
5. **How are constituting particles arranged in a solid?**
   In solids, the particles are tightly packed usually in a regular pattern. This dense arrangement is responsible for the fixed and rigid shapes of solids.
6. **Sponge is a solid, still can be compressed. How?**
   A sponge can be compressed easily. This is because the air that fills their tiny air pockets escapes on pressure that causes them to change the shape.
7. **Give four examples of gases.**
   Oxygen, carbon-dioxide, nitrogen, water vapor.

8. **Why do gases diffuse readily?**

The intermolecular force of attraction between the particles of gases is very weak. So the gas particles move quickly and diffuse readily.

Long Answer questions:

1. With the help of an activity, show that matter occupies space.

- Take a small stone tied with a thread.
- Take a full glass of water and place it in a bowl.
- Slowly dip the stone into the glass, filled with water.
- Now you will see some water is coming out of the glass and spills in the bowl.
- Take the stone out of the glass and see the level of water in it.
- Pour back the water collected in the bowl into the glass.
- You will see full glass of water again.
- This experiment shows both stone and water are matter that occupies space.

2. **List the characteristics of solids. How are these characteristics applied in real life?**

- Solids possess a fixed shape.
- Solids occupy a definite volume.
- Solids cannot flow or diffuse.
- Their constituting particles are packed together very tightly.
- Solids have negligible compressibility.

Application of solids:

- Due to the rigid nature of solids, we use solids for constructing the buildings, producing transport vehicles, making utensils, furniture.

3.Mention the characteristics of liquids. Give any three applications in liquids.

- Liquids do not possess any fixed shape. They take the shape of the container in which they kept.
- They have definite volume.
- Their constituting particles are less tightly packed than solids.
- Liquids can flow from a higher level to lower level, can also diffuse.

Application of Liquids:

- Water is the most important liquids that we cannot survive without water.
- Blood is a liquid which circulates in our body carrying oxygen and nutrients to each body parts.
- Mercury and alcohol are used in thermometers.

4. What are the characteristics of gases? Mention three applications of gases based on their characteristics.

- Gases neither have a definite shape nor definite volume.
- They can flow in all directions and fill up all the available spaces.

- They can diffuse readily.
- Their constituting particles are very loosely packed.

Application of Gases:

- Gases are filled in vehicle tyres and oxygen cylinders in a pressurized form.
- Deodorant cans, insecticide sprays can also contain compressed gases.
- Compressed LPG can be used for cooking purposes.

5.With the help of a neat diagram, explain in detail the arrangement of particles in solids, liquids and gases.

Solids	Liquids	Gases
The particles are very closely packed.	The particles are less tightly packed than in solids.	The particles are very loosely packed with lot of free space in between.
The intermolecular force is very strong in solids, so they cannot move freely.	The intermolecular force is not that strong in liquids, so they can move freely.	The intermolecular force is very weak in gases, so they can move quickly.

6. Write in detail about the three states of water.

- The three states of water are ice, water and water vapor.
- The solid form of water is ice, which is formed when water is cooled to 0 C or below. Ex: Snow, Frost.

- The liquid form is normal water which is present in lake, river etc.
- We use water for drinking, washing etc.
- The gaseous form of water is water vapor or steam which is formed when water is heated at 100 C or above.

7. Draw a detailed comparison of the three states of matter in terms of :

Properties	Solids	Liquids	Gases
Volume	Definite	Definite	Not definite
Intermolecular force	Strong	Moderate	Least
Compressibility	Negligible	Very little	Very high
Fluidity	No	Yes	Yes
Kinetic Energy	Minimum	High	Very high
Melting Point			