Matter

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

2. **Write the characteristics of Matter?**
   Ans. The characteristics of Matter are
   a. All material bodies have weight and mass
   b. All material bodies occupy space.

3. **What are the states of matter?**
   Ans. There are three states of matter
   a. Solid
   b. Liquid
   c. Gas

4. **What is Solid?**
   Ans: A material that has a definite shape and definite volume, such that it can have any number of free surfaces, is called solid.

5. **What are the properties of Solid?**
   Ans. The properties of solid are:
   a. Solids have definite shape and volume
   b. Solids are rigid and retain their shape.
   c. Solids do not flow.
   d. Solids are incompressible. Except- Sponge
   e. Solids have high density.
   f. Solids can have a number of free surfaces.
   g. Solids exert pressure at their base due to their weight.
   h. Solids show low thermal expansion.
   i. Solids do not diffuse easily into the other solid.

6. **What is Liquid?**
   Ans. A material which has a definite volume, but no definite shape and has only one free surface is called liquid.

7. **Write the properties of liquid?**
   Ans. The properties of liquid are
   a. Liquid do not have definite shape
   b. Liquids have definite volume
   c. Liquids are not rigid
   d. Liquids can flow easily
   e. Liquids are slightly compressible.
   f. Liquids have low density in comparison to solid.
   g. Liquid has only one free surface.
   h. Liquid exert pressure in all direction.
   i. Liquids show high thermal expansion
   j. Liquids can easily diffuse into other liquid
   k. Liquids tend to adequate minimum surface area, So they have a tendency to form a drops.

8. **What is Gas?**
   Ans. A material which has neither definite shape nor definite volume and is easily compressed and has no free surface is called Gas.

9. **Write the properties of Gas.**
   Ans. The properties of gas are
   a. Gases neither have a definite shape nor a definite volume.
   b. Gases are not rigid
   c. Gases flow in all direction.
   d. Gases are highly compressible, due to the molecules are far apart and large space are between them.
   e. Gases have very low density
   f. Gases do not have any free surface.
   g. Gases exerts pressure from all direction on the walls of the container in which they kept.
   h. Gases show very high thermal expansion.
   i. Gases can diffuse into other gases very fast.

10. **Differentiate the states of matter according to their properties**
    Ans.

Properties	Solid	Liquid	Gas
Arrangement of molecules	Closely packed	Less closely packed	Loosely packed
Intermolecular force of attraction	Very strong	Weak	Weakest
Intermolecular Space	Very less	Less	Very far
Motion of constituent molecules	Only vibrates about their fixed axis.	Moves in all direction within the boundary of liquid.	Move randomly in the entire space available in them.
Shape and volume	Definite shape and volume	Definite volume but no definite shape	Neither definite shape and volume.
Rigidity	High	Less Rigid	No Rigid
Flow	Cannot flow	Flow slowly than gas.	Flow smoothly.
Compressibility	Incompressible	Slightly compressible	Highly compressible
Number of free surfaces	More than one number of free surfaces	Only one free surface	No free surface
Pressure	Exerts pressure only at the base	Exerts pressure in all direction	Exerts pressure from all directions on the walls of container.
Thermal expansion	Less	Higher than Solid but less than gas	Very high
Diffusion	Cannot diffuse	Can diffuse slowly	Can diffuse quickly.

11. **Give reason why a material exists solid in room temperature?**
    Ans. A material is existing as solid because the intermolecular force of attraction between molecules is very strong and very less intermolecular space. So, the molecules are not free to change their positions. Thus, they are tightly packed.

12. **Give reason why a material exists Liquid in room temperature?**
    Ans. A material is existing as liquid because the intermolecular force is weak and intermolecular space is more as compared to solid. So, the molecules are free to change their positions within the liquid. The molecules cannot move apart.

13. **Give reason why a material exists Gas in room temperature?**
    Ans. A material is existing as gas because intermolecular force is negligible and intermolecular space is far more as compared to liquid. So, the molecules are free to move in all directions and can fill the entire space available to them. They need container to hold them.