

**Multiple Choice Questions**

- Matter is made up of**
  - Large continuous pieces
  - Invisible energy waves
  - Extremely small particles
  - Liquids only
- The smallest units that make up matter are called**
  - Grains
  - Constituents
  - Constituent particles
  - Crystals
- Sugar dissolves in water because**
  - Sugar disappears
  - Sugar particles fit into spaces between water particles
  - Water particles break sugar chemically
  - Sugar melts
- Which state of matter has maximum interparticle space?**
  - Solid
  - Liquid
  - Gas
  - Plasma
- Interparticle forces of attraction are strongest in**
  - Gases
  - Liquids
  - Solids
  - Vapours
- The process in which a solid changes into a liquid on heating is called**
  - Freezing
  - Evaporation
  - Melting
  - Condensation
- Liquids have**
  - Fixed shape and volume
  - No shape and no volume
  - Fixed volume but no fixed shape
  - Fixed shape but variable volume
- The temperature at which a liquid changes into vapour is its**
  - Melting point
  - Boiling point
  - Freezing point
  - Sublimation point
- Potassium permanganate spreads faster in hot water because**
  - Hot water dissolves more solids
  - Water particles move faster at higher temperature
  - Hot water has more space
  - Colour becomes lighter

10. **Gases fill the entire container because**
- (a) They are heavy
  - (b) Their particles are tightly packed
  - (c) Their particles move freely in all directions
  - (d) They dissolve easily

### Fill in the blanks :

11. The spaces between particles of matter are called \_\_\_\_\_.
12. The force that holds particles together is called \_\_\_\_\_ force.

### True / False

13. Particles of matter are in constant motion.
14. Solids have the weakest interparticle attraction.

### Very Short Type Questions

15. What are constituent particles of matter?
16. Why does perfume spread throughout a room?

### Short Type Questions

17. Why are solids rigid in nature?
18. Why are gases easily compressible?

### Essay Type Questions

19. Explain the particulate nature of matter using everyday examples and experiments.
20. Describe the characteristics of solids, liquids, and gases on the basis of interparticle space, attraction, and movement.

### HOTS

21. **Assertion (A):** Sugar dissolves in water without increasing its volume significantly.  
**Reason (R):** Sugar particles occupy the empty spaces between water particles.  
Choose the correct option:
- a) Both A and R are true and R is the correct explanation of A
  - b) Both A and R are true but R is not the correct explanation
  - c) A is false but R is true
  - d) A is true but R is false

Chapter-7 | PARTICULATE  
NATURE OF MATTER

## Worksheet-1

## Answer &amp; Solution

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- (c) Extremely small particles
- (c) Constituent particles
- (b) Sugar particles fit into spaces between water particles
- (c) Gas
- (c) Solids
- (c) Melting
- (c) Fixed volume but no fixed shape
- (b) Boiling point
- (b) Water particles move faster at higher temperature
- (c) Their particles move freely in all directions
- Interparticle spaces
- Interparticle
- True
- False
- Constituent particles are the tiny particles that make up all matter and cannot be seen with the naked eye.
- Perfume spreads because gas particles move constantly and spread in all directions.
- Solids are rigid because their particles are very closely packed and held together by strong interparticle forces. These strong forces restrict the movement of particles, allowing only small vibrations about fixed positions.
- Gases are easily compressible because there is a large amount of space between their particles. When pressure is applied, these particles can be pushed closer together, reducing the volume of the gas.
- Matter is anything that has mass and occupies space. According to science, matter is made up of very tiny particles called particles of matter. These particles are extremely small and cannot be seen with the naked eye. The idea that matter is made up of such tiny particles is known as the particulate nature of matter. One important property of particles of matter is that they have spaces between them. This can be shown by a simple experiment of dissolving sugar or salt in water. When sugar is added to a glass of water and stirred, it dissolves completely. Even though sugar has dissolved, the level of water does not increase noticeably. This shows that sugar particles occupy the spaces between water particles. Another property is that particles of matter are in constant motion. This can be observed through the spreading of smell. When perfume, or incense sticks are lit in one corner of a room, their smell spreads to the entire room after some time. This happens because the particles of the perfume or smoke move continuously and mix with air particles. Particles of matter also attract each other. This attraction keeps the particles together. For example, solids like iron or stone are hard because their particles are strongly attracted to each other. These everyday examples and experiments clearly show that matter is made up of tiny particles which have spaces between them, move continuously, and attract one another.

20. Matter exists in three common states: solid, liquid, and gas. These states differ due to the arrangement, attraction, and movement of their particles.

Solids have very small interparticle space.

The particles in solids are closely packed and have a very strong force of attraction between them. Due to this strong attraction, particles can only vibrate about their fixed positions and cannot move freely. As a result, solids have a fixed shape and fixed volume and are generally hard and rigid.

Liquids have moderate interparticle space, which is more than solids but less than gases. The force of attraction between liquid particles is weaker than in solids but stronger than in gases. Because of this, liquid particles can slide past one another. This allows liquids to flow and take the shape of the container while maintaining a fixed volume.

Gases have very large interparticle space.

The particles are far apart and have very weak force of attraction between them. Gas particles move freely and rapidly in all directions. Due to this high movement and weak attraction, gases have neither fixed shape nor fixed volume and can be easily compressed.

Thus, the differences in interparticle space, attraction, and movement explain the different properties of solids, liquids, and gases.

21. Correct Answer: (b)

**Explanation:**

Both the assertion and the reason are true. Sugar dissolves without significantly increasing volume because its particles occupy the empty spaces between water particles. However, the reason states a fact but does not fully explain the observation independently, so option (b) is correct.