Matter Short Notes

Keywords

Matter: Anything that occupies space and possesses mass is called matter
Element: An element is a substance which cannot be subdivided into two or more similar substances by any chemical or physical method
Molecule: The smallest unit of matter
Kinetic molecular theory of matter: The theory that visualizes that all substances, whether solids, liquids or gases are made of molecules in motion is called kinetic theory of matter
Melting or fusion: The phenomenon of change of a solid to a liquid at a particular temperature
Boiling or vaporization: The phenomenon of a liquid changing into a gas at a particular temperature
Evaporation: The phenomenon of a liquid changing into a gas at any temperature below the boiling point
Condensation: The phenomenon of the change of a state of a gas to a liquid upon the reduction of temperature
Sublimation: The phenomenon of change of a solid to a gas directly without changing to liquid
Deposition: The reverse of sublimation, where a gas changes directly to a solid without changing into a liquid

Chapter at a Glance

- Anything that occupies space and has mass is catted matter.
- Kinetic theory of matter — five main postulates —
  - All matter is made of molecules
  - The kinetic energy of the molecules is due to the heat content of the substance
  - The molecules in a matter always exert a force of attraction on each other
  - Molecules when arranged in a substance have spaces between them known as intermolecular space
  - Intermolecular force of attraction is inversely proportional to the intermolecular space
- There are three states (phases) of matter that exist naturally on the Earth — solid, liquid and gas
- **Solids -**
  Fixed shape
  Fixed volume
  Cannot be compressed
  High density
  Does not fill its container completely.
- **Liquids -**
  No fixed shape
  Fixed volume
  Cannot be compressed much
  Has high density though not as much in solids
  Does not fill its container completely
  Generally flows easily.
- **Gases -**
  No fixed shape
  Does not have a fixed volume
  Can be compressed easily
  Very low density
  Fills its container completely
  Flows easily
- Change of state of matter using kinetic theory.
- The average kinetic energy of the molecules is directly proportional to the temperature of the substance

Matter DPP - 1

Tick the correct option.

1. The particles of (solids, liquid, gas) hove minimum kinetic energy,
2. Ice melts at a temperature of (zero degree, hundred degree).
3. Higher the melting point of o solid substance (greater, lesser) will be the force of attraction between its particles.
4. The boiling of a Liquid takes place at (any temperature, fixed) temperature.
5. Formation of frost in extreme cold conditions is on example of (freezing, sublimation, deposition).

Fill in the blanks

6. Matter exists in three forms in nature ……., ……. and …….. .
7. Matter is made up of ……...
8. A molecule of oxygen contains two …… of oxygen.
9. Molecules possess the same…….. and ……. properties of that matter.
10. ……. and …… are the two states of matter that do not exist in natural conditions on the Earth.

Write T for true and F for false statement. Correct the false statement.

11. The smallest unit of an element is molecule.
12. A molecule of nitrogen consists of three atoms of nitrogen.
13. Atoms and molecules are tiny microscopic particles.
14. Molecules in a matter exert force of attraction on each other only in the solid state.
15. The intermolecular force of attraction is inversely proportional to the intermolecular space.
16. Positions of particles in solids are fixed.

Matter DPP - 2

Name the following.

1. Anything that occupies space and has weight
2. Molecules are held together to each other by
3. The two states of matter whose molecules execute random movement
4. The space between the neighboring molecules in a substance
5. Two examples of gases used in compressed state in our daily Life
6. The reverse of fusion
7. The reverse of vaporization
8. The reverse of sublimation
9. The boiling point of water
10. The method used to change the states of matter
11. Four substances that sublimate easily

Define the following terms.

12. Matter
13. Intermolecular space
14. Melting
15. Boiling or vaporization
16. Evaporation
17. Condensation
18. Sublimation
19. Deposition

Differentiate the following.

20. Atom – Element
21. Boiling – Evaporation
22. Sublimation – Condensation
23. Melting point – Boiling point
24. Melting point – Freezing point

Matter DPP - 3

1. Match the following

Column A	Column B
(A) Solids	**I.** Dilute gas of low density cooled to almost absolute zero
(B) Plasma	**II.** No fixed shape but have a fixed volume
(C) Gas	**III.** Cannot be compressed much
(D) Bose Einstein condensate	**IV.** Highly charged particles possessing very high kinetic energy
(E) Liquids	**V.** Lower density as compared to liquids

Find odd one. Give reason.

2. Ice, naphthalene, camphor, dry ice

3. Solid, Plasma, gas, Liquid

Give reason for the following.

4. Molecules in a matter are in o state of continuous motion

5. Molecules in a matter possess kinetic energy

6. In solids, the particles are closely packed

7. A solid has a fixed shape but liquids and gases don't

8. A solids and Liquids have a fixed volume but gases don't

9. A solid cannot be compressed much, Liquids can be compressed a little more but gases are highly compressible

10. A solid has a high density but liquids and gases are lower densities

11. A solid cannot fill its container completely, liquids fill more and gases can fill their container completely.

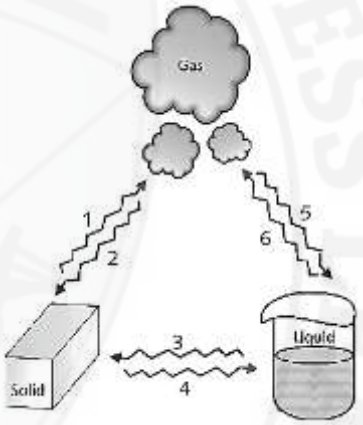
Matter DPP - 4

1. Complete the following table.

Shape	Volume	Compressibility	Density	Fills Container or Not	Fluidity
Solid					
Liquid					
Gas					

Picture based questions.

2. Look at the diagram given below and identify the changes in the different states of matter.



Answer the following.

3. List the main postulates of the kinetic theory of matter for the motion of molecules in a matter.

4. What happens to the molecules in a substance when heat is supplied and when the substance is cooled?

5. Explain

(a) average kinetic energy of the molecules Is directly proportional to the temperature of the substance

(b) the intermolecular force of attraction is inversely proportional to the intermolecular space

6. Compare the three states of matter on the basis of the following

(a) Intermolecular space

(b) Intermolecular force of attraction

(c) Kinetic energy of molecules

7. On the bass of the kinetic theory of matter briefly describe how a

(a) solid changes its physical state and becomes a liquid

(b) liquid changes Its physical state and becomes a gas

(c) liquid freezes and becomes a solid