Matter

1. **What is Matter?**
   Ans. Matter is something which occupies space, has mass and can be perceived by our senses.
   Actually, matter means all the living and non-living things of the universe.
   Ex: Air, Water, Iron etc.

2. **What are the characteristics of Matter?**
   Ans. The characteristics of Matter are
   a. Matter has mass and occupies space.
   b. Matter is made of unique substances called elements.
   c. An atom is the smallest unit of an element that has the characteristics of that element.
   d. One or more atoms combine to form a molecule.
3. **What is Intermolecular Space?**
   Ans. The space between two molecules is called Intermolecular Space.
   It is very strong in gases and very less in solid.

4. **What is Intermolecular Force?**
   Ans. The attraction force between two molecules is called Intermolecular Force.
   It is very strong in solid and very less in gases.

5. **What are the main points of the Kinetic theory of Matter?**
   Ans. The main points of Kinetic theory of Matter are:
   a. Matter is made of the tiny particles called Molecules.
   b. There is space between molecules in matter is called Intermolecular space.
   c. Molecules are attracted to each other by intermolecular force.
   d. Molecules move constantly and they process Kinetic Energy.
   e. When the temperature of matter is increased the kinetic energy of molecules in it increases. When the temperature decreases the kinetic energy decreases. The Kinetic Energy of Molecule is thus directly proportional to the temperature.

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

7. **Through which properties we can decide the states of substances?**
   Ans. The properties which decide the state of a substance, are
   a. Inter-molecular space.
   b. Force of attraction between the molecules.
   c. Kinetic energy of molecules due to their motion.

8. **When a matter exists as Solid?**
   Ans. When inter-molecular force is very strong and kinetic energy is very less, the inter-molecular space is reduced and matter exists as a solid.

9 **Why Solid have a fixed shape and volume?**
   Ans. The intermolecular force of attraction of solid is very strong, thus the molecules in a solid cannot move away from one another easily. They only vibrate about their fixed positions. This is why solid have a fixed shape and volume.

10 **Why Solids cannot be compressed easily?**
Ans. Solids cannot b compressed easily because the molecules are closely packed and the intermolecular space is small.

11 **How solids can expand on heating?**
Ans. On heating, the molecules gain energy and vibrate more. This increases the space between molecules and decreases the intermolecular force.
Hence, solids expand on heating.

12 **Why liquid have only one free surface?**
Ans. Since the intermolecular force is weaker, liquids cannot maintain a fixed shape. This is why they have only one free surface.

13 Why Liquids cannot be compressed easily?
Ans. The intermolecular space is only slightly larger and the intermolecular force only slightly weaker in liquids than in solids. Because of this, liquids cannot be compressed easily.

14 **Why liquids can expand on heating?**
Ans. When a liquid is heated, the molecules gain energy and move more easily. The intermolecular space increases. This is why liquids expand on heating.

15 **How gases can expand easily?**
Ans. The intermolecular space is the largest among the three states of matter, and thus the intermolecular force is the weakest. So, gases can change their shape and volume easily and expand to fill any container.

16 **Write the differences between Solid, Liquid and gases according to their properties?**
Ans.

Solid	Liquid	Gas
A solid has a definite shape and a definite volume.	A liquid has a definite volume but not a definite shape.	A gas has neither a definite volume nor a definite shape.
The molecules in a solid are rigid.	The molecules in a liquid are non-rigid.	The molecules in a gas are non-rigid.
The molecules in a solid can only vibrate to and fro about their mean positions.	The molecules in a liquid can move within the boundary of the vessel.	The molecules of gas can move freely in the available space.
The molecules remain fixed at their position.	The molecules do not remain fixed at their position.	The molecules do not remain fixed at their position.
The inter-molecular forces are very strong.	The inter-molecular forces are less strong.	The inter-molecular forces are weak
The molecules in a solid are closely packed.	The molecules in a liquid are loosely packed.	The molecules in a gas are wide apart.
A solid cannot flow.	A liquid can flow.	A gas can flow.

9. **What is Cohesion?**
Ans. The force of attraction between molecules of the same kind is known as Cohesion.
10. **What is Adhesion?**
Ans. The force of attraction between molecules of different substances is known as Adhesion.

11. **What is Brownian Motion?**
Ans. In liquid and gases the molecules move constantly in random directions. This motion is called Brownian Motion.
12. **What is Change of State?**
Ans. The process of change from one state to another state either by absorption or rejection of heat at a constant temperature is called change of state.

13. **What is Vaporization or Evaporation?**
Ans. The process in which liquid substance changes into a gas rapidly on heating, is called boiling.

14. **What is the difference between Evaporation and Boiling?**
Ans.

Evaporation	Boiling
It is a slow process.	It is a rapid process.
It takes place at the surface of liquid.	It takes place throughout the mass of liquid.
It takes place at a temperature.	It takes place at a specific constant temperature which is called the boiling point of the liquid.
The temperature of surrounding falls.	The temperature of surrounding remains constant.

15. **What is Melting or Fusion?**
Ans. The process in which solid substances changes into liquid on heating is called Melting.

16. **What is Melting Point?**
Ans. The melting point of a substance is the temperature at which it changes state from solid to liquid.
Ex: The melting point of Water is 0^0 C.

17. **What is Boiling?**
Ans. The process at which liquid changes to gases by heating is called Boiling or Vaporization.
18. **What is Boiling Point?**
Ans. The temperature at which liquid changes to gases is called Boiling point.
The Boiling Point of water is 100^0C.

19. **What is Condensation?**
Ans. The change of state of a substance from gas to liquid is called condensation.

20. **What is Condensation Point?**
Ans. The fixed temperature at which the state of a substance changes from gas to liquid on cooling is called the Condensation Point.

21. **What is Freezing or Solidification?**
Ans. The process in which liquid substance changes into solid is called Freezing.

22. **What is Freezing Point?**
Ans. The temperature at which temperature at which a liquid becomes a solid is called Freezing Point.
Ex: The freezing point of Water is 0^0 C.

23. What is Sublimation?

Ans. The process of directly changing from the solid to gaseous state is called Sublimation.

Ex: Naphthalene, Dry ice etc.

24. Why does the size of the naphthalene ball decrease when left open?

Ans. When naphthalene balls left open it changes directly into vapor duo to sublimation. This is why the size of the Naphthalene ball decrease.

25. What is Deposition?

Ans. Deposition is the reverse of process of sublimation. Here a gas solidifies directly without going through the liquid stage when it undergoes a reduction of temperature.

26. 'Wet clothes dry more quickly on warm dry day than on a cold humid day'- why?

Ans. A wet cloth dries up on a hot day much faster than on a cold day. Thus, the rate of evaporation is higher if the temperature of liquid is high.

27. Water in a dish evaporates faster than in a bottle'-Give Reason

Ans. The open surface area of a dish is greater than that of bottle. Thus, the rate of evaporation increases if the area of surface exposed increases. This is why Water in a dish evaporates faster than in a bottle.

28. Why are volatile liquids such as alcohol and spirit stored in tightly closed bottles?

Ans. Volatile liquids with low boiling point such as alcohol, spirit, ether etc. evaporate much faster than water. This is why volatile liquids are stored in tightly closed bottles.

29. In summer how water gets cooled in an earthen pot?

Ans. In summer water gets cooled in an earthen pot. The reason is that water seeps out on the surface through the pores in the pot and it evaporates. The heat required for evaporation is taken from water inside the pot which therefore gets cooled.

30. How evaporation controls body temperature?

Ans. Evaporation of sweat from our body helps to maintain the body temperature at 37°C (or 98-6°F). When sweat evaporates, it requires heat which it takes away from our body. As a result, temperature falls to keep the body at 37°C.

31. A patient suffering from high fiver is advised to put wet cloth strips on his forehead. Why?

Ans. Doctor advices to put the strips of wet cloth on the forehead of a patient having high fever. The reason is that water of the strips evaporates. During evaporation, water takes heat from the body of the patient and thus the temperature of his body decreases.

Short Question

1. The tiny particle which composes a matter is called _____.
2. Matter is made of unique substances called _____.
3. One or more atoms combine to form a _____.
4. Smallest unit of element is _____.
5. Molecules move constantly and they process _____.
6. Molecules are attracted to each other due to _____..
7. The space between molecules in matter is called _____.
8. The Kinetic Energy of Molecule is _____ with the temperature.
9. _____ do not have a definite volume or shape.
10. The random motion of liquids and gases molecules are called _____.
11. The force of attraction between molecules of the same kind is known as _____.
12. The force of attraction between molecules of different substances is known as _____.
13. The process at which liquid changes to gases by heating is called _____.
14. The temperature at which solid changes to liquid is called _____.
15. The process at which solid changes to liquid is called _____.
16. The temperature at which liquid changes to gases is called _____.
17. The change of state of a substance from gas to liquid is called _____.
18. The temperature at which the gas changes to liquid on cooling is called _____.
19. The process in which liquid substance changes into solid is called _____.
20. The temperature at which temperature at which a liquid becomes a solid is called _____.
21. Naphthalene is a _____ substance.
22. _____ is the reverse of process of sublimation.
23. _____ is the process that involves direct conversion of solid to vapor.
24. The melting point and boiling point of Water is _____.

Answer

1) Molecule
2) elements
3) molecule
4) Atom
5) Kinetic Energy
6) Intermolecular force
7) Intermolecular space
8) directly proportional
9) Gases
10) Brownian Motion
11) Cohesion
12) Adhesion
13) Boiling or Vaporization.
14) Meating Point
15) Melting
16) Boiling point.
17) Condensation
18) Condensation Point.
19) Freezing
20) Freezing Point.
21) Sublimate.
22) Deposition
23) Sublimation
24) 0^0C