

Ch-4 Solid, liquid and gases

New Words

1. Matter
2. Particles
3. Evaporation
4. Condensation
5. Solidification
6. Miscible
7. Immiscible
8. Expansion
9. Contraction
10. Rigid

Define the following

1. Expansion- The increase in the size of matter on heating is called expansion.

2. Contraction- The decrease in the size of matter on cooling is called contraction.

Answer the following questions

Q1. What is matter?

Answer: Any substance that has mass (i.e., amount of material in an object) and occupies space is called matter.

Q2. Differentiate between solids, liquids and gases in terms of their particle arrangement.

Solids

Particles are tightly packed.

Particles cannot move away from each other.

They have a fixed shape.

Liquids

Particles are not as tightly packed as in solids.

Particles can move away from each other.

They flow and take the shape of the container they are poured into.

Gases

Particles are far apart from each other.

Particles can move freely.

They can flow easily and take up all the available space.

Q3. Define melting. How is it different from solidification?

Answer:

Melting: Changing of a solid into a liquid is called melting.

Example: Changing of ice into water.

Solidification: Changing of a liquid into its solid form is called solidification.

Example: Changing of water into ice.

Q4. What is a solution? Write different kinds of solutions with the help of examples.

Answer: When two substances mix together such that they are evenly distributed, a solution is formed.

Solutions may be of different types depending upon the state of the solute and solvent present in the solution.

- Solid dissolved in liquid: Sugar solution, salt solution.
- Liquid dissolved in liquid: Lemon juice and water (lemonade).
- Gas dissolved in liquid: Carbonated drinks (air dissolved in water).
- Gas dissolved in gas: Air (mixture of different gases).

Q5. Differentiate between miscible and immiscible liquids.

Ans- Miscible liquids: When two liquids mix together such that they dissolve completely in each other, they are called miscible liquids.

Example: Milk mixed with water.

Immiscible liquids: When two liquids mix together such that they do not dissolve completely in each other, they are called immiscible liquids.

Example: Oil mixed with water. Oil and water form separate layers within the container.

Q6. What are physical and chemical changes? Give two examples of each.

Answer: A physical change is a type of change in which only the physical state of a substance changes and no new product is formed.

Examples: Ice cubes change into water.

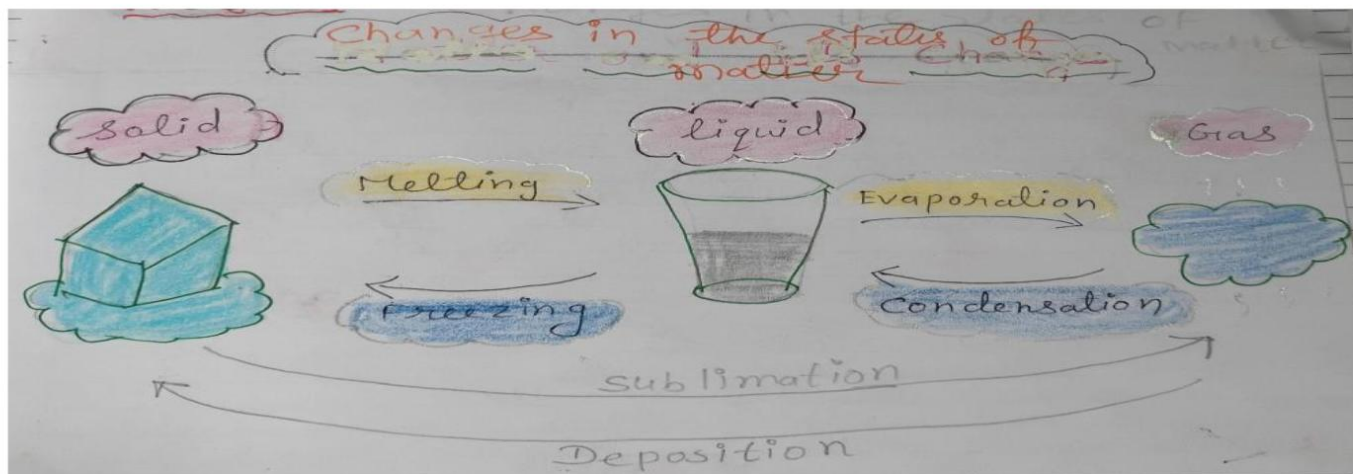
Melting of butter.

A chemical change is a type of change in which the chemical composition of a substance changes and a new substance is formed.

Examples: Burning of paper. Rusting of iron.

Q7. Why do things expand on heating?

Answer: When a substance is heated, the particles start vibrating rapidly. Thus, each particle takes up more space because of its increased movement, causing the substance to expand.



Textual exercise

A. Objective Type Questions

I. Fill in the blanks with the correct words.

1. Matter can (can/cannot) change its form from one state to another.
2. Cooling (Heating/Cooling) a substance slows down the movement of its particles.
3. Freezing (Freezing/Melting) is a type of solidification.

When two substances mix together such that they are evenly distributed, a 4. solution (solute/solution) is formed.

5. Heating (Cooling/Heating) a substance can make it expand.

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

1. All matter is made up of small particles. – T
2. Condensation is a type of solidification. – F
3. Oil is a universal solvent. – F
4. Breaking of glass is an example of a physical change. – T
5. Electric cables appear to hang loosely during winter because of expansion. – F

III. Choose the correct option.

1. Which of these is true about matter?

a. It is made up of particles. b. It occupies space.

c. It has mass. ☒ d. All of these

2. Which of these would change water to vapour?

☒ a. Evaporation b. Condensation

c. Melting. d. Freezing

3. On heating, the speed of movement of particles _____.

☒ a. Increases. b. Decreases

c. Stops. d. Remains the same

4. In a solution of sugar and water, what is the solute?

☒ a. Sugar. b. Water

c. Salt. d. None of these

5. Which of these is an example of a solution in which a gas is dissolved in a liquid?

a. Air. b. Milkshake

c. Lemonade ☒ d. Carbonated drink

6. Which of these is an example of a chemical change?

☒ a. Ripening of fruit b. Tearing of paper

c. Melting of glaciers d. Breaking of a glass

7. Heating a substance causes it to _____.

☒ a. Expand b. Contract

c. Become smaller. d. Stay the same

IV. Match the Columns

Column A	Column B	Answer
1. Gas	a. Universal solvent	1-c
2. Solid	b. Oil and water	2-d
3. Cooling	c. Vapour	3-e
4. Water	d. Ice	4-a
5. Immiscible	e. Slows down movement of particles	5-b

B. Very Short Answer Questions

Give two examples of the following.

1. Matter - Air Water
2. Miscible liquids-. Lemon juice and water Milk and water
3. Immiscible liquids Oil and water. Hair oil and water
4. Solid dissolved in liquid Sugar in water. Salt in water
5. Gas dissolved in liquid Carbonated drink Air dissolved in water

II. Give one word for the following.

1. Any substance that has mass and occupies space **Matter**
2. Changing of a liquid into a gaseous form **Evaporation**
3. When two substances mix together such that they are evenly distributed

Solution

4. Two liquids that do not mix completely with each other **Immiscible**
5. A type of change in which no new substance is formed **Physical change**

LET'S RECALL 

Recall and complete the concept map given below. One has been done for you.

Particle arrangement in matter

```
graph TD; A[Particle arrangement in matter] --- B[Solids  
Particles are tightly packed]; A --- C[Liquids  
Particles are not as tightly packed as in solids]; A --- D[Gases  
Particles are far apart from each other]
```

The concept map shows the particle arrangement in matter for three states: Solids, Liquids, and Gases. The Solids box is pre-filled with the text "Particles are tightly packed". The Liquids and Gases boxes are empty for completion.

Change of states

Evaporation

Changing of a liquid into its gaseous form

Condensation

changing of a gas into a liquid

Melting

changing of a solid into a liquid

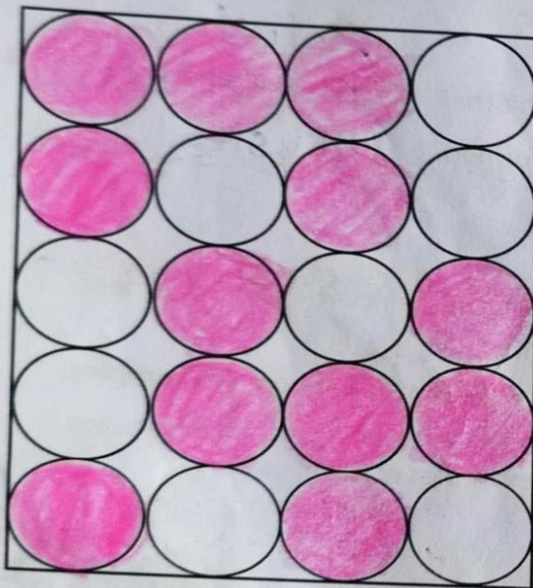
Solidification

changing of a liquid into its solid form

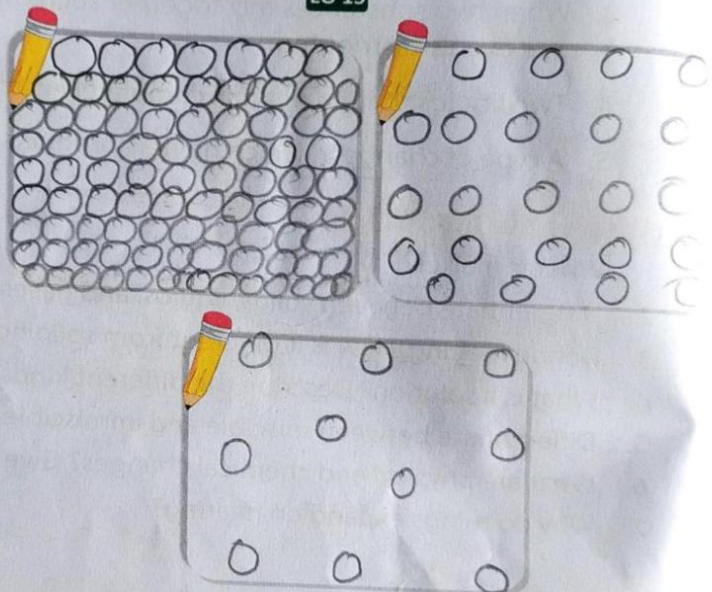
LET'S OBSERVE



1. Colour the circles to show particle arrangement in a liquid.



2. Draw arrangement of particles each for ice, water, and steam. **LO 15**



LET'S CONNECT



ENGLISH

Write one describing word for each of the following:

- a. Water
- b. Water when heated
- c. Salt solution
- d. Oil mixed with water
- e. Cooling of water in a freezer

liquid
steam (or gaseous)
Mixture
Immiscible
Freezing

