



BAL BHARATI PUBLIC SCHOOL, PITAMPURA, DELHI – 110034

Class- 9
Chemistry

Ch-1: Matter in Our Surroundings

Guidelines

Dear Students

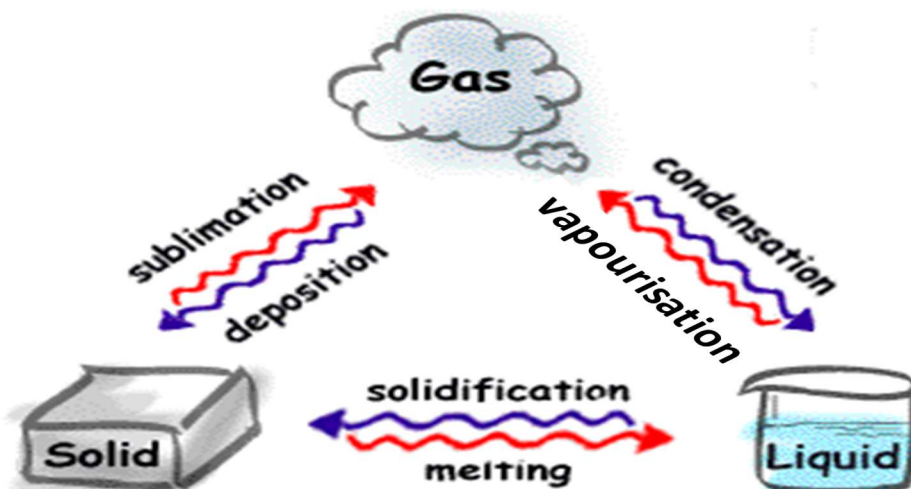
- Refer to the content given below and view the links.
- These notes will help you to understand the concept and complete the assignment that follows.
- The assignment is to be done in the Chemistry notebook
- Please read Science NCERT book before you begin to answer the questions.
- Link for Class 9 Science NCERT book:

http://ncertbooks.prashanthellina.com/class_9.Science.Science/CHAP%201.pdf

Sub-Topics

1. Recapitulation
2. Units of Temperature
3. Relation between Celsius scale and Kelvin scale
4. Effect of change of pressure on the states of matter
5. Some important conceptual questions

1. Recapitulation



2. Units of Temperature

Temperature can be expressed in

- Celsius ($^{\circ}\text{C}$)
- Fahrenheit ($^{\circ}\text{F}$)
- Kelvin (K) ----- SI unit of Temperature

3. Relation between Celsius scale and Kelvin scale

$$\text{Temperature on Kelvin scale} = \text{Temperature on Celsius scale} + 273$$

4. Effect of Change of Pressure

The physical state of matter can also be changed by increasing or decreasing the pressure. However, only change of pressure is not sufficient to bring about a change in the state of a substance.

- **Gases can be liquefied by applying pressure and lowering temperature**
- Solid carbon dioxide (dry ice) is stored under high pressure. It gets directly converted from solid state into the gaseous state without passing through the liquid state, when the pressure on it is reduced to 1 atmosphere. This is the reason why it is known as dry ice as it does not pass through the liquid state

5. Some Important Conceptual Questions

1. What is the significance of melting point or boiling point of a substance?

Ans. a) Melting point or boiling point indicates the purity of the substance.

b) It is the measure of the strength of forces of attraction between the particles.

Note:

- Different substances have different melting or boiling points. Higher the melting point/boiling point of a substance, greater will be the force of attraction between its particles.

2. Two solids X and Y have melting points 300°C and 150°C . Which of the two will have stronger forces of attraction between the particles and why?

Ans. Solid X will have stronger forces of attraction between its particles. This is because the melting point is the indication of the strength of forces of attraction. Higher the melting point, stronger will be the forces of attraction.

3. Give reasons for the following statements:

a) Steam at 100°C causes more severe burns than water at 100°C .

Ans. Steam at 100°C has extra energy in the form of latent heat of vaporization.

b) Ice at 0°C is more effective in cooling than water at 0°C .

Ans. Ice at 0°C absorbs heat from the surroundings to change its state whereas water does not undergo any change in state. Hence ice at 0°C is more effective in cooling than water at 0°C .

c) The temperature becomes constant when the melting point of a substance is attained

Ans. The temperature becomes constant at the melting point as the heat supplied is used to overcome the forces of attraction between the particles and to change the state.

d) Kelvin scale of temperature is considered better than Celsius scale.

Ans. Kelvin scale is considered better than Celsius scale as it has all positive values.

e) Liquids generally have lower density as compared to solids, yet ice floats on water.

Ans. Ice has a special **cage like structure**, in which the water molecules have more space between them in comparison to liquid water. Due to this, for a given mass the volume of ice is more than that of water. Hence it becomes less dense (Density= Mass/Volume). Therefore, ice being less denser than water floats on its surface.

f) Naphthalene balls disappear with time without leaving any solid residue.

Ans. Naphthalene undergoes sublimation and directly changes into the gaseous state without passing through the liquid state.

g) Solids have more density than liquids.

Ans. The particles in solids are very closely packed. As a result, the number of particles per unit volume in a solid is more than liquids. Hence, they have more density. (Density= Mass/Volume)

4. Convert 25⁰ C into Kelvin

Ans. a) **Temp. on Kelvin scale = Temp. on Celsius scale + 273**

$$\begin{aligned} \text{Temp. on Kelvin scale} &= 25 + 273 \\ &= 298 \text{ K} \end{aligned}$$

Note:

- The melting point of ice = the freezing point of water = 0⁰ C = 273 K
- The boiling point of water = 100⁰ C = 373 K

For further reference, you may refer to the following links:

- https://www.youtube.com/watch?v=r7XtuY_fr4E (watch it 8 minutes onwards)

ASSIGNMENT QUESTIONS (To be done in the Chemistry Notebook)

1. Convert the following

a) 50⁰ C into K

b) 30 K into ⁰ C

2. Suggest a method to liquefy atmospheric gases.

3. Two liquids X and Y have boiling points 90 K and 75 K respectively.

Which out of the two will have stronger forces of attraction between the particles and why?
