

# Chemistry Study Materials for Class 9 (NCERT Based notes of Chapter -01)

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## MATTER IN OUR SURROUNDINGS

### EXERCISE QUESTIONS PAGE NO 12

**Q1. Convert the following temperatures to the Celsius scale.**

- (a) 300 K            (b) 573 K.

**Answer:** Kelvin is an SI unit of temperature, where  $0^{\circ}\text{C} = 273 \text{ K}$

(a)  $300 \text{ K} = (300 - 273)^{\circ}\text{C} = 27^{\circ}\text{C}$

(b)  $573 \text{ K} = (573 - 273)^{\circ}\text{C} = 300^{\circ}\text{C}$

**Q2. Convert the following temperatures to the Kelvin scale.**

- (a)  $25^{\circ}\text{C}$             (b)  $373^{\circ}\text{C}$ .

**Answer:** Kelvin is an SI unit of temperature, where  $0^{\circ}\text{C} = 273 \text{ K}$

(a)  $25^{\circ}\text{C} = (25 + 273) \text{ K} = 298 \text{ K}$                       (b)  $373^{\circ}\text{C} = (373 + 273) \text{ K} = 646 \text{ K}$

**Q3. Give reason for the following observations.**

(a) Naphthalene balls disappear with time without leaving any solid.

(b) We can get the smell of perfume sitting several metres away.

**Answer:**

(a) Naphthalene undergoes sublimation easily i.e., the change of state of naphthalene from solid to gas takes place easily. Thus, naphthalene balls disappear with time without leaving any solid.

(b) Gaseous particles possess high speed and large spaces between them. Particles of perfume diffuse into these gaseous particles at a very fast rate and reach our nostrils. This enables us to smell the perfume from a distance.

**Q4. Arrange the following substances in increasing order of forces of attraction between the particles— water, sugar, oxygen.**

**Answer:** Sugar is a solid; the forces of attraction between the particles of sugar are strong. Water is a liquid; the forces of attraction here are weaker than sugar. Oxygen is a gas; the forces of attraction are the weakest in gases.

Thus, the increasing order of forces of attraction between the particles of water, sugar and oxygen is  $Oxygen < Water < Sugar$

**Q5. What is the physical state of water at— (a) 25°C (b) 0°C (c) 100°C ?**

**Answer:**

(a) Water at 25°C is present in the liquid state.

(b) At 0 °C, water can exist as both solid and liquid. At this temperature, after getting the heat equal to the latent heat of fusion, the solid form of water i.e., ice starts changing into its liquid form i.e., water.

(c) At 100 °C, water can exist as both liquid and gas. At this temperature, after getting the heat equal to the latent heat of vaporization, water starts changing from its liquid state to its gaseous state, i.e., water vapours.

**Q6. Give two reasons to justify—**

(a) **Water at room temperature is a liquid.**

(b) **An iron almirah is a solid at room temperature.**

**Answer:**

(a) At room temperature (25 °C), water is a liquid because it has the following characteristic of liquid:

- i). At room temperature, water has no shape but has a fixed volume that is, it occupies the shape of the container in which it is kept.
- ii). At room temperature, water flows.

(b) An iron almirah is a solid at room temperature (25 °C) because:

- i). it has a definite shape and volume like a solid at room temperature.
- ii). it is rigid as solid at room temperature.

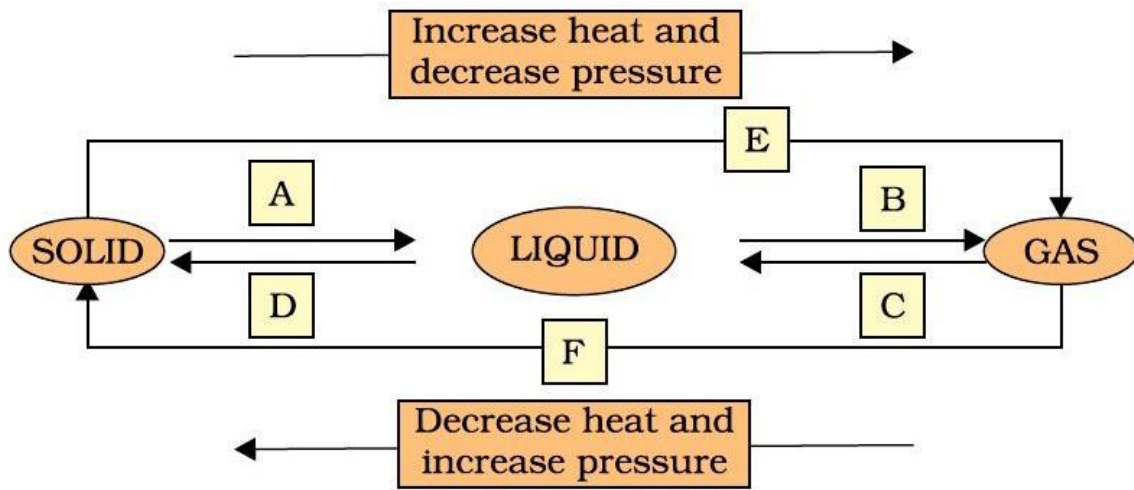
**Q7. Why is ice at 273 K more effective in cooling than water at the same temperature?**

**Answer:** When ice melts, it absorbs the energy equal to the latent heat of fusion too from the surroundings so it causes cooling more effectively than the water at same temperature (because water does not absorb energy from the surroundings).

**Q8. What produces more severe burns, boiling water or steam?**

**Answer:** Steam causes more severe burns than boiling water. The reason is that it releases the extra amount of heat (latent heat) which it has already taken during vaporisation (when the steam was formed from water).

**Q9. Name A, B, C, D, E and F in the following diagram showing change in its state**



**Answer:**

*A* = Melting or fusion, here the solid changes into liquid.

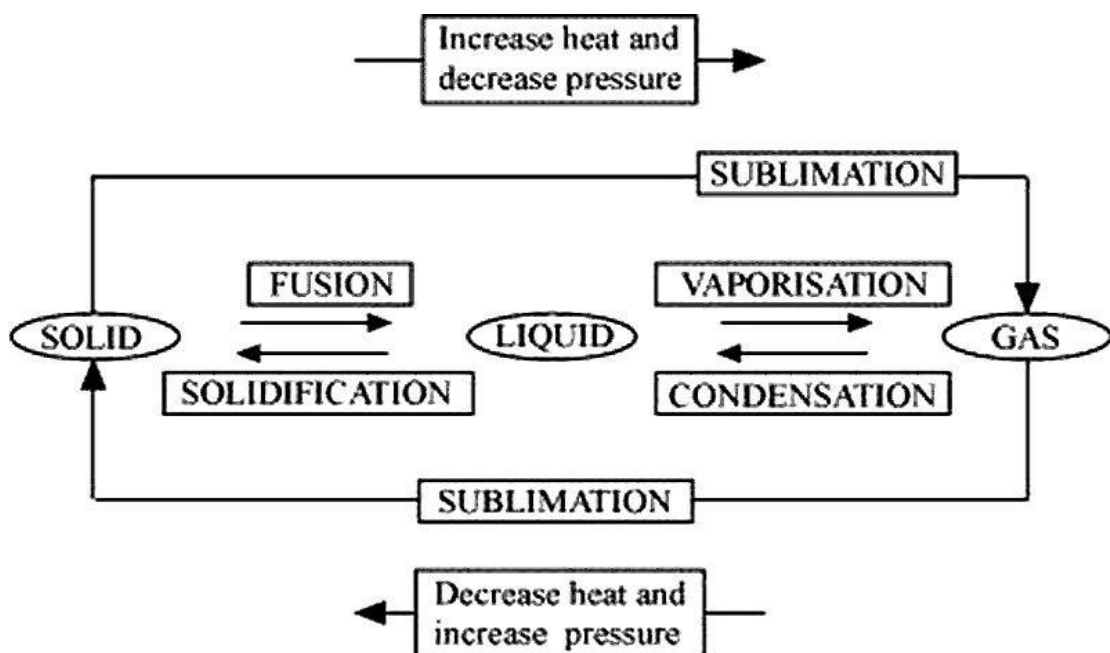
*B* = Evaporation or vaporisation, here the liquid changes into gas.

*C* = Condensation or liquification, here the gas changes into liquid.

*D* = Freezing or solidification, here the liquid changes into solid.

*E* = Sublimation, here solid directly changes into gas without coming in liquid state.

*F* = Sublimation, here gas changes into solid without coming to liquid state.



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