Matter In Our Surroundings - Notes

Notes Important Questions

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Physical Nature of Matter:-

- Matter is made up of particles.
- Particles of matter are very small that we can't see by our naked eyes.

Characteristics of Particles of Matter:-

- Particles of matter have space between them.
- Particles of matter continuously moving.
- Particles of matter attract each other.

We can change the state of matter :-

- By changing the temperature.
- By changing the pressure.

Note:- On increasing the temperature, the kinetic energy of the particles increases and the particles move faster.

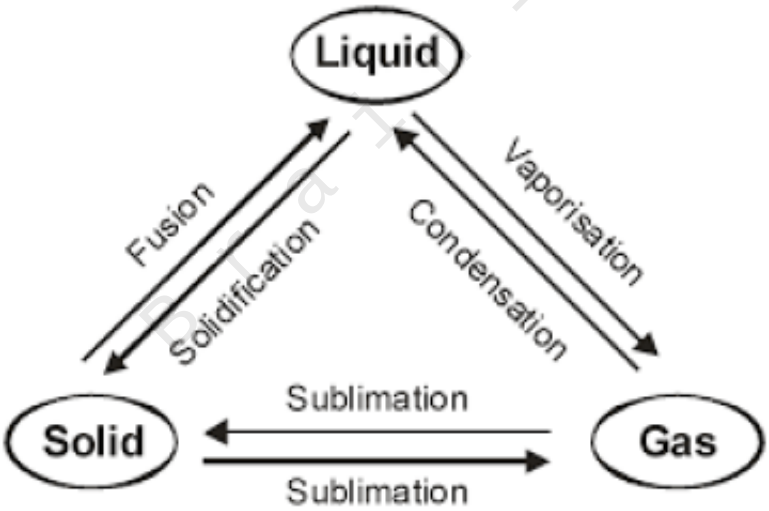
Boiling Point:- The temperature at which a liquid starts boiling at the atmospheric pressure is known as its boiling point.

Melting Point:- The temperature at which a solid starts melting to become a liquid at the atmospheric pressure is known as its melting point.

Note:-

- Melting point of ice = 0 ^{o}C = 273.16 K
- Boiling point of water = 100 ^{o}C = 373.16 K

Interconversion of three States of Matter:-



Fusion:- The process of change of solid into liquid state is known as fusion.

Sublimation:- The conversion of solid directly into gaseous state without changing into liquid state (or vice versa) is called sublimation.

Note:- Some sublimable solids are ammonium chloride, camphor, dry ice (solid form of CO_2) etc.

Vaporisation:- The conversion of a liquid into gaseous state at its boiling point is called vaporisation.

Latent heat of Fusion:- The amount of heat energy required to change 1 kg of solid into liquid at atmospheric pressure at its melting point is known as latent heat of fusion.

Latent heat of vaporisation:- The amount of heat energy required to change 1 kg of liquid into gaseous state at the atmospheric pressure at its boiling point is known as latent heat of vaporisation.

Evaporation:- The conversion of a liquid into gaseous state at any temperature below its boiling point is called evaporation.

Factors on which Rate of evaporation depends are:-

- **Surface Area:-** On increasing surface area, rate of evaporation also increases.
- **Temperature:-** On increasing the temperature, rate of evaporation also increases.
- **Wind Speed:-** With the increase in wind speed, rate of evaporation also increases.
- **Humidity:-** With the increase in humidity, rate of evaporation decreases.

Note:- During evaporation, the liquid absorbs heat energy from the surroundings to get converted into gaseous state and so, **evaporation causes cooling**.

Difference Between Vaporisation and Evaporation:-

S. No.	Evaporation	Vaporisation (Boiling)
1.	The conversion of a liquid into gaseous state at any temperature below its boiling point is called evaporation.	The conversion of a liquid into gaseous state at its boiling point is called vaporisation.
2.	It is a surface phenomenon.	It is a bulk phenomenon.
3.	It is a slow process.	It is a fast process.

Note:- Now scientists are talking of five states of matter: **Solid, Liquid, Gas, Plasma** and **Bose-Einstein Condensate**.

Formulas for interconversion of different units of temperature:-

- $^{o}F = (9/5)\,^{o}C + 32$
- $^{o}C = (5/9)\,(^{o}F - 32)$
- $K = {}^{o}C + 273.16$
- $^{o}C = K - 273.16$

Note:- S.I. unit of temperature is **Kelvin** (**K**)