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“What one man calls God, another calls the laws of physics.”

-Nikola Tesla

TOPIC 8: KINETIC MODEL OF MATTER

THE ABOUT

CHAPTER ANALYSIS



MASTERY

- Straight forward chapter



EXAM

- Commonly tested in MCQ
- Tested together with other Thermal Physics chapters



WEIGHTAGE

- Light-medium overall weightage
- Constitute to around **2%** of marks for past 5 year papers

KEY CONCEPT

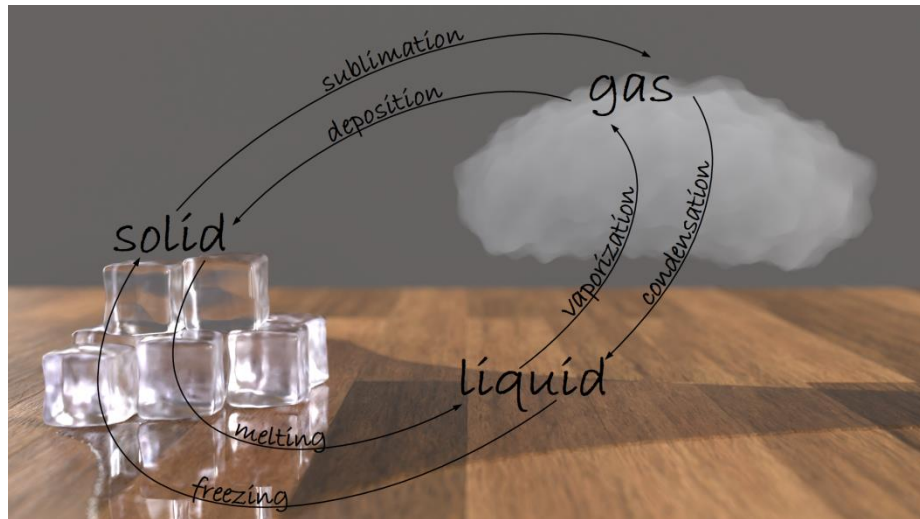
KINETIC MODEL OF MATTER

SOLID, LIQUID, GAS

TEMPERATURE & MOTION OF MOLECULES



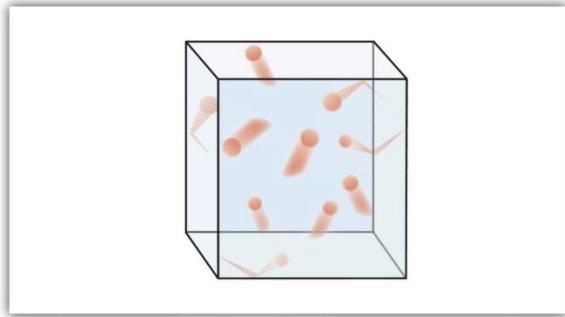
KINETIC MODEL OF MATTER



KINETIC MODEL OF MATTER

Physical properties	Solid	Liquid	Gas
Diagram			
Arrangement of particles	Packed close together; orderly arrangement	Packed loosely together; disordered arrangement	Far apart; random arrangement
Movement of particles	Vibrate about fixed position	Slide over one another	Moves randomly at high speed
Shape & Volume	Fixed shape & fixed Volume	No fixed shape but has fixed volume	No fixed shape & no fixed volume (can be compressed)
Space between molecules	Very little	Little space (more than solid)	Large space
Forces between particles	Very strong attraction	Strong attraction (weaker than solid)	Weak attraction
Density	Very high - particles are close together	High - particles are close together	Very low - particles are far apart

RELATIONSHIP OF TEMPERATURE & MOTION OF MOLECULES



TEMPERATURE \propto MOTION OF MOLECULE

When **temperature is higher**, thermal energy is transferred to the molecules and **gaseous particles gain kinetic energy**.

This cause the molecules to move faster.

This increases both the frequency of collision against the wall and the force exerted by each gaseous particle.

Since pressure is force per unit area, pressure will hence increase.

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