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SUBJECT:- PHYSICS

CLASS:- IXTH

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CHAPTER 3. (GRAVITATION PART-2)(BASED ON NCERT SYLLABUS)

Archimedes' Principle:-

- It states that when a body is immersed fully or partially in a fluid, it experiences an upward force that is equal to the weight of the fluid displaced by it.

Applications of Archimedes' Principle:

- It is used in designing ships and submarines.
- It is used in determining relative density of substances.
- Hydrometers used to determine the density of liquids, work on this principle.
- Lactometers used to determine purity of milk, are also based on this principle.

It is because of this principle that ship made of iron and steel floats in water whereas a small piece of iron like nail, sinks in it.

Density (ρ):-

- The mass per unit volume is called density of an object.
- Density (ρ) = Mass(M)/Volume(V)
- SI unit of density = kg/m³

Relative density:-

- It is the ratio of the density of a substance to the density of water.

$$\text{Relative density} = \frac{\text{Density of substance}}{\text{Density of water}}$$

- Since relative density is a ratio of similar quantities, it has no unit.

Applications of density:-

- If an object has density more than that of the liquid, it will float over that liquid.
- If an object has density lower than that of a liquid, it will sink in that liquid.
- When the relative density of a substance is less than 1, it will float in water otherwise it will sink in water.