

GRAVITATION

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Universal Law of Gravitation

$$F = \frac{Gm_1m_2}{r^2}$$

Where 'G' is Gravitational Constant, m_1 and m_2 are the masses of two bodies, and 'r' is the distance of separation b/w two bodies.

$$G = 6.67 \times 10^{-11} \text{ Nm}^2\text{Kg}^{-2}$$

Acceleration due to Gravity (g)

The value of 'g' varies from places to places

Value of 'g' on earth is approx. 9.8 ms^{-2}

$$g = \frac{GM}{R^2}$$

Eqns. of motion for freely falling objects

$$v = u - gt$$

$$h = ut - \frac{1}{2}gt^2$$

$$v^2 - u^2 = -2gh$$

ELECTRICITY

ELECTRICITY

STATIC
ELECTRICITY
(Charge are at
rest)

CURRENT
ELECTRICITY.
(Charges in motion)

Movement of
electrons
(Current comes
opposite to the
flow of electrons)

$$I = \frac{Q}{t}$$

S.I. unit
is C/s
known as
Ampere

Scalar
Quantity.

Measured
by
Ammeter

Electric Potential

↓
Work done to Move
a charge from one
point to another

$$V = \frac{W}{Q}$$

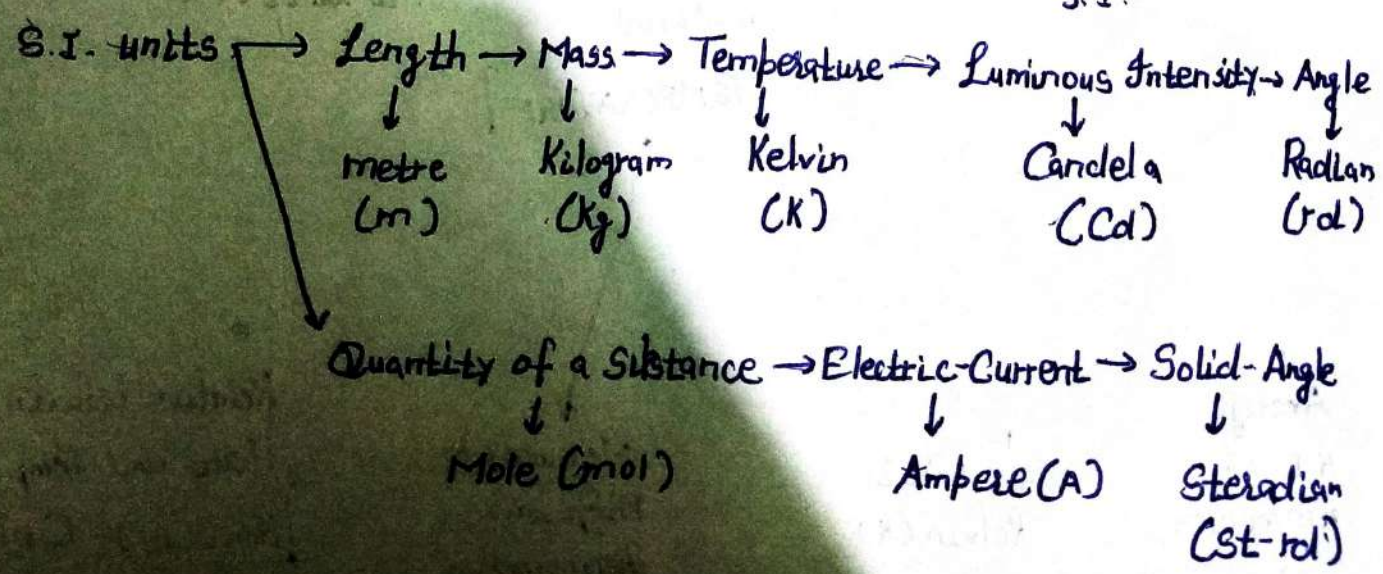
→ S.I. unit is J/C → Measured by
known as Volts Voltmeter

PHYSICAL QUANTITIES AND MEASUREMENTS

Physical Quantity
(Numerical Value
x unit).

TYPES OF UNITS
↓
FUNDAMENTAL
↓
DERIVED.

SYSTEM OF UNITS:
↓
C.G.S
↓
F.P.S
↓
M.K.S.
↓
S.I.



HEAT

↓
"Form of energy that produces in us the sensation of warmth"

← S.I. unit is Joules (J)

← Measured by Calorimeter

↓ Depends upon Mass, Temp. and material

→ Moves from Higher conc. to lower conc.

TEMPERATURE

← Average K.E. of molecules

← S.I. unit is Kelvin (K)

↓ Measured by Different thermometers

→ Relation between Heat and Temp

$$\text{Heat (Q)} = C m \Delta t$$

where 'C' is "specific Heat Capacity"

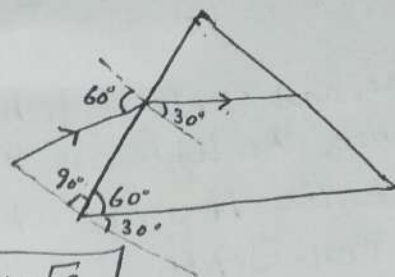
'm' = mass and 't' = temp.

23. Using Snell's Law,

$$\sin 60^\circ = \mu \sin 30^\circ$$

$$\frac{\sqrt{3}}{2} = \mu \times \frac{1}{2} \Rightarrow \boxed{\mu = \sqrt{3}}$$

Hence, Refractive-index of Prism will be: $\boxed{\mu = \sqrt{3}}$



24. The formula for minimum angle of Deviation (δ_{\min}) is expressed as:

$$\boxed{A + \delta_{\min} = i + e} \quad (-i)$$

For equilateral-Triangle: $\boxed{A = 60^\circ}$; and $i = 60^\circ$; $e = 60^\circ$

$$\therefore 60^\circ + \delta_{\min} = 60^\circ + 60^\circ$$

$$\boxed{\delta_{\min} = 60^\circ}$$

\therefore Minimum angle of Deviation (δ_{\min}) = 60° .

25. The condition for

"Total-Internal Reflection" is given as,

$$\boxed{\sin C = \frac{1}{\mu}}; (i \geq C)$$

where 'C' is the critical angle

and μ is the refractive-index of glass-prism.

$$\text{Here, } \boxed{C = 45^\circ}$$

$$\therefore \sin 45^\circ = \frac{1}{\mu} \Rightarrow \boxed{\mu = \sqrt{2} = 1.414}$$

