PHYSICS

* Image formation by concave mirror at different Position *

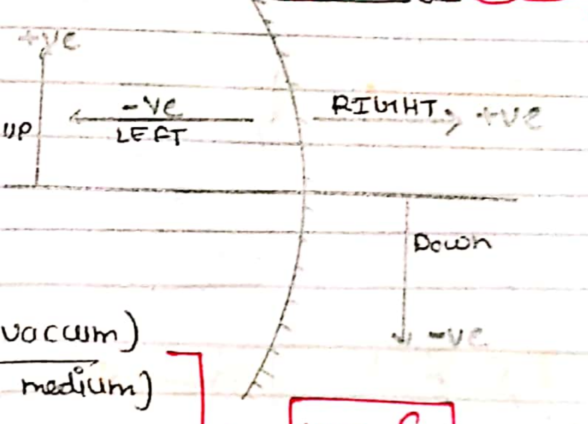
Position of object	Position of image	Size of image	Nature
→ At Infinity	At the focus F	Higly diminised	Real and inverted
→ Beyond C	between F and C	Diminished	Real and inverted
→ At C	At C	same Size	Real and inverted
→ Between C and F	Beyond C	Enlarged	Real and inverted
→ At focus.	At Infinity	Highly Enlarged	Real and inverted
→ Between P and F	Behind the mirror.	Enlarged	Virtual and Erect

* Image formation by convex mirror at different Positions *

Position of object	Position of image	Size of image	Nature
→ At Infinity	At focus F, behind mirror	Highly diminished	Virtual and Erect
→ Between Infinity and Pole	Between P an F	Diminished	Virtual and Erect.

Mirror Formula :- $\frac{1}{f} = \frac{1}{v} + \frac{1}{u}$

(New Cartesian Sign Convention)



Magnification :- $\frac{\text{Height of image}}{\text{Height of object}} = \frac{h_I}{h_0}$

$$m \Rightarrow \frac{h_I}{h_0} = -\frac{v}{u}$$

n (refractive Index) $= \frac{c}{v}$ $\frac{(\text{Speed of light in vacuum})}{(\text{Speed of light in medium})}$ → $n = \frac{c}{v}$

* Image formation for Convex lens

Position of object	Position of image	Size of image	Nature
→ At Infinity	At focus F_2	Highly diminished	Real and inverted
→ Beyond $2F_1$	Between F_2 and $2F_2$	Diminished	Real and inverted
→ At $2F_1$	At $2F_2$	Same Size	Real and inverted
→ Between F_1 and $2F_1$	Beyond $2F_2$	Enlarged	Real and inverted
→ At F_1	At Infinity	highly enlarged	Real and inverted
→ Between F_1 and O	On same side of object	Enlarged	Virtual and Erect

* Image formation for Concave lens

Position of object	Position of image	Size of image	Nature
→ At Infinity	At focus F_1	Highly diminished	Virtual and erect
→ Between Infinity and O	Between F and O	Diminished	Virtual and erect

Lens Formula :- $\frac{1}{f} = \frac{1}{v} - \frac{1}{u}$

$$m = \frac{h_I}{h_0} = \frac{v}{u}$$

Power of lens $= \frac{1}{\text{focal length}}$

$$P = \frac{1}{f(m)} \text{ or } \frac{100\text{ cm}}{f(\text{cm})}$$

ELECTRICITY

Current (Ampere) = Charge (Coulomb) / time (sec) , $I = \frac{Q}{t}$, Potential difference (Volt) = Work done (Joule) / Charge (Coulomb) $V = \frac{W}{Q}$

OHM's Law :- Potential difference (V) = Current (A) X Resistance (Ω)

$$V = IR$$

$$R = \frac{V}{I} , \quad I = \frac{V}{R}$$

Resistance (Ω) :- Resistivity (Ωm) X Length (m) / Area (m^2) => $R = \rho \frac{l}{A}$

In series Connection => I -> same
V -> $V_1 + V_2 + V_3 + \ldots$ (Different)
Total $R \Rightarrow R_1 + R_2 + \ldots$

In Parallel Connection -> V -> Same
$I = I_1 + I_2 + I_3 +$ (Different)
Total Resistance => $\frac{1}{R_p} = \frac{1}{R_1} + \frac{1}{R_2} + \ldots$

$$\Rightarrow \frac{1}{R_p} = \frac{R_2 + R_1}{R_1 R_2}$$

$$R_p = \frac{R_1 R_2}{R_2 + R_1}$$

Power (Watt) :- $P = VI$

$$P = I^2 R$$

$$P = \frac{V^2}{R}$$

Joule's law of Heating :- $H = I^2 Rt$

$$H = \frac{V^2}{R} t$$

$$H = VIt$$

1W = 1V X 1A

1 kWh = 1000 Watt X 3600 sec
=> 3.6×10^6 Watt second

1 Kwh => 3.6×10^6 joule

DOMESTIC ELECTRIC CIRCUIT