LIGHT - Reflection & Refraction-

Home Assignment

1) Differentiate between concavo-convex lens & convexo-concave lens.

Ans (1) *Concavo-convex lens is thinner at outer boundary (top & bottom pts) while thicker at middle & ~~thi~~

* Convexo-concave lens is thinner at middle & thicker at outer boundary

(2) * Concavo-Convex lens ⟶

* Convexo-Concave lens ⟶

(3) * In concavo-convex lens ⟶ the convex face has a greater degree of curvature than concave face

Date
Page

* In Convexo-concave lens, the concave face has greater degree of curvature than convex face.

2) What is the reason behind sparkling of diamond?

Ans * Diamond sparkles due to total internal reflection.

- TIR is a phenomenon that occurs at the interface of two mediums such that if incident angle in the first medium > Critical Angle, then all the light is reflected into first medium.

* So, when light rays enter the diamond it acts as a prism & disperses the light into its seven constituent colours.

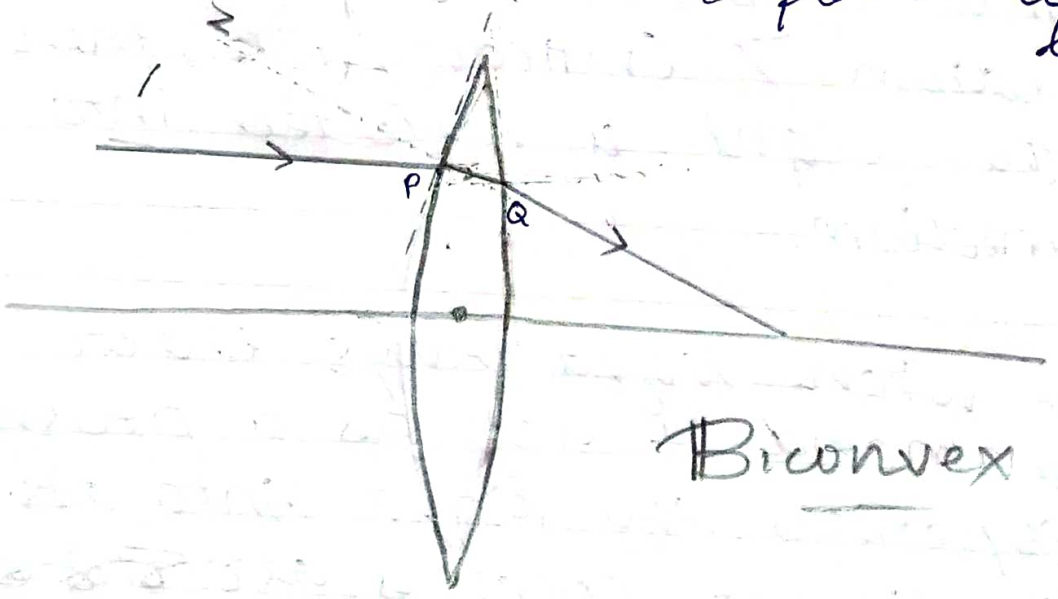
* These colours strike the other surface of diamond & a TIR takes place & finally, all the 7 colours

emerge together to combine into white light again.

* These multiple TIR of light along with refraction (a bit) & finally dispersion of light (as diamond parts act as multiple glass prism) helps in sparkling of diamond.

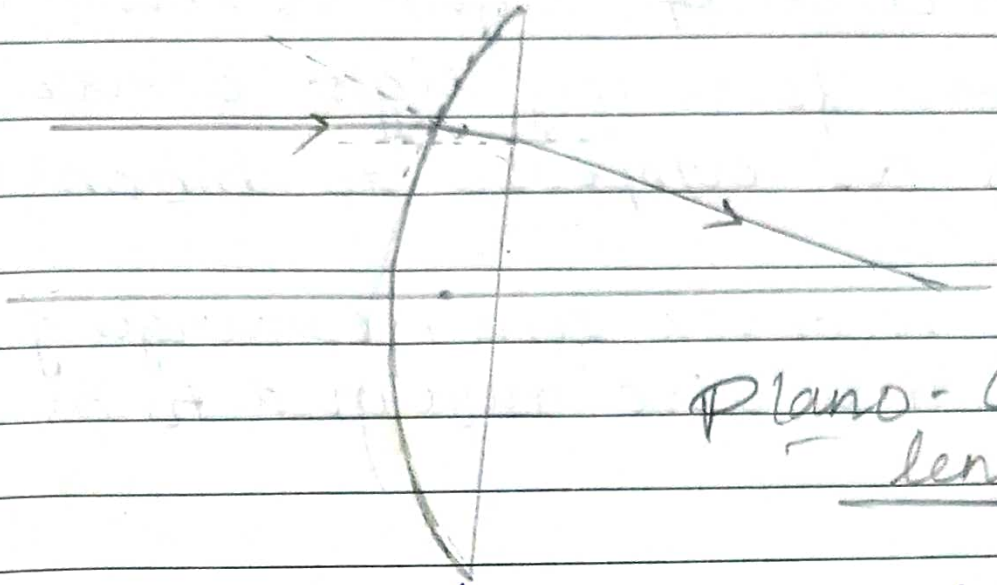
3. In which case the converging will be more, Biconvex or plano-convex? Justify.

Ans * Converging will be more in case of Biconvex lens than plano-convex lens.



Biconvex lens

- Biconvex lens consists of 2 convex surfaces bound together



Plano-convex lens

- Plano convex lens consists of 1 plane and other convex surface bound together.

* In biconvex lens, the light as first enters a side of lens (convex side) and as it is convex; suffers more refraction & consequently more bending. It then strikes on the other interface of lens & air; which is concave to the light ray striking on it. So, it suffers enough refraction & focuses on a pt very near to pole on the principal axis. Thus, it acts as most converging lens.

★ Whereas, in plano convex lens, the refraction of light is lesser and thus, focusing light occurs less as compared to biconvex lens.

★ In biconvex lens, converging is more so, it is also referred to as converging.