PHYSICS - X-PART-2 CLASS 40

Refraction in different Media

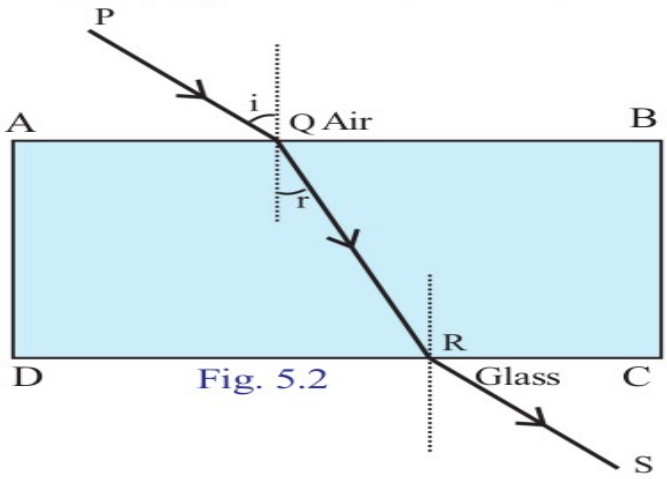


Fig. 5.2

- **Which is the incident ray on the surface of separation CD?**

* **QR**

- **The angle between the incident ray and the normal is called the angle of incidence. If so, can you explain what is angle of refraction?**

* **The angle between the refracted ray and the normal**

- **Using a protractor measure the angle of incidence and the angle of refraction.**

* **Angle of incidence i = 45^0 , Angle of refraction r = 28^0**

- **Is the angle of refraction greater or lower than the angle of incidence when it goes from air to glass?**

* **Lower**

- **What about from glass to air?**

* **grater**

- **Which is of greater optical density air or glass?**

* **Glass**

- **While going from air to glass,(from a medium of lower optical density to that of a greater one) the refracted ray deviates towards the normal/ deviates away from the normal.**

* **Deviates towards the normal**

- **What happens while it goes from glass to air(from a medium of greater optical density to that of a lower one)?**

* **Deviates away from the normal.**

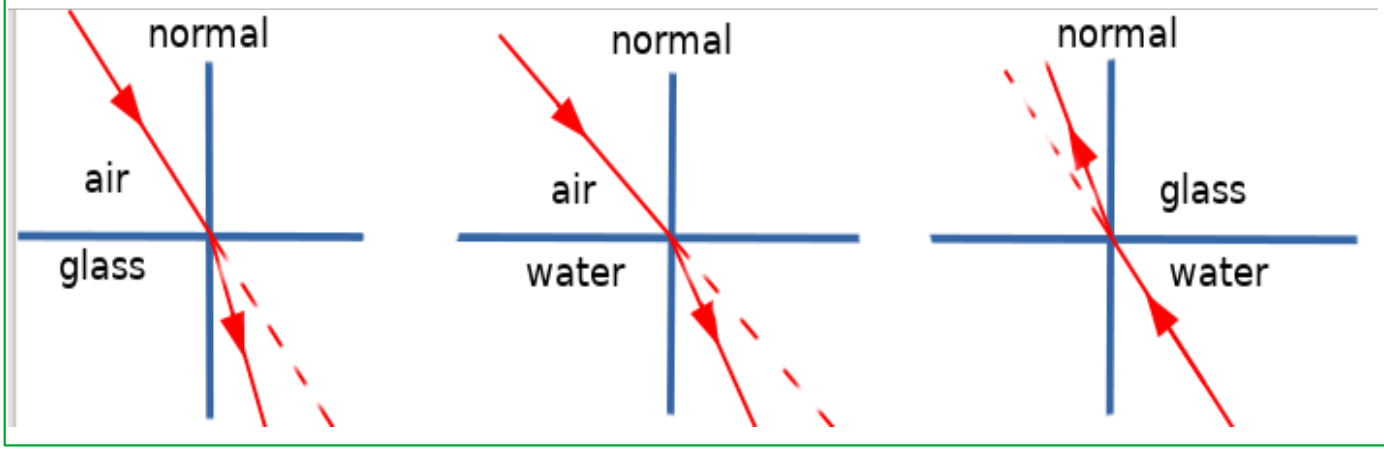
- **Are the angle of incidence, angle of refraction and the normal at the point of incidence on the same plane?**

* **Yes**

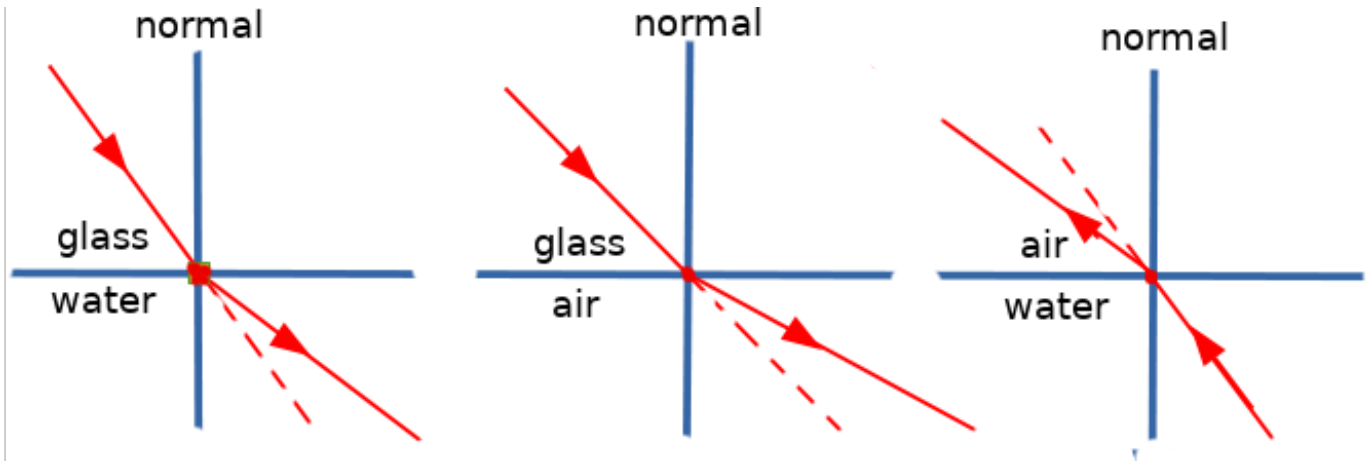
- **Does refraction take place for a ray while entering a glass slab normal to it?**

* **No**

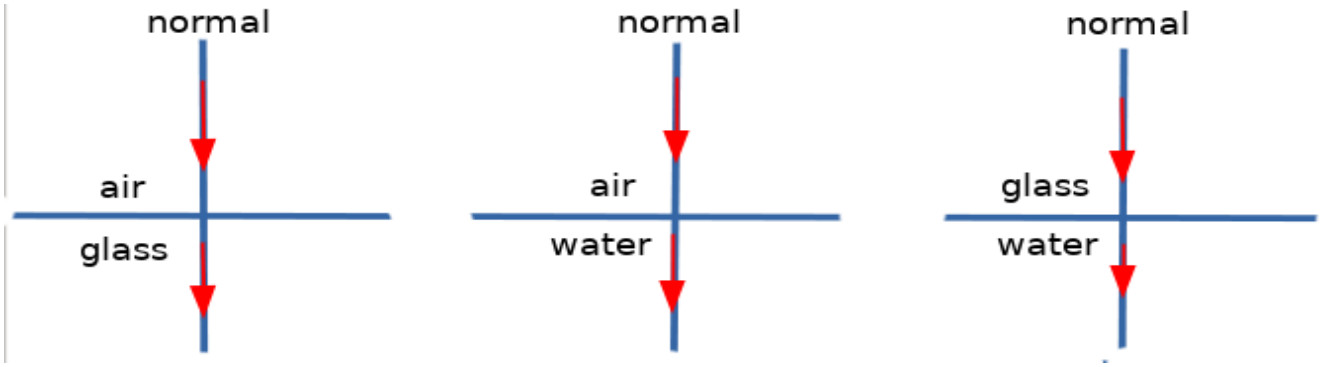
* **From a medium of lower optical density to that of a greater one the refracted ray deviates towards the normal.**



* **From a medium of greater optical density to that of a lower one the refracted ray deviates away from the normal.**



***No deviation takes place in the case of a light ray falling normally on a medium**



A ray of light entering from air to glass

Sl. No.	Angle of incidence (i)	Angle of refraction (r)	sin i	sin r	sin i/sin r
1	20°	13°	0.34	0.22	1.5
2	30°	19.45°	0.5	0.33	1.5
3	45°	28°	0.7	0.47	1.5
4	60°	35°	0.86	0.57	1.5

*** The ratio of the sine of the angle of incidence to the sine of the angle of refraction (sin i / sin r) will be a constant.**

Laws of Refraction

- **The angle of incidence, the angle of refraction and the normal at the point of incidence on the surface of separation of the two media will always be in the same plane.**
- **The ratio of the sine of the angle of incidence to the sine of the angle of refraction $\left(\frac{\sin i}{\sin r}\right)$ will always be a constant. This is known as Snell's Law.**

The constant from Snell's Law is known as refractive index. This is indicated by the letter n.

Worksheet

Draw the refraction of light through the glass slab and mark the angle of incidence and the angle of refraction.