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HOME ASSIGNMENTS

1. Can a beam of white light when passed through a hollow prism give spectrum?

No, a beam of white light when passed through a hollow prism will not give spectrum

2. Why do different components of white light deviate by a different amounts when passed through a Prism?

Different components of white light deviate by a different amounts when passed through a prism -

→ Due to change in refractive index when medium is changed

→ Due to change in wavelegth of different colours (

3. The angle of prism is 60°. What is the angle of incidence for minimum deviation for the prism with refractive index $\sqrt{2}$

$\mu = \sqrt{2}$

$A = 60^\circ$

i = For minimum angle of deviation we have angle of incidence is equal to angle

of emergence, $i = e$

$$i = \frac{A + dm}{2}$$

We know

$$\mu = \frac{\sin i}{\sin r} = \frac{\sin\left(\frac{A+dm}{2}\right)}{\sin\left(\frac{A}{2}\right)}$$

$$\Rightarrow \sqrt{2} = \frac{\sin i}{\sin \frac{60}{2}}$$

$$\Rightarrow \sin i = \sqrt{2}(\sin 30)$$

$$\Rightarrow \sin i = \sqrt{2} \times \frac{1}{2}$$

Multiply & divide by $\sqrt{2}$, we get

$$\sin i = \frac{1}{\sqrt{2}}$$

$$\Rightarrow i = 45^\circ$$