

HW  
26/7/21

1- No, spectrum won't form while passing light through a hollow prism because light goes from air medium to again air, which leads to no refraction or deviation so, no spectrum is visible.

2- Because of difference in wavelength of different colours, so every colour has its own velocity so, refractive index for every colour is different which leads to ~~different~~ dispersion of white light into 7 colours because each colour refracts at a different angle.

$$\begin{aligned} 3- \quad \mu &= \frac{\sin\left(\frac{A+\delta}{2}\right)}{\sin\frac{A}{2}} & \Rightarrow 45^\circ &= 30 + \frac{\delta}{2} \\ & & \Rightarrow \delta_{\min} &= 30^\circ \\ \Rightarrow \sqrt{2} &= \frac{\sin\left(30 + \frac{\delta}{2}\right)}{\frac{1}{2}} \\ \Rightarrow \frac{1}{\sqrt{2}} &= \sin\left(30 + \frac{\delta}{2}\right) \\ \Rightarrow \sin^{-1}\left(\frac{1}{\sqrt{2}}\right) &= 30 + \frac{\delta}{2} \end{aligned}$$