

37. The angle between the direction of polarization of the light incident on the first polarizing sheet and the polarizing direction of that sheet is $\theta_1 = 70^\circ$. If I_0 is the intensity of the incident light, then the intensity of the light transmitted through the first sheet is

$$I_1 = I_0 \cos^2 \theta_1 = (43 \text{ W/m}^2) \cos^2 70^\circ = 5.03 \text{ W/m}^2 .$$

The direction of polarization of the transmitted light makes an angle of 70° with the vertical and an angle of $\theta_2 = 20^\circ$ with the horizontal. θ_2 is the angle it makes with the polarizing direction of the second polarizing sheet. Consequently, the transmitted intensity is

$$I_2 = I_1 \cos^2 \theta_2 = (5.03 \text{ W/m}^2) \cos^2 20^\circ = 4.4 \text{ W/m}^2 .$$