P6

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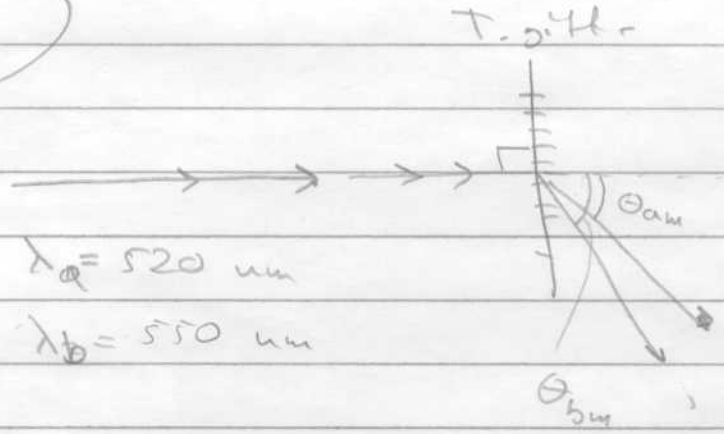
a, b



$\lambda_a = 520$ nm

$\lambda_b = 550$ nm

$\theta_i = 0$

3500 γραμμές/cm

$\Rightarrow a = \frac{1\,cm}{3500} = 2.86\ \mu m$

Αρθρακτ.: $a(\sin\theta_i + \sin\theta_m) = m\lambda$, $m = 0, \pm 1, \pm 2, \dots$

a) $m = 3$

$\sin\theta_{a3} = \frac{3\lambda_a}{a} \Rightarrow \theta_{a3} = 33.1°$

$\sin\theta_{b3} = \frac{3\lambda_b}{a} \Rightarrow \theta_{b3} = 35.2°$

$\theta_{b3} - \theta_{a3} = 2.1°$

b) Γενικά $\theta_m \leq 90° \Rightarrow \sin\theta_m < 1$

$a = m_{max}\lambda_b \Rightarrow m_{max} \leq \frac{a}{\lambda_b} = 5.2$

$\Rightarrow m_{max} = 5$