A thin film of oil ($n = 1.30$) is sandwiched between two thick glass plates ($n = 1.55$). If constructive interference is observed in transmission with light at perpendicular incidence at the following wavelengths (not necessarily consecutive), calculate the thickness of the film.

$\lambda_1 = 550$ nm
$\lambda_2 = 770$ nm
$\lambda_3 = 427$ nm
$\lambda_4 = 350$ nm

Because of constructive interference in transmission, there is condition below:

$$m \frac{\lambda}{n} = 2d, \quad m \lambda = 2dn,$$

where $m$ is an integer.

So,

$m_1 \lambda_1 = m_2 \lambda_2 \Rightarrow \frac{m_1 \lambda_1}{m_2} = \frac{\lambda_2}{\lambda_1} = \frac{770}{550} = \frac{7}{5}$

try $m_1 = 7, \ m_2 = 5$. I get

$m_2 \lambda_2 = m_3 \lambda_3 \Rightarrow m_3 = \frac{m_2 \lambda_2}{\lambda_3} = 9$

and $m_4 = \frac{m_2 \lambda_2}{\lambda_4} = 11$

Conclusion

$$d = \frac{m_1 \lambda_1}{2n} = \frac{7 \times 550 \times 10^{-9}}{2 \times 1.3} = 1.48 \times 10^{-6} \text{ m}$$