

Practice Problem Set 5

Practice only - Not to be turned in for grades!

Question 1 (1 point)

What is Rayleigh's Criterion? What can it be used for?

Question 2 (3 points)

A thin film of oil is placed on the surface of a piece of glass. The oil has an index of refraction of 1.29 and the glass has an index of refraction of 1.56. If the film produces a first-order maximum of light of wavelength 550 nm normally incident on it, how thick is the film?

Question 3 (3 points)

What is the ratio between the intensities of the brightest maximum in a single-slit diffraction pattern and the second brightest maximum for the same pattern? The brightest maximum is the same as the central maximum.

Question 4 (3 points)

A 720 nm light beam in air hits the flat surface of a certain plastic and the beam is split into a reflected ray and a refracted ray. If the reflected ray is completely polarized when it is at 39° with respect to the surface, what is the index of refraction of the plastic?