ĐẠI HỌC QUỐC GIA HÀ NỘI
TRƯỜNG ĐẠI HỌC KHOA HỌC TỰ NHIÊN

ĐỀ THI KẾT THÚC HỌC KỲ II
NĂM HỌC 2015-2016

Môn thi: Quang học

Mã môn học: PHY 2304 . 6 Số tín chỉ: 3 Đề số:1

Dành cho sinh viên khóa: K59 *Ngành*: Vật lý Quốc tế

Thời gian làm bài: 90 phút (không kể thời gian phát đề)

Question 1:

Mention the factors that influence the interference pattern in the two slits interferometer.

Question 2:

A wedge-shaped film of 1.5 refractive index is illuminated by a monochromatic light with wavelength of 550nm. A constructive interference pattern appears. The distance between two consecutive fringes is 0.21mm.

a- Determine angle of the wedge

b- In fact, the light is not ideally monochromatic. Determine spectral bandwidth ($\Delta\lambda$) of the light if the fringes disappear in distance greater than 1.5cm from apex of the wedge.

Question 3:

Two narrow slits of width ***a*** and center-to-center separation ***b*** illuminated by a plane wave of wavelength λ. If $b = k.a$ where ***k*** is a given integer, how many bright fringes can be observed in the central diffraction region? Give the reason for your calculation.

Question 4:

Using Fresnel equations demonstrate that a natural light reflected form a surface of glass in the air is completely polarized if the incident angle θ_i satisfies the condition : $\tan\theta_i = n$ where n is refractive index of the glass.

Question 5:

A photon of X ray with wavelength of 0,02 nm collides with a stationary electron and then is scattered in angle of 90^0. Determine: a-Energy of scattered photon; b- Kinetic energy and momentum of the electron right after collision.

$\frac{hc}{\lambda'}$ $\frac{hc}{\lambda} - \frac{hc}{\lambda'}$