PHYSICS LABORATORY (PHS51) Examination 2021-22

TIME : 30 minutes (15:30 - 16:00 on 08.03.2022). Put your institute email correctly.
Example: ZZZZ.21uXXXX@btech.nitdgp.ac.in
[Form will not be considered for evaluation if you put your personal email id or wrong email Id]

The frequency corresponding to the work function of a metal is known as threshold frequency (f). Two beams of light with frequencies (3/2)f and (2/3)f are incident on the metal whose threshold frequency is f. Which is correct about the photo current produced in the 2 cases? *

- ○ No photo-current for both the beams
- ◉ No photo-current for second beam
- ○ Both the beams will produce photo-current
- ○ No photo-current for first beam

The interference pattern cannot be seen for the case of *

- ○ Wedge shaped film
- ○ Thick film
- ○ Soap bubble
- ◉ Excessively thin film

A beam of light with intensity I and frequency f is incident on a metal surface to observe photo electric effect. Now another beam with intensity 3I and frequency 2f is incident on the same metal surface. What will be the observed photo current? *

- 2I
- 3I
- (3/2)I
- 6I

The angle between electric and magnetic field vectors (and) of a light beam, after passing thorough two polaroid, which are places with an angle 60o in between them, will be _____ *

- Only will present in the emerging light
- 90 degree
- Uncertain
- 60 degree

In Newton ring experiment the diameter of the 15th ring was found to be 0.590 cm and that of the 5th ring was 0.336 cm. If the radius of the plano-convex lens is 100 cm, calculate the wavelength of the light used. *

- 578 nm
- 555 nm
- 588 nm
- 500 nm

What will be the nature of polarization of the reflected light at the Brewster's angle? *

- ○ Linearly polarized
- ◉ Partially polarized
- ○ Circularly polarized
- ○ Elliptically polarized

A pair of ideal linear Polaroid plates with their optic axes parallel is present in front of an unpolarized light beam of intensity 600 W/m2 and emergent intensity from the polaroid plates is 300 W/m2. Calculate the intensity of the emergent light beam when the second Polaroid plate is rotated through an angle 60o with respect to the first one. *

- ○ 300 W/m^2
- ○ 350 W/m^2
- ○ 275 W/m^2
- ◉ 225 W/m^2

A light is incident at Brewster's angle i.e. 40 degree. What is the angle between reflected and refracted beams? *

- ○ 50 degree
- ◉ 90 degree
- ○ 58.7 degree
- ○ Depends on relative refractive index

In Newton's ring experiment calculate the thickness of air film at 10th dark ring when viewed in reflected light of wavelength 500 nm. *

- ○ 5μm
- ◉ 2.5μm
- ○ 1μm
- ○ 2μm

A certain metal has work function of 2eV. A light beam of energy 7eV is incident on its surface. How many electrons will be ejected from the surface? *

- ◉ Can't be predicted from given data
- ○ No electron
- ○ 1 electron
- ○ 3 electron

For which of the following light the fringe width of Newton's ring will be maximum? *

- ○ Blue
- ○ Yellow
- ◉ Red
- ○ Green

The dimension of Planck's constant is the same as that of - *

- energy
- angular momentum
- work
- momentum

The Refractive index of materials can be determined by using *

- Both Brewster's and Malus'law
- Only laser light
- Malus' law
- Brewster's law

In photoelectric effect experiment, if energy of incident light is doubled and intensity is tripled, then what happens to the stopping potential of the photocurrent? *

- Depends on work-function of metal
- No change
- Doubled
- Tripled

A beam of polarized light, whose intensity is I, is passed thorough 2 polaroids whose polarizing axis makes angle 60 degree and 120 degree respectively with the polarization axis of incident beam. After passing through second polarizer its intensity will be - *

- ○ (√3/2)I
- ◉ (1/4)I
- ○ (1/2)I
- ○ (1/8)I

In the experiment of Malus' law, the intensity of light (Iout) coming out from the polarizer-analyser assembly vs. cos 2θ curve is a - *

- ○ parallel to the intensity axis
- ○ parabolic
- ○ can't be stated
- ◉ straight line

A beam of unpolarized blue light incident on a glass plate in polarizing angle and produces a refracted angle of 34 degree. The refractive index of the glass plate is *

- ○ 1.52
- ○ 1.5
- ◉ 1.48
- ○ 1.49

What happens to the wavelength of a photon after it collides with an electron? *

- ○ Decreases
- ○ Remain the same
- ○ Increases
- ◉ Infinite

An unpolarized light is passed through a medium with refractive index 1.44 to produce a fully polarized light after reflection. The incident and reflected angle must be, *

- ○ 44 degree & 55 degree
- ○ 44 degree & 44 degree
- ○ 55 degree & 44 degree
- ◉ 55 degree & 55 degree

An unpolarized light is passed from a medium of refractive index 1.5 to a medium of refractive index 1.25. What is the Brewster's angle for this interface? *

- ◉ Doesn't exist, as light is passing from denser to rarer medium
- ○ 50 degree
- ○ 40 degree
- ○ 56 degree