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SUBJECT CODE NO:- B-2147
FACULTY OF SCIENCE AND TECHNOLOGY
B.Sc. F.Y (Sem.-II) Examination OCT/NOV 2019
Physics Paper- IV
Geometrical & Physical Optics

[Time : 1:30 Hours]

[Total Marks : 50]

Please check whether you have got the right question paper.

- N.B. :**
- i. Attempt all question.
 - ii. Use of logarithmic table and electronic pocket calculator is allowed.

- Q.1
- a) Give construction and working of Huygen's eyepiece. 10
 - b) Describe construction and working of Michelson's Interferometer. 10

OR

- c) Explain in details Fraunhofer's diffraction due to a double slit. 10
 - d) What is Nicol Prism? Explain construction and working of Nicol Prism. 10
- Q.2
- a) Write a short note on cardinal points. 05
 - b) Find the equivalent focal length, If the focal length of Hyugen's eyepiece are 4cm and 12cm respectively. 05
 - c) Write a short note on Rayleigh's criterion. 05
 - d) Calculate the number of lines per meter on the surface of grating? If light of wavelength 500nm is incident on a plane transmission grating a second order spectral line is observed at an angle of 30° . 05

OR

- a) Draw a neat diagram and explain the fringes produced by a wedge shaped thin film. 05
- b) Newton's rings are formed with light of wavelength 600nm. The radius of the 20th ring is found to be 1.1×10^{-2} . Find the radius of curvature of the lens. 05
- c) Write a note on optical activity. 05
- d) Determine the specific rotation of the sugar solution, if the plane of polarization is turned through 13.2° and the length of tube containing 10% solution is 20cm. 05

- Q.3 Multiple choice question. 10

- 1) The points having unit lateral magnification in a lens system are called.
 - a) Principal foci
 - b) Nodal point
 - c) Principal point
 - d) Cardinal point
- 2) In Huygen's eye piece, the separation between the two planoconvex lenses is given by.
 - a) $\frac{3f}{2}$
 - b) $\frac{2f}{3}$
 - c) 2f
 - d) f

- 3) In Newton's ring experiment, rings are formed when light is _____ by lower surface of the lens and upper surface of the glass plate interfere.
- a) Reflected b) Refracted c) Both a & b d) None of above
- 4) If θ is the angle of wedge, then fringe width due to interference in wedge shaped air film is.
- a) λ/θ b) $\lambda/2\theta$ c) θ/λ d) $2\theta/\lambda$
- 5) The power of an optical instrument by which it can form separate images of two close object is called.
- a) Dispersive power b) Magnifying power
c) Resolving power d) Diopter
- 6) In a plane transmission grating the angle of diffraction for the second order principal maxima for the wavelength 5×10^{-5} cm is 30° . The number of lines in one centimeter of grating surface will be.
- a) 100 b) 10 c) 1000 d) 5000
- 7) Polaroid sunglasses decrease glare on a sunny day because they.
- a) Block a portion of light b) have a special colour
c) completely absorbs d) refract the light
- 8) The substance which produce the rotation of the plane of polarization towards right looking towards the source is called.
- a) Dextrorotatory b) Laevorotatory c) Polaroid d) None of above
- 9) If there are 5×10^4 number of lines per meter on the grating surface, the R.P. of grating for the first order spectrum is.
- a) 2×10^{-5} m b) 2×10^5 m c) 5×10^5 m d) 5×10^4 m
- 10) The bending of a beam of light around the corners of an obstacle is called.
- a) Interference b) Diffraction c) Dispersion d) Polarization