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SUBJECT CODE NO: - Y-2025
FACULTY OF SCIENCE AND TECHNOLOGY
B.Sc. F.Y (Sem-II)
Examination March / April - 2023
Physics Paper- IV Geometrical & Physical Optics

[Time: 1:30 Hours] **[Max. Marks: 50]**

Please check whether you have got the right question paper.

N. B 1) Attempt all questions.
2) Use of logarithmic table and Electronic Pocket Calculator is allowed..

Q1	a.	Explain with neat diagram the construction and theory of Ramsden's eyepiece.	10
	b.	Give the theory of Newton's experiment for measuring the wavelength of rings Sodium light	10
		OR	
	c.	Derive an Power of expression for resolving grating	10
	d.	Define polarization. Describe construction and working of Nicol Prism	10
Q2	a.	Write a note on principal point and Principal plane of co-axial lenses System	05
	b.	The focal length of the more Convergent lens of Huygen's eyepiece is 0.5 cm. Calculate the focal length of eyepiece	05
	c.	Write a note on diffraction at a thin wire	05
	d.	Find the minimum lines that diffraction grating should have to resolve in the first order, the doublet with difference in wavelength of $1.8A^0$ wavelength 6563 A°	05
		OR	
	a.	Write a note on wedge shaped film.	05
	b.	In Newton's rings experiment the diameter of 15^{th} ring was found to be 0.59cm. and that of the string was 0.336cm. If the radius of the Plano convex lens is 100 cm. Calculate the wavelength of light used.	05
	c.	Explain Malu's Law.	05
	d.	Determine the specific rotation of the given sample of sugar Solution using biquartz polarimeter, if the plane of polarization is turned through 20°. The length of the tube containing 50% of Sugar solution in 1 decimetre	05

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Q3 Multiple Choice question. 10

1. Huygen's eyepiece consist of _____
   a. two plano coxvex lenses of focal lengths 3f and f seperated by 2f.
   b. two plano convex lenses of focal lengths 3f and f seperated by $\frac{2}{3}$f
   c. two plano convex lenses of focal lengths 3f and f seperated by 2f
   d. two plano convex lenges of focal lengths are 3f and f separated by $^3/_2\ f$

2. In Ramsden's eyepiece if the focal length of eyelens is 12 cm then distance between two lenses is _____
   a. 8 cm b. 10 cm c. 12 cm d. 14 cm

3. In Newton's rings experiment with the order of rings Fringe width ____
   a. Increases b. decreases c. remain constant d. none of these

4. In Michelson's interferometer if two mirrors are mutually perpendicular the the types of fringe's observed are ____
   a. Circular b. Straight c. White light d. both a and b

5. The number of lines per unit length over the grating surface is increased, then the resolving power of grating will _____
   a. Decrease b. increase c. remains unchanged d. none of above

6. If there are $5x10^4$ number of lines on the grating surface, the resolving power of grating for the first order is _____
   a. $2 \times 10^{-5}m$ b. $2 \times 10^{5}m$ c. $5 \times 10^{5}m$ d. $5 \times 10^{4}m$

7. Polarization indicated light is _____
   a. Longitudinal wave
   b. Transverse wave
   c. Quantum nature
   d. Both a and b

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8. A calcite crystal is a __
   a. Uniaxial crystal
   b. Biaxial crystal
   c. Opaque crystal
   d. Triaxial crystal

9. In case of extra ordinary ray its refractive index varies with a _____
   a. Incident angle b. Ordinary angle c. reflection angle d. normal

10. In Huygen's eyepiece focal length of lenses are 3f and f and the distance between them is _
    a. f b. 2f c. 3f d. $\frac{2}{3}$ f

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