K26FY0456 Pages: 2 Reg No:.....
Name:.....

Fourth Semester FYUGP Degree (Reg) Examination April 2026

KU4DSCPHY205 - OPTICS

2024 Admission onwards

Time : 1.5 hours Maximum Marks : 50

Section A

Answer any 6 questions. Each carry 2 marks.

1. How a low reflectivity glass plate can be constructed?
2. What do you mean by blooming?
3. What is meant by the path difference between two waves. Give the relationship between path difference and phase difference.
4. What is interference of light?
5. Why does the intensity of light passing through a second polaroid become zero when the two polaroids are crossed?
6. Explain the phenomenon of polarization by double refraction ?
7. Obtain the expression for the width of central maximum in a single slit diffraction pattern.
8. Why the zones formed in Fresnel pattern is called half period zones?

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Section B

Answer any 4 questions. Each carry 6 marks.

9. Distinguish between polarization by reflection and polarization by scattering.
10. Explain polarization by reflection and derive Brewster's law.
11. Find the thickness of a a) Quarter wave plate b) Half wave plate when light of wavelength $559nm$ is used. Given, $mu_o = 1.55$, $mu_e = 1.54$.
12. Distinguish between grating spectra and prism spectra.
13. Compare the intensities at the focal points of a zone plate for $p = 1$ and $p = 3$.
14. A zone plate has the radius of the first ring 0.05cm. If plane wave of wavelength 500nm fall on the plate, where should the screen is placed so that the light is focussed to a bright spot?

Section C

Answer any 1 questions. Each carry 14 marks.

15. With the help of neat diagram explain the formation of interference finges in the wedge shaped thin film. Explain how this can be used to find the diameter of a thin wire.

16. Explain how the thickness of a thin transparent sheet can be determined using Young's double slit arrangement. What is the importance of using white light in this case?

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