



A-2995
B. Sc. (Sem. III) Examination
March/April – 2015
Applied Physics : Paper - IV
(Optics - Spectra)

Time : Hours]

[Total Marks : 50

Instructions :

(1)

<p>नीचे दर्शावेक निशानीवाणी विगतो उत्तरवडी पर अवश्य लपवी. Fillup strictly the details of signs on your answer book.</p> <p>Name of the Examination : B. Sc. (Sem. III)</p> <p>Name of the Subject : Applied Physics : Paper - IV</p> <p>Subject Code No. : 2 9 9 5 Section No. (1, 2,...): Nil</p>	<p>Seat No. : □ □ □ □ □ □</p> <p style="text-align: center; border: 1px solid black; border-radius: 15px; padding: 10px;">Student's Signature</p>
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- (2) Draw neat diagrams wherever necessary.
- (3) Symbols used have their usual meanings.
- (4) Figures to the right indicate full marks of the questions.
- (5) Scientific calculator can be used.

1 Answer the following in brief : 8

- (1) Mention the condition for achromatism of two thin lenses separated by a finite distance.
- (2) What is axial chromatic aberration ?
- (3) What is the circle of least confusion ?
- (4) Define : Polarized light.
- (5) What is Polarimeter ?
- (6) What is an optic axis ?
- (7) Name the monochromatic aberrations.
- (8) What is meant by an aberration in a lens ?

- 2 (a) How to reduce a spherical aberration in a lens ? 10
Explain.
- (b) The dispersive powers of two lenses are in the ratio of 4
2 : 3. They are to be used as achromatic doubles having
resultant focal length of 20 cm. Calculate focal lengths
of the two lenses.

OR

- 2 (a) Derive the relation $\sum \frac{w}{f} = 0$ when the two lenses 10
placed in contact.
- (b) An object of a telescope is an achromas of focal length 4
90 cm. The dispersive powers of the two lenses are 0.024
and 0.036. Calculate their focal lengths.
- 3 (a) Describe construction and working of Nicol Prisms. 10
(b) Write short note on Malu's law. 4

OR

- 3 (a) Explain polarization by reflection. 7
(b) Write short note on half wave plate. 7
- 4 (a) Explain optical rotation due to magnetic and electric 7
field.
- (b) Write short note on determination of refractive index. 7

OR

- 4 Explain Raman effect in details. Explain the method of 14
observing Raman spectrum.