



**JB-3097**

**B. Sc. (Sem. III) Examination**  
**March/April – 2013**  
**Applied Physics : Paper - IV**  
*(Optics & Spectra)*

Time : Hours]

[Total Marks : 50

**Instructions :**

(1)

नीचे दर्शायेव निशानीवाणी विगतो उत्तरवही पर अवश्य कपवी.  
Fillup strictly the details of signs on your answer book.

Name of the Examination :  
B. SC. (SEM. 3)

Name of the Subject :  
APPLIED PHYSICS : PAPER - 4

Subject Code No. : 3 0 9 7 Section No. (1, 2,.....): Nil

Seat No. :

Student's Signature

- (2) Figures to the right indicate the-total marks carried by the question.
- (3) Students can use non-programmable scientific calculator, if required.

- 1 Answer the following in brief : (any eight). 8
- (i) What is chromatic aberration?
- (ii) Name the monochromatic aberrations,.
- (iii) What are Seidal sums ?
- (iv) Define : polarized light.
- (v) Define : principal section of the crystal.
- (vi) What is an optic axis ?
- (vii) State Brewster's slaw.
- (viii) Define : optical activity.
- (ix) What is quartz region ?
- (x) What is a polarimeter ?

- 2 (a) Explain the methods of reducing spherical 10  
aberration in detail.

- (b) The dispersive powers of two lenses are in the ratio of 2 : 3. They are to be used as achromatic doublet having resultant focal length of 20 cm. Calculate focal lengths of the two lenses. 4

**OR**

- 2 (a) Derive condition for the two lenses in contact to be an achromatic doublet. 10
- (b) An object of a telescope is an achromat of focal length 90 cm. The dispersive powers of the two lenses are 0.024 and 0.036. calculate their focal lengths. 4

- 3 (a) State and prove Malus' law. 7
- (b) Write a short note on Nicol prism. 7

**OR**

- 3 (a) Explain polarization by reflection. 7
- (b) Write a short note on half wave plate. 7

- 4 (a) Give Fresnel's explanation of optical activity. 10
- (b) Write a note on constant deviation prism. 4

**OR**

- 4 Explain Raman Effect in detail ? Explain the method of observing Raman spectrum. 14