

Anjuman Islam Janjira Degree College of Science Murud-Janjira, Raigad-402401 Affiliated to University of Mumbai	
Class: -F.Y.B.Sc.	Subject: - Physics Major
Semester: - II	Course code: -USPH102
Exam Event: - (FH) Summer 2025	Marks: - 30
Date: - 11/04/2025	Duration: - 1 Hours

- N.B.**
1. All questions are compulsory.
 2. Figures to the right indicate full marks.
 3. Draw neat labelled diagrams wherever necessary.

Q.1. A) Attempt any TWO of the following.

10

- 1) State and Explain Newton's Lens Equation.
- 2) Write Introduction and types of lenses.
- 3) Elaborate any two methods to reduce Spherical Aberration.
- 4) Explain the concept of Achromatism.

Q.1. B) Attempt any ONE of the following.

05

- 1) A thin converging and diverging lens are placed coaxially at a distance of 6 cm. if the focal length of each lens is 10 cm find the equivalent focal length and position of it from converging and diverging lens.
- 2) What is Spherical Aberration? Two thin lenses of focal length 10 cm and 6 cm are placed actually at a certain distance a part calculates the distance between the two lenses if the combination of lenses produces minimum spherical aberration.

Q.2. A) Attempt any TWO of the following.

10

- 1) Write the difference between single slit and double slit diffraction pattern.
- 2) Explain the construction of Michelson's Interferometer, with necessary diagram.
- 3) Elaborate any two applications of Michelson's Interferometer.
- 4) Define Polarization, write any two types of polarization.

Q.2. B) Attempt any ONE of the following.

05

- 1) For a single slit of width 0.4 mm illuminated by light of wavelength 500 nm calculate the relative intensity at an angle when $\alpha = \pi/2$.
- 2) In an experiment to determine the refractive index of gas using Michelson's interferometer a shift of 150 fringes is not noted. if the wavelength of light is 5400 Å and length of tube is 20 cm. calculate the refractive index of gas.