

PHYSICS QUESTION BANK-SEM III

OPTICS

10 MARKS QUESTIONS

UNIT 1

ABERRATIONS

10 marks questions

- 1) Explain about chromatic aberration Explain the condition for removal of chromatic aberration using two lenses in contact.
- 2) Explain chromatic aberration. Explain the condition for removal of chromatic aberration using when two lenses are separated by a certain distance.
- 3) Explain spherical aberration - Discuss various methods to minimize spherical aberrations in lenses
- 4) Explain spherical aberration. How it is eliminated find the condition to eliminate spherical aberration formed by two convex lenses Separated by a distance?

UNIT 2

INTERFERENCE

10 marks questions

- 1) Explain the formation of rings in Newton rings experiment and the determination of wavelength of monochromatic light with necessary theory.
- 2) Explain the construction and working of Michelson interferometer Explain how the instrument can be used to determine the wavelengths of a monochromatic source of radiation.
- 3) define how to draw Biprism. How do you determine the wavelength of monochromatic source of radiation.

UNIT 3

DIFFRACTION

10 marks questions

- 1) what is a Fresnel's zone plate. Explain its construction and working.
- 2) what is diffraction? Describe Fraunhofer diffraction due to a single slit and deduce the position of Maxima and minima. Draw the respective graph of intensity distribution.
- 3) what is diffraction. Describe Fraunhofer diffraction with N-slits with Necessary Theory and discuss intensity distribution

- 4) Explain the theory of diffraction grating How do you use it in the Normal incidence method to measure the wavelength of spectral lines in the spectrum.

UNIT 4

POLARIZATION

10 marks questions

- 1) Describe the Constructions & working of Nicols prism. Explain how it is cased as polariser & analyser.
- 2) Define specific rotation. Explain in detail the principal and working of laurent's half shade polarimeter.
- 3) Explain the production of circularly and Elliptically plane Polarised light

UNIT 5

LASERS AND HOLOGRAPHY

10 marks questions

- 1) Describe the construction and working of Ruby laser?
- 2) Explain description and working of He-ne-laser?
- 3) what is holography? Explain principle of holography.

5 MARKS QUESTIONS

UNIT 1

ABERRATIONS

5 marks questions

- 1) Explain Astigmatism. write Minimization methods.
- 2) Explain coma. write minimization methods
- 3) Explain curvature. write minimization
- 4) Explain distortion. Write minimization methods.

UNIT 2

INTERFERENCE

5 marks questions

- 1) Explain colour's in a thin film
- 2) Derive cosine law.
- 3) Explain the conditions for interference of light.

- 4) what is meant by phase change on reflection stokes law.

UNIT 3

DIFFRACTION

5 marks questions

- 1) what is diffraction Distinguish between fresnel and fraunhoffer diffraction.
- 2) what is a resolving power of grating derive an expression for resolving power of grating
- 3) Comparison between zone plate and convex lens.
- 4) Distinguish between interference and diffraction.

UNIT 4

POLARIZATION

5 marks questions

- 1) Explain the double refraction
- 2) state and Explain Malus law.
- 3) state and Explain Brewster's law.
- 4) Explain optical activity.
- 5) Explain Quarter wave plate and half wave plate.

UNIT 5

LASERS AND HOLOGRAPHY

5 marks questions

- 1) Distinguish between spontaneous and stimulated emission?
- 2) write applications of lasers?"
- 3) write applications of Holography
- 4) Explain principle of Lasers.