

KRISHNA UNINVERSIY

**B.Sc – I YEAR: PHYSICS: II SEMESTER (CBCS)
(With Non-Mathematics combination)**

SEMESTER II

Paper II: WAVE OPTICS

TIME: 3 Hours

MODEL QUESTION PAPER

Max. Marks: 75

SECTION – A

(Short Answer Type Questions)

5x5M = 25M

Answer any five out of the following ten questions

1. Explain astigmatism and how it is eliminated.
2. Explain the aberration distortion with neat diagram
3. Write the conditions of interference.
4. Explain the colours in thin films.
5. Distinguish between Fresnel and Fraunhofer diffraction.
6. Explain the limits of resolution for telescope and microscope.
7. Write a short note on Malus law.
8. What is Half wave plate? Explain its construction.
9. Explain the terms spontaneous emission and stimulated emission.
10. Write the applications of lasers.

SECTION – B

Answer All questions with internal choice from each Unit

5x10M = 50M

11. (a) What is chromatic aberration? Obtain an expression for the chromatic aberration of a lens. Derive the condition for achromatism when two lenses are in contact.
(OR)
(b) Explain the defects curvature and distortion. How are they minimized?
12. (a) Describe the construction and theory of young's double slit experiment. Explain how the wavelength of light is determined from it.
(OR)
(b) Determine the wavelength of monochromatic light from newton's rings experiment.
13. (a) Describe the Fraunhofer diffraction due to single slit and deduce the intensity distribution.

(OR)

(b) Explain the construction and working of Zone plate. Compare the zone plate with convex lens.

14. (a) What is double refraction? Describe the construction of Nicol prism. Explain how it is used as polarizer and analyzer.

(OR)

(b) Explain in detail the production and detection of plane, circularly and elliptically polarized light.

15. (a) What is LASER? Describe the construction and working of Ruby laser.

(OR)

(b) Explain the different types of optical fibers. What are the advantages of optical fibers in communication system?