Rajiv Gandhi University of Health Sciences, Karnataka

I Year B.Sc. Optometry Degree Examination - 17-Nov-2025

Time: Three Hours **Max. Marks: 100 Marks**

PHYSICAL AND PRINCIPLES OF LIGHTING, GEOMETRIC OPTICS
SECTION A – PHYSICAL AND PRINCIPLES OF LIGHTING (50 MARKS)
(REVISED SCHEME – 4)
Q.P. CODE: 3344

Your answers should be specific to the questions asked
Draw neat, labeled diagrams wherever necessary
(Note : Both QP Codes 3344 and 3345 are to be answered within total duration of 3 hours)

LONG ESSAYS (First Question Choice) **1 x 10 = 10 Marks**

1. Explain Michelson Interferometer in detail with a neat diagram.

   Or

   Explain the production and detection of plane, elliptical and circularly polarized light.

SHORT ESSAYS (Question No. 5 choice) **5 x 5 = 25 Marks**

2. Explain Nicol prism as Polariser and Analyser.

3. Obtain an expression for the kinetic energy of a vibrating particle.

4. Calculate distance between the centres of the second and the fifth bright fringe in an interference pattern produced in Young's double slit experiment, given (a) Distance between coherent sources = 1.15mm (b) distance of screen from the source=1.3m (c) Wavelength of light=589.3nm

5. Explain the theory of Raman scattering in detail.

   Or

   Explain Ruby laser in detail with neat energy level diagram.

6. How many half period zones are there in a circular path a radius 1.2cm due to a wavelength 630nm, when observed from a distance of 1.4m?

SHORT ANSWER (Question No. 10 choice) **5 x 3 = 15 Marks**

7. What are coherent waves? Give the relation between phase and path difference of a wave.

8. Define resolving poser of a grating. Write the expression for the same.

9. Define double defraction.

10. State any two laws of photo electric effect.

    Or

    Write the expression for resolving power of a grating.

11. If the refractive index of core is 1.57 and clad is 1.54, calculate the acceptance angle and numerical aperture of the optical fiber.

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