Rajiv Gandhi University of Health Sciences, Karnataka

I Year B.Sc. Optometry Degree Examination - 11-May-2026

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. Obtain the expression for Einstein's photo electric effect.

   Or

   Explain the nature of resultant wave when two simple harmonic waves move at right angle to each other.

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

2. Explain the theory of zone plate.

3. Calculate distance between the centers 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=1.5mm (b) Distance of screen from the source+ 1.2m (c) Wavelength of length = 580 nm

4. What is double refraction? Explain Quarter wave plate in detail.

5. Define Rayleigh and Mie scattering.

   Or

   Explain Nicol prism as polarizer and analyzer.

6. Find the minimum number of lines on a grating to resolved in the second order sodium doublet having a wavelength difference of $6A^0$ at 589.3nm

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

7. What is SHM? Write the expression for time period of SHM.

8. Write the differences between o-ray and e-ray.

9. State Brewster's law.

10. Define refractive index. Explain the terms.

    Or

    List various losses that occur in an optical fiber and explain bending loss.

11. If a grating has 15000 lines per inch, calculate the number of lines per meter of the grating.

*****