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 B – GEOMETRIC OPTICS (50 MARKS)
(REVISED SCHEME – 4)
Q.P. CODE: 3345

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. Derive expression for the i) Lateral shift by a ray passing through a glass slab ii) Obtain the expression for normal shift.

   Or

   Obtain the prism formula. Hence reduce the expression for deviation produced by thin prism.

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

2. Deduce the expression for Gauss formula for spherical surface.

3. Explain i) Refractive index of a material ii) Total internal reflection.

4. Find the effective focal length of two thin lenses in contact.

5. Deduce the Lens Maker's formula.

   Or

   A 55^0 dense flint prism is used at an angle of incidence of $\phi_1 = 60^o$. The index of refraction of the prism is 1.671. Find (a) The angle of deviation at the first surface (b) The angle of deviation at the second surface and the total deviation by the prism.

6. Obtain the expression for dispersion without deviation.

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

7. Explain conjugate points.

8. Explain entrance and exit pupils.

9. Draw the ray diagram of image formation in a concave lens.

10. Define total internal reflection. Explain critical angle.

    Or

    Write the applications of spherical mirrors.

11. Explain curvature field of aberration.

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