Rajiv Gandhi University of Health Sciences, Karnataka

I Year B.Sc. Optometry Degree Examination - 05-Jun-2024

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. Discuss the resultant motion of a particle when two simple harmonic motions simultaneously act on it right angles to each other.
   Or
   What is interference of light waves? Obtain an expression radius of curvature of a plano convex lens using Newton's ring experiment.

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

2. Give a theory of zone plate.

3. Explain Raman effect.

4. Obtain the expression for L-B- photometer.

5. Obtain the expression for resolving power of a grating.
   Or
   In a Michelson's experiment 200 fringes cross the field of view when the movable mirror is displaced through 0.059 mm. Calculate the wavelength of the light used.

6. Explain Nicol prism as analyser and polarizer.

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

7. Explain the terms:- i) Reflection phases shifts ii) Optical path length.

8. What are transverse and longitudinal waves?

9. Explain Rayleigh and Mie scattering.

10. What are step index and graded index optical fibers?
    Or
    X-rays of wavelength λ_o = 0.020 nm are scattered form a block of material. What is the wavelength of X-rays scattered at an angle of 45^0

11. Explain briefly applications of laser.

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