Rajiv Gandhi University of Health Sciences, Karnataka

I year B.Sc. Optometry Degree Examination – OCT-2019

Time: 3 Hours **Max. Marks: 80 Marks**

Physical and Principles of Lighting, Geometric Optics
Section B: Geometric Optics (40 Marks)
(Revised Scheme – 3)
Q.P. Code : 3106

Your answers should be specific to the questions asked
Draw neat labeled diagrams wherever necessary

(Note : Both QP Codes 3105 and 3106 are to be answered within total duration of 3 hours)

LONG ESSAYS (Answer Any two) **2 x 10 = 20 Marks**

1. Deduce the prism formula and the expression for the deviation produced by a thin prism?
2. Obtain the expression for equivalent focal length of two lenses kept (a) in contact. (b) Separated.
3. Explain the principle of a laser. Describe a He-Ne laser. Mention one use of the same

SHORT ESSAYS (Answer Any Two) **2 x 5 = 10 Marks**

4. What is dispersive power of a prism? Obtain the condition for combination of two thin prisms to produce dispersion without deviation.
5. The magnification produced by a convex lens was found to be twice as great when the object is 20cm from it, as when it was 30cm from it. Calculate the focal length of the lens.
6. Light of wavelength 4800Å is incident on a surface of photo emissive metal of work function 1.05 eV. Calculate (I) energy of the incident photon and (ii) the maximum kinetic energy of the ejected photoelectrons. $h=6.625 \times 10^{-34}$ J.s. $e=1.6 \times 10^{-19}$C. $c=3x10^{8}m.s^{-1}$.

SHORT ANSWERS **5 x 2 = 10 Marks**

7. What is an ophthalmic prism? Mention its use in optometry.
8. Write the expressions for resolving power and dispersive power of a grating, explaining the symbols.
9. Mention the uses of spherical mirrors.
10. State the conditions for total internal reflection.
11. What is the significance of velocity of light?

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