

First Year B.Sc Optometry Degree Examinations December 2017

Paper III – Physical & Geometrical Optics

(2016 Scheme)

Time: 3 hrs

Max marks: 80

- Answer all questions
- Draw diagram wherever necessary

Essay:

(2x15=30)

1. Derive an expression for the refractive index of the material of a prism in terms of angle of the prism and angle of minimum deviation. With suitable diagrams explain the formation of different types of images (one example for each, real, virtual, magnified and diminished images) formed by a thin convex lens.
2. Give the theory of interference of light. Derive an expression for fringe width. Discuss diffraction effects produced by a circular aperture. What is Airy's disc. Explain.

Short notes

(5x5=25)

3. Explain chromatic aberration. Explain the methods of removing it.
4. Explain Rayleigh scattering. What is Tyndall effect.
5. Derive an expression for the resolving power of a telescope.
6. What are the conditions necessary for observing interference fringes?
7. What are cardinal points. Give the advantages and disadvantages of various telescopes

Answer briefly

(10x2=20)

8. GSE (Gullstrand's Schematic Eye). Calculate the power of cornea.
9. Mention four uses of lasers.
10. Explain displacement without deviation.
11. Explain third order theory.
12. When can you say, the eye is ametropic. How does it arise
13. Distinguish between spatial coherence and temporal coherence.
14. Distinguish between circularly polarized light and unpolarised light.
15. What is dichroism. Where it is used.
16. What is spherical aberration and how it is corrected.
17. What is CLC(Circle of least confusion)". Explain with an example

Fill in the blanks

(5x1=5)

18. Light rays are drawn to the wave fronts.
19. The phenomenon of is shown by transverse waves only.
20. The the value of limit of resolution, greater will be the value of resolving power of a microscope.
21. Using concave lens we cannot produce image of a real object.
22. The method of reducing chromatic aberration is called