

**First Year B.Sc Optometry Degree Regular/Supplementary Examinations**  
**January 2023**  
**Paper III – Physical & Geometrical Optics**

**(2016 Scheme)**

**Time: 3 hrs**

**Max marks: 80**

- Answer all questions to the point neatly and legibly • Do not leave any blank pages between answers
- Indicate the question number correctly for the answer in the margin space
- Answer all parts of a single question together • Leave sufficient space between answers • Draw table/diagrams/flow charts wherever necessary

**Essay:**

**(2x15=30)**

1. How the different types of polarized light can be distinguished.
2. Basic principle of laser, its action and its applications to medicine.

**Short notes**

**(5x5=25)**

3. What is diffraction. Explain with neat diagram Fresnel diffraction Refraction at plane surface according to Fermat
4. Difference between Ramsden and Huygenes eyepiece.
5. Show that for refraction at a concave spherical surface (separating glass- air), the distance of the object should be greater than three times the radius of curvature of the refracting surface for the image to be real.
6. A point source of light is located 20 cm in front of a convex mirror with  $f = 15$  cm. Determine the position and characteristic of the image point
7. Explain Chromatic aberration

**Answer briefly**

**(10x2=20)**

8. Fermat's principle
9. Define dispersion of light
10. Define power of a lens. What is the unit of measurement
11. What are non-reflection films
12. Define linear magnification
13. What are nodal planes
14. Define depth of focus
15. Two importance of Sagitta depth
16. Angle of minimum deviation
17. What are purkinje images and two significance points

**Fill in the blanks**

**(5x1=5)**

18. There are \_\_\_\_\_ points known as cardinal points of an optical system
19. The power of magnifying glasses given by \_\_\_\_\_
20. The aberration that occurs due to dispersion of light are called \_\_\_\_\_ aberration
21. The Ramsden eyepiece is sometimes referred to as \_\_\_\_\_ eyepiece
22. The axial length of the eye as per Gullstrand schematic eye is \_\_\_\_\_

\*\*\*\*\*