

**First Year B.Sc Optometry Degree Supplementary Examinations  
April 2019**

**Physics  
(2010 Scheme)**

**Time: 3 hrs**

**Max marks: 80**

- **Answer all questions**
- **Draw diagram wherever necessary**

**Essay:**

**(2x15=30)**

1. Explain the spherical and chromatic aberrations of a lens. Explain how they are caused and how these defects can be eliminated.
2. Describe the construction and working of a half shade Polari meter. Describe the experimental determination of specific rotatory power of sugar solution using Polari meter.

**Short notes**

**(5x5=25)**

3. What are cardinal points. Show that the nodal planes are planes of unit angular magnification.
4. Describe the working of a solid state ruby laser.
5. Explain the colours exhibited by thin films.
6. Describe the propagation of light through an optical fibre.
7. Explain holographic recording and reconstruction process.

**Answer briefly**

**(10x2=20)**

8. What is plane polarized light
9. Raman scattering.
10. Define Fermat's principle in optics.
11. How laser is helpful in medical field
12. What are non-reflecting films
13. Define the power of a lens.
14. Explain the term "Population inversion" in a laser.
15. Define surface tension.
16. Define double refraction with reference to calcite crystal.
17. Define the terms numerical aperture and acceptance angle of an optical fibre

**Fill in the blanks**

**(5x1=5)**

18. Optical pumping is used in ..... laser.
19. The principle used in optical fibre communication is successive .....
20. Cylindrical lens is used to correct .....
21. Sugar is a ..... optically active substance.
22. For diffraction to occur, the size of the object should be comparable to ..... of the light used.

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