

First Year B.Sc Optometry Degree supplementary Examinations –
November 2015

(2010 Scheme)**PHYSICS****Time : 3 hrs****Max marks : 80**

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

Essay:**(2x15=30)**

1. Describe and explain Fraunhofer diffraction pattern obtained with a narrow slit and illuminated by a parallel beam of monochromatic light.
2. What is the advantage of using matrix method in paraxial optics. Obtain the system matrix for the thick lens and hence derive the thin lens formula.

Short notes**(5x5=25)**

3. Discuss the formation of interference bands in wedge shaped films. Derive an expression for bandwidth.
4. Distinguish between spatial coherence and temporal coherence.
5. What is optical activity and mention Fresnel's explanation.
6. Derive an expression for the resolving power of a telescope.
7. What are the conditions for getting a pure spectrum and how it is achieved in a spectrometer.

Answer briefly**(10x2=20)**

8. Principle of holography.
9. Explain double refraction.
10. Mention four applications of laser in medicine.
11. Explain the difference between dispersion without deviation and deviation without dispersion.
12. What is coma and how it is minimized.
13. Malus law .
14. Define surface tension and surface energy.
15. Mention the Maxwell's equations in electromagnetic theory.
16. When white light is passed through a glass prism it is dispersed into different colours. But when white light is passed through a rectangular glass slab, no colour is seen. Why.
17. What is the concentration of sugar solution of length 15cm if the optical rotation produced is 7° and specific rotation is 65° .

Fill in the blanks**(5x1=5)**

18. The method of reducing chromatic aberration is called _____.
19. Color seen in soap films is due to the phenomenon of _____.
20. Diffraction is due to the superposition of _____ originating from the different parts of the same wavefront.
21. _____ is a device used to produce and analyze elliptically polarized light.
22. Surface tension is numerically equal to _____.