Q.P.Code 103013 **Reg. No.:……**

First B.Sc Optometry Degree Supplementary Examinations - April 2014

PHYSICS

Time : 3 hrs **Max marks : 80**

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

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

1. Describe nodal assembly method to locate cardinal points of a lens system experimentally. Explain its working with particular reference to the characteristics of nodal points.
2. What is optical activity. Mention Fresnel's explanation and verification of optical activity. Define specific rotation. Describe construction and working of Laurent's half shade polarimeter.

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

3. Explain about the optics of emmetropia and ametropia and its correction.
4. What is the use of constant deviation spectrometer and explain how it works.
5. Prove that interference fringes are equally spaced.
6. Explain the construction and working of ruby laser.
7. Obtain an expression for reflection of a spherical wave at a spherical surface.

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

8. Explain first order theory.
9. Differentiate between interference and diffraction of light.
10. What is Rayleigh scattering and explain the blue of the sky.
11. Explain Malus law.
12. Show that the deviation produced by a thin lens is independent of the position of the object
13. A slit of width 'a' is illuminated by white light. For what value of 'a' does the first minimum for red light of wave length 650nm fall at angle of diffraction $\theta=15^{o}$.
14. Show that surface tension is equal to surface energy.
15. Explain Lagrange's equation for magnification.
16. A step index fibre has the following parameters $n_1=1.68$, $n_2=1.44$. Calculate the critical angle and numerical aperture.
17. Explain Fermat's principle of least time.

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

18. Astigmatism can be corrected by using _____ lens.
19. For a normal eye the least distance of distinct vision is _____.
20. Refractive index of aqueous given by Gullstrand is _____.
21. Balmer series in the line spectrum lie in the _____ region.
22. The limit of resolution of human eye is about _____.

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