Q.P. Code: 103013 (old scheme) **Reg. No.:……**

First Year B.Sc Optometry Degree Supplementary Examinations April 2017

PHYSICS
(2010 Scheme)

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

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

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

1. Explain the translation, refraction and system matrices. Derive an expression for the system matrix for a thin lens and hence obtain the formula for a thin lens.
2. Explain the formation of Newton's rings. Describe an experiment to determine the refractive index of a liquid using Newton's rings method.

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

3. Describe Young's experiment. Derive an expression for the fringe width.
4. Explain colour of thin films with necessary theory.
5. Explain the diffraction effects due to a circular aperture, with necessary equations.
6. Define resolving power. Derive an expression for the resolving power of a telescope.
7. What is double refraction. Explain the working of a Nicol prism.

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

8. Compare zone plate and convex lens
9. State Brewster's law.
10. Explain optical pumping and population inversion.
11. Define reflection coefficient and transmission coefficient
12. Explain Fermat's principle
13. What is a hologram and how does it differ from a photograph.
14. Explain the working of a polaroid.
15. How will you produce non-reflecting films.
16. State and explain Lambert's law.
17. Distinguish between spatial coherence and temporal coherence.

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

18. Nodal points are two points on the axis of a lens system such that the relative angular magnification is ……
19. Distortion is an example of …….. aberration.
20. In double refraction the ray which does not obey the laws of refraction is called …… ray.
21. When circularly polarized light is seen through a rotating Nicol, there is no variation in ……. of light.
22. In ruby laser the active laser particles are the …….. atoms.

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