First Year B.Sc Optometry Degree Supplementary Examinations
October 2018

Physics
(2010 Scheme)

Time: 3 hrs   Max marks: 80

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

Essay: (2x15=30)

1. Explain the formation of Newton's rings in reflected light. Derive an expression for the diameter of nth dark ring. Describe an experimental procedure to determine the radius of curvature of a bi-convex lens by Newton's rings method.
2. Describe the construction of a helium-neon laser. Also explain it's working with the help an energy level diagram.

Short notes   (5x5=25)

3. Differentiate between holography and ordinary photography
4. Distinguish between spontaneous emission of radiation and stimulated emission of radiation
5. Calculate the equivalent focal length of two thin co-axial lenses separated by a finite distance
6. Describe the construction of a Nicol prism with diagrams.
7. Photovoltaic photometer

Answer briefly   (10x2=20)

8. List any two pumping methods in a laser
9. Compare grating spectra and prism spectra
10. What is meant by plane polarized light
11. List any four types of monochromatic aberrations of a lens
12. State Huygen's wave theory of light
13. Franhoffer's class of diffraction
14. What is graded index optical fibre
15. Obtain the grating equation
16. Define surface tension
17. What are coherent sources

Fill in the blanks   (5x1=5)

18. Light signals are transmitted through optical fibres by means of a physical phenomenon called as ……………..
19. The size of an obstacle in order to observe diffraction of light must be of the order of ……………. of light
20. A spherical lens which is free from the defects of spherical aberrations and coma is called as …………………..
21. Polarization of light proves the ……………………… nature of light
22. Chromatic aberration in an optical lens occurs due to ………………… phenomenon.

****