

First Year B.Sc Optometry Degree Examinations - June 2015

PHYSICS

Time : 3 hrs

Max marks : 80

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

Essay: (2x15=30)

1. Explain the formation of interference fringes by an air wedge. Derive an expression for fringes width. How can the above method used to measure the diameter of a thin wire accurately.
2. What is simple harmonic motion. Derive an expression for total energy of simple harmonic motion and also derive an expression for composition of simple harmonic motion in a straight line.

Short notes (5x5=25)

3. Sign convention used in the geometrical optics.
4. Define coma and how it can be eliminated.
5. Explain the principle of holography.
6. What is meant by resolving power of grating. Find an expression for it.
7. In Newton's ring experiment the diameter of the 4th and 12th dark ring are 0.4 cm and 0.7 cm respectively. Find the diameter of the 20th ring.

Answer briefly (10x2=20)

8. Differentiate between Fresnel and Fraunhofer diffraction
9. Characteristics properties of laser.
10. State Malu's law.
11. Explain the third order theory
12. Focal points.
13. Mention various members of the electromagnetic spectrum in the increasing order of frequency
14. What is luminous intensity.
15. Explain Raman scattering
16. Soap helps in cleaning clothes. Why.
17. What are the different types of optical fibers.

Fill in the blanks (5x1=5)

18. The velocity of IR is
- 19..... law says that the radiant intensity observed from an ideal diffusely reflecting surface is directly proportional to the cosine of the angle θ between the observer's line of sight and the surface normal.
20. "Laser" originated as an acronym for
21. SI unit of luminous Intensity is
- 22.....is a condition where, with age, the eye exhibits a progressively diminished ability to focus on near objects.