

**CARMEL COLLEGE OF ARTS, SCIENCE & COMMERCE FOR WOMEN,  
NUVEM-GOA**

**SEMESTER END EXAMINATION, JULY 2021**

**B.Sc Semester: II**

**Optics and Instrumentation (PYG-102)**

**Max marks: 40**

**Date: 09-07-2021**

**Duration: 2hrs**

**Total No. of pages: 02**

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***Instructions:***

- 1) All questions are compulsory.*
- 2) Figures to the right indicate maximum marks.*
- 3) Use of log tables and non-programmable calculators is permitted.*
- 4) Symbols have their usual meanings unless specified.*

**Q1. Answer any FIVE of the following:**

**(2 marks x 5 = 10)**

- a) Name the units of luminous intensity used for stage lights and those used by a traffic police following a vehicle at night.
- b) Give two points of difference between Ramsden and Huygens's eyepiece.
- c) Give the ray diagram to show, how interference pattern is produced in Biprism or Young's double slit.
- d) Give two points of difference between Fresnel and Fraunhofer class of diffraction.
- e) Give the diagram to show how we could obtain polarisation by refraction.
- f) State and explain any two properties of Lasers. How is the laser different from a simple light bulb?
- g) State any four properties of X-rays. Write an expression for the shortest wavelength of X-rays obtained from a X-ray tube.
- h) Differentiate between simple and compound microscope.

**Q2. Answer any SIX of the following:**

**(5 marks x 6 = 30)**

- a) What is meant by chromatic aberration in a lens system? How could be minimised? ( any two methods)
- b) Give the construction and ray diagram of Huygens's eyepiece.

- c) State the Rayleigh's criterion for resolution, use this to obtain the resolving power of a telescope.
  - d) Give the construction of a Simple polarimeter and show it is used to study optical activity.
  - e) Explain the working principle of Laser. Can we have a 2 level laser? Explain
  - f) State any 3 differences between LCD and LED. Which is better option for TV?
  - g) Write a note of Electron microscope.
  - h) With the help of a schematic explain the working of UV spectrophotometer.
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