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Total No. of Printed Pages: 1

Total No. of Questions: [09]

B. Sc. (Optometry) (Semester – 2nd)

PHYSICAL OPTICS (OPTICS II)

Subject Code: BOPTS1201

Paper ID: [20131806]

Time: 03 Hours

Maximum Marks: 60

Instruction for candidates:

1. Section A is compulsory. It consists of 10 parts of two marks each.
2. Section B consist of 5 questions of 5 marks each. The student has to attempt any 4 questions out of it.
3. Section C consist of 3 questions of 10 marks each. The student has to attempt any 2 questions.

Section – A

(2 marks each)

Q1. Attempt the following:

- a. Define the laws of refraction?
- b. How do thin film antireflection coatings work?
- c. Discuss few strategies for controlling glare at a workplace?
- d. What does the term LASER stand for?
- e. What happens to the speed of light as it passes from a denser medium into the air?
- f. Differentiate between wave velocity and group velocity briefly?
- g. Can you name one common application where incandescent lamps are often used?
- h. Define interference in the context of wave optics?
- i. Name one property of daylight that affects its quality in indoor spaces?
- j. Define dispersive power in the context of diffraction gratings?

Section – B

(5 marks each)

- Q2. Discuss the characteristics of low-pressure sodium lamps? Also add a note on their typical applications?
- Q3. Explain the terms "path difference" and "phase difference" in the context of interference?
- Q4. Explain Huygens' Principle? Also add a note on how does it help in understanding wave propagation?
- Q5. How does lighting play a crucial role in optometry and ophthalmology practices?
- Q6. Describe the laws of refraction at a plane surface and their implications?

Section – C

(10 marks each)

- Q7. Describe Newton's ring experiment and its application in determining the thickness of thin films?
- Q8. Explore the principles of diffraction by a grating, including the amplitude and phase relationships involved? How does the spacing of the grating elements impact the diffraction pattern, and how does it relate to the concept of spectral resolution?
- Q9. Elaborate on the concept of polarization in optics, discussing the significance of aligned electric vectors and the role of polarizers in achieving polarization? Also add a note on how does this concept find application in technologies such as liquid crystal displays (LCDs) and 3D cinema?