



(University of Choice)

MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY

(MMUST)

MAIN CAMPUS

UNIVERSITY EXAMINATIONS

2021/2022 ACADEMIC YEAR

FIRST YEAR SECOND SEMESTER EXAMINATIONS

MAIN EXAMS

FOR THE DEGREE

OF

BACHELOR OF OPTOMETRY AND VISION SCIENCES

COURSE CODE: BOV 122

COURSE TITLE: PHYSICAL AND GEOMETRICAL OPTIC

DATE: 21/04/2022

TIME: 12-2pm

INSTRUCTIONS TO CANDIDATES

- 1. Answer all questions in the TWO (2) sections**
- 2. Write your answers on the university examinations booklets provided**
- 3. Write your university registration number only; do NOT write your names on the booklets**
- 4. Write your registration number on every new leaf of the examinations booklet on which you write your answers**

TIME: 2 Hours

MMUST observes ZERO tolerance to examination cheating

This Paper Consists of 3 Printed Pages. Please Turn Over

SECTION A ANSWER ALL THE QUESTIONS IN THIS SECTION 30 MARKS

1. Distinguish between Geometric Optics and Physical Optics (2marks)
2. Highlight what is meant by the term “dual nature of light”? (2 marks)
3. Draw and indicate each of the following on wave diagram. (5 marks)
 - a) a crest
 - b) a trough
 - c) the wavelength
 - d) the amplitude
4. Describe what is meant by rectilinear propagation of light (2 marks)
5. Distinguish between a pencil and a beam of light (2 marks)
6. A certain plano-convex lens (with minimal thickness at the edges) has a curvature of 6.0 D and an aperture of 10 cm. Calculate the sagitta of the lens. (2 marks)
7. State the two Laws of Refraction. (2 marks)
8. Define critical angle (1 mark)
9. List down any two uses of total internal reflection (2marks)
10. State any TWO disadvantages of a back-reflecting mirror (2 marks)
11. Describe four procedures whereby lasers are used to treat problematic eye conditions. (8marks)

SECTION B ANSWER ALL THE QUESTIONS IN THIS SECTION 40 MARKS

1.
 - a) Define spherical aberration. (2marks)
 - b) Describe TWO ways in which spherical aberration in lenses can be countered (8 marks)
2.
 - a) Define depth of field (1 marks)
 - b) Describe any THREE factors that affect depth of field (6 marks)
 - c) List down any THREE similarities between the eye and a camera. (3marks)
3. List down any TEN advantages of light-emitting diodes compared to incandescent and fluorescent lamps (10 marks)
4. List FIVE differences between the eye and a camera. (10marks)