

EASTERN UNIVERSITY, SRI LANKA

THIRD YEAR SECOND SEMESTER EXAMINATION IN SCIENCE -

2020/2021

(July/August - 2024)

PH3101 - BIOPHYSICS

Time : 01 hour

Answer All Questions

---

- 1.
- (a) What are the five main sensory systems in human body. (10 marks)
- (b) Describe the process by which light enters the eye and travels to the retina. (10 marks)
- (c) What are the physiological mechanisms by which the human eye responds to dim light? (10 marks)
- (d) What conclusions can be drawn about a person's vision and the structure of their eyes if they struggle to read small text in a book when it is close to their face? (10 marks)
- (e)
- i. By assuming that the lens-to-retina distance is 2.0 cm, determine the focal length of the eye-lens system when observing an object positioned at :
- a) Infinity, (20 Marks)
- b) 34 cm away from the eye. (20 Marks)

ii. A person experiences the difficulty of reading a book held at a distance of 52 cm. What should be the prescribed power of reading glasses, assuming they are positioned 2.0 cm from the eye and the person aims to read at the standard near point of 25 cm?"

(20 Marks)

2.

(a) What is meant by steady-state flow of blood and explain Bernoulli's principle in brief?

(20 Marks)

(b) Derive an expression for Bernoulli's Equation

(40 Marks)

(c) The speed of blood in a frictionless tube increased from 1.96 mm/s to 25.5 mm/s moving from the blood bag to the nozzle. Calculate the pressure in the tube, assuming that the absolute pressure in the nozzle is  $1.01 \times 10^5 \text{ N/m}^2$ .

(40 Marks)

--End of exam--.