

P530/2

BIOLOGY

(Theory)

Paper 2

2024

2 ½ Hours

Uganda Advanced Certificate of Education

BIOLOGY

(THEORY)

Paper 2

2 hours 30 minutes

INSTRUCTIONS TO CANDIDATES:

*This paper consists of two sections, **A** and **B**.*

*Answer question **one** in section **A** and any **three** other questions in section **B**.*

Candidates are advised to read the questions carefully, organize their answers and present them precisely and logically, illustrating with well labeled diagrams where necessary.

SECTION A (40 MARKS)

Question 1 is compulsory

1. The below shows the number of photoreceptor cells (types A and B) in the human retina along a horizontal line from the nasal side of the eye to the outside.

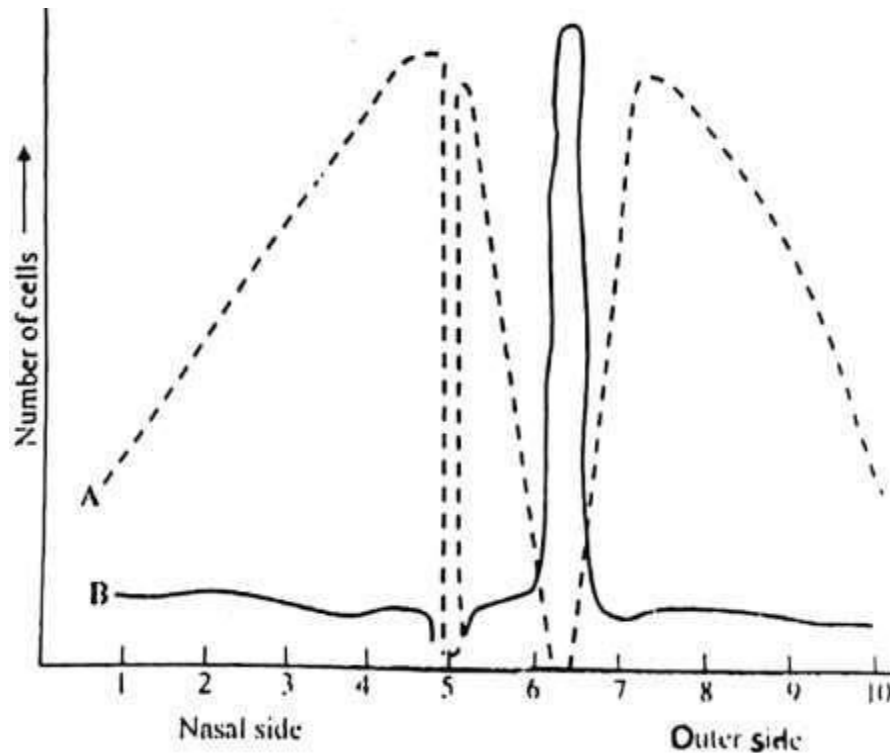


Fig. 1

- (a) Identify the types of photoreceptor cells represented by A and B. (02 marks)
- (b) Compare the number of cells of type A and B across the retina (08 marks)
- (c) Explain the distribution of both types of receptor cells in the retina. (10 marks)
- (d) What is the name of the retina at position 6 (01 mark)
- (e) Explain why
 - (i) the greatest concentration of receptor cells of type B occurs at 6 (05 marks)
 - (ii) there are no receptor cells at position 5 (04 marks)
- (f) Suggest changes that would happen in the human eye when a person moves from a bright surrounding into a dimly lit room (06 marks)
- (g) Explain why in a dimly lit room objects are only visible in black and white. (04 marks)

SECTION B (60 MARKS)

*Answer any **three** questions from this section.*

*Any additional question(s) answered will **not** be marked.*

2. (a) Describe the structure of a triglyceride molecule. (06 marks)
(b) Explain the functions of lipids in the bodies of organisms. (14 marks)

3. (a) Describe the different mechanisms by which the human body prevent loss of blood. (08 marks)
(b) How is Bohr Effect involved in transportation and exchange of respiratory gases. (12 marks)

4. (a) Describe the mechanisms which limit inbreeding in flowering plants (10 marks)
(b) Explain why:
 - (i) In dioecious plants, male plants are usually associated with dry soils while female plants are associated with moist soils. (02 marks)
 - (ii) Dioecious plants are rarer than monoecious plants. (02 marks)(c) What are the advantages of propagation by seeds? (06 marks)

5. (a) Explain the necessity of thermoregulation to living organisms (04 marks)
(b) Describe strategies exhibited by the following organisms to survive low temperature conditions:
 - (i) Plants (08 marks)
 - (ii) Arctic animals (08 marks)

6. (a) Distinguish endangered species from extinct species (02 marks)
(b) Describe factors leading to biodiversity loss. (08 marks)
(c) Describe different ways of conserving biodiversity (10 marks)

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