

P530/2
BIOLOGY
PAPER 2
2½ hours
May 2023

Uganda Advanced Certificate of Education

BIOLOGY DEPARTMENT - 2023

SET ELEVEN

PAPER 2

THEORY

2 hours 30 minutes.

INSTRUCTIONS TO CANDIDATES:

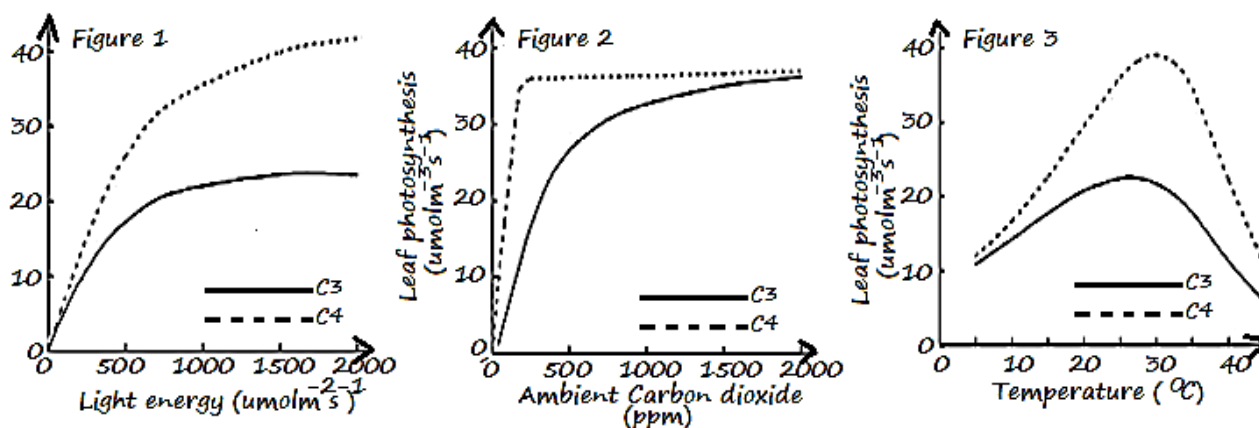
- ✓ Answer question one in section A plus three others from section B.
- ✓ Candidates are advised to read the questions carefully, organize their answers and present them precisely and logically, illustrating with well labeled diagrams where ever necessary.
- ✓ Write on the answer sheet, your name, index number and the questions attempted in their order as shown in the table.

| QUESTION | MARKS |
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| TOTAL | |

SECTION A: (40 Marks)

Compulsory.

1. The figures below show effect of different factors affect leaf photosynthesis in C₃ and C₄ plants. Study them carefully to answer the questions below. Figure 1, 2 and 3 show effect of light intensity, ambient carbon dioxide and temperature respectively on leaf photosynthesis of C₃ and C₄ plants.



- From the above figures, compare leaf photosynthesis in C₃ and C₄ Plants. (10marks)
- Account for the observed differences figures 2 and 3. (08marks)
- Describe the photosynthetic mechanism which occurs in the C₄ plants. (08marks)
- State the photosynthetic advantage of C₃ plants over C₄ plants.
 - Using figure 1. (03marks)
 - Using figure 3. (04marks)
- How is water photolysis relevant during photosynthesis? (07marks)

SECTION B: (60 Marks)

Attempt only 3 questions from this section.

- Relate the movement of ions across the plasma membrane to regulation of water potential in intracellular fluid. (08marks)
 - Describe the functions and interactions of the following organelles. (Nucleus, endoplasmic reticulum, lysosomes, Golgi complex, mitochondrion). (12marks)
- Explain the sequence of events that may lead to eutrophication of a previously non-polluted water body. (10marks)
 - Outline any five parameters that can be measured to assess the quality of water in a lake. (05marks)

- (c) Suggest reasons why it is important to measure BOD at standard temperature of 20°C and water sample kept in darkness. (05marks)
3. (a) Describe how carbon dioxide from respiring tissues is transported to the lung capillaries in man. (10marks)
- (b) Explain the effect of increased levels of carbon dioxide on blood pressure in man. (10marks)
4. (a) Describe how xerophytes have overcome their osmoregulatory challenges. (10marks)
- (b) Account for the absence of complex excretory systems in plants. (10marks)
5. How are the following achieved in humans;
- (a) Reception of visual images at different light intensities. (10marks)
- (b) Contraction of a skeletal muscle upon arrival of impulse at the neuromuscular junction. (10marks)

END