

P530/2
BIOLOGY
PAPER 2
2½ hours
May-June 2023

Uganda Advanced Certificate of Education

BIOLOGY DEPARTMENT - 2023

SET TWELVE

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
TOTAL	

SECTION A: (40 Marks)

Compulsory.

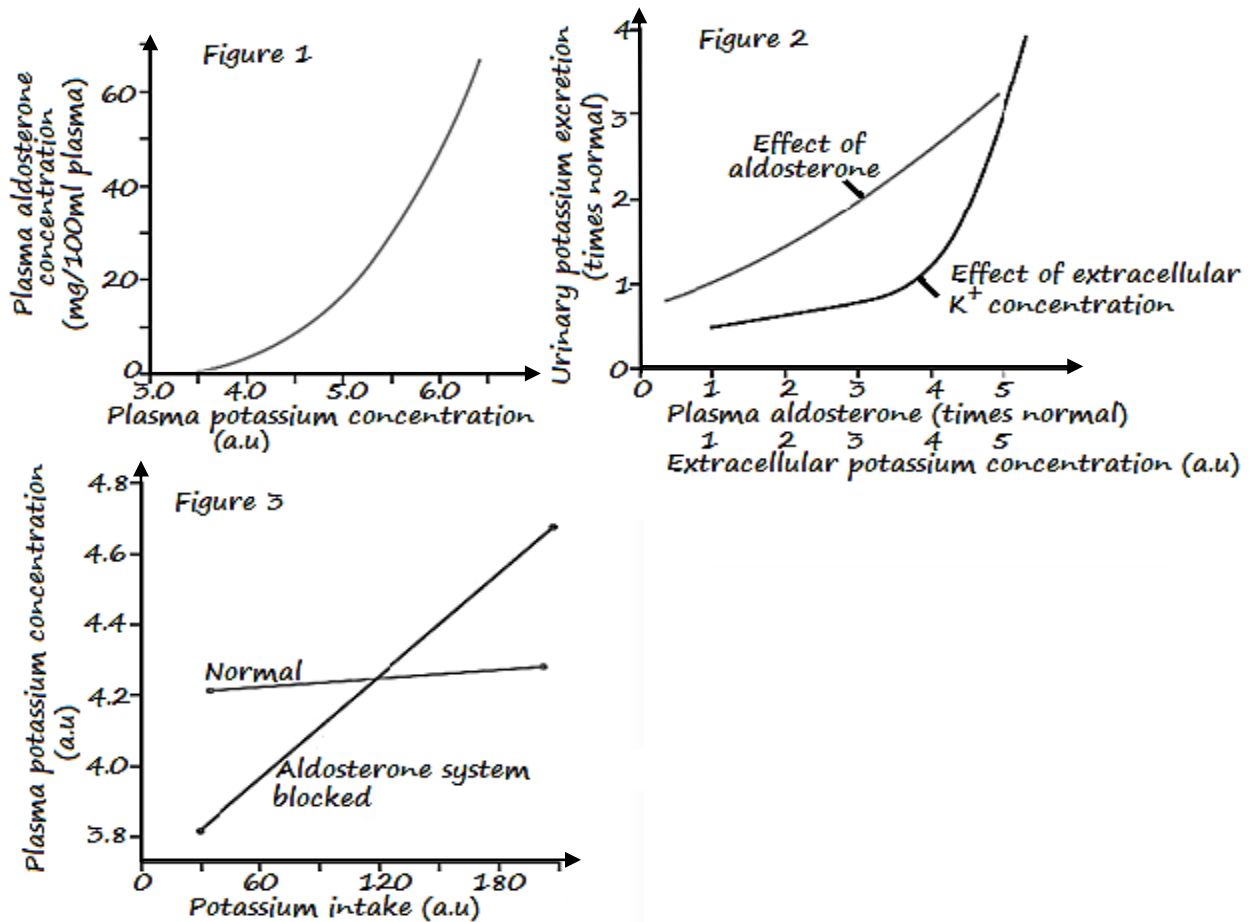
1. Figures 1, 2 and 3 show some of the changes that occur during excretion in a dog.

Figure 1 shows the effect of extracellular fluid potassium ion concentration on plasma aldosterone concentration.

Figure 2 shows the effect of plasma aldosterone and extracellular potassium ion concentration on the rate of urinary potassium excretion.

Figure 3 shows the effect of large changes in potassium ion intake on extracellular fluid potassium ion concentration under normal conditions, and after the aldosterone feedback had been blocked.

Study the information and use it to answer the questions that follow.



- a) Explain the effect of

(i) Extracellular fluid potassium ion concentration on the plasma aldosterone concentration. (Figure 1)

(06marks)

- (ii) Extracellular potassium ion concentration and plasma aldosterone on urinary potassium excretion. (Figure 2) (09marks)
- (iii) Potassium ion intake on extracellular fluid potassium ion concentration under normal conditions, and after the aldosterone feedback had been blocked. (Figure 3). (09marks)
- b) Explain other two factors other than those depicted in the information which may affect potassium ion secretion by the principal cells. (05marks)
- c) Show how the principal cells which secrete potassium ions maintain the blood sodium ion level at the set point. (08marks)
- d) Distinguish excretion from osmoregulation in living organism. (03marks)

SECTION B: (60 Marks)

Attempt only 3 questions from this section.

2. (a) Compare the compact bone tissue of mammals and the sclerenchyma tissue of plants. (07marks)
- (b) Explain the similarities in (2) (a) above. (05marks)
- (c) Giving examples of cells, relate the presence of extensions found on the different cells to the functions which these cells perform. (08marks)
3. (a) Describe how a triglyceride results from fatty acids? (05marks)
- (b) Explain the relationship between the structure of cellulose and its functions. (08marks)
- (b) How does the structural diversity of proteins enable the plasma membrane function? (07marks)
4. (a) Explain how animals and plants have successfully co-operated in evolution? (09marks)
- (b) Describe the ways in which plants have negatively responded to each other. (06marks)
- (c) Account for the evolutionary significance of predation. (05marks)
5. (a) With suitable examples in each case, describe the photoperiodic categories of flowering plants. (15marks)
- (b) Outline the differences between short-day and long-day plants. (05marks)
6. (a) Compare growth of a flowering plant with that of a vertebrate animal. (10marks)
- (b) Summarise the changes that occur in the circulation of human foetus at, or soon after, birth. (10marks)

END