P530/2

BIOLOGY

(Theory)

Paper 2

June, 2019

2 ½ Hours

UGANDA PRIVATE AND INTEGRATED SCHOOLS ASSOCIATION

Uganda Advanced Certificate of Education

FINAL ASSESMENT EXAMINATIONS YEAR 2019

BIOLOGY

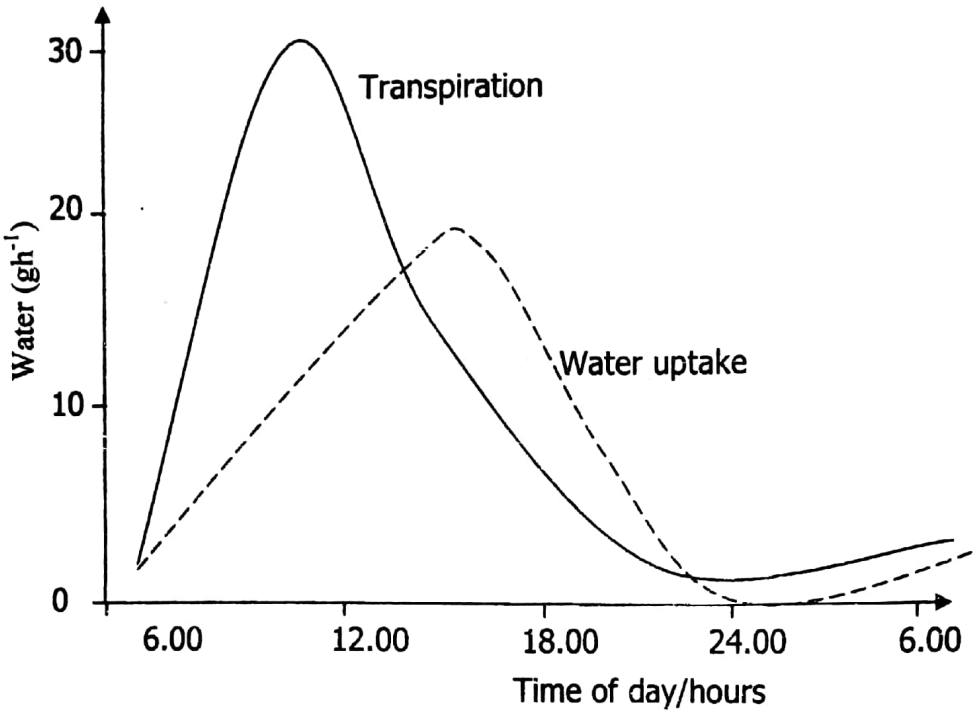
Paper 2

2 hours 30 minutes

INSTRUCTIONS TO CANDIDATES:

- This paper consists of **six** questions.
- 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 wherever necessary.

1. a) Figure 1 shows the rate of transpiration and rate of water uptake of a sun flower plant at different times of the day.



(i) Compare the rates of transpiration and water uptake. (6 marks)

(ii) Describe the relationship between the rate of transpiration and rate of water uptake. (3 marks)

(iii) Explain the relationship described in a) (ii) above. (9 marks)

(iv) Suggest three factors which could have influenced the changes in rate of transpiration after 12:00 hours. (3 marks)

b) Table 1 shows the relative number of stomata and relative rate of transpiration, in four different plant species.

Table 1

Plant species	**A**	**B**	**C**	**D**
Relative number of stomata mm^{-2} of leaf (upper : lower surface	5:30	0:80	10:15	0:50
Relative transpiration rate (upper : lower surface)	10:12	0:4	15:30	20:50

(i) Comment on the distribution of stomata in the four species. (8 marks)

(ii) Explain the relationship between the distribution of stomata and the rate of transpiration in

- Species **B** (04 marks)
- Species **D** (03 marks)

(iii) From the data, what conclusions can be drawn about the difference between the upper leaf surface of species **B** and **D**. (2 marks)

(iv) What is the importance of stomata in a plant leaf? (2 marks)

SECTION B

2. a) Describe the mechanism of stomatal movement based on changes in carbon diode concentration . (12marks)

   b) How are hydrophytes adapted to their environment? (08 marks)

3. a) Describe the structure of the nucleus in eukaryotic cells. (05 marks)

   b) Outline the changes that occur in the nucleus of an animal cell during meiosis. (12 marks)

   c) What is the significance of the nucleus in organisms? (3 marks)

4. a) Compare the spores of a moss plant with the pollen grains of angiosperms. (10marks)

   b) Explain how the formation of a seed in angiosperms has contributed to their evolutionary success. (10marks)

5. a) What is meant by cascade effect? (03 marks)

   b) Describe the functioning of a steroid hormone. (8marks)

   c) Explain how the amount of sodium ions is controlled in humans. (09marks)

6. a) Explain how accumulation of carbon dioxide in the atmosphere may lead to desertification. (08marks)

   b)Describe the ecological consequences of the following human activities :

   (i) release of hot water into a shallow lake. (5marks)

   (ii)clearing a forest to set up an industrial park (7marks)

END