

**P530/2**  
**BIOLOGY**  
**(Theory)**  
**Paper 2**  
**JUNE 2022**  
**2½ Hours**



## **EDUCAN EXAMINATIONS BOARD**

**Uganda Advanced Certificate of Education**

**BIOLOGY**

**(THEORY)**

**Paper 2**

**2 Hours 30 Minutes**

### **INSTRUCTIONS TO CANDIDATES**

*This paper consists of **six** questions.*

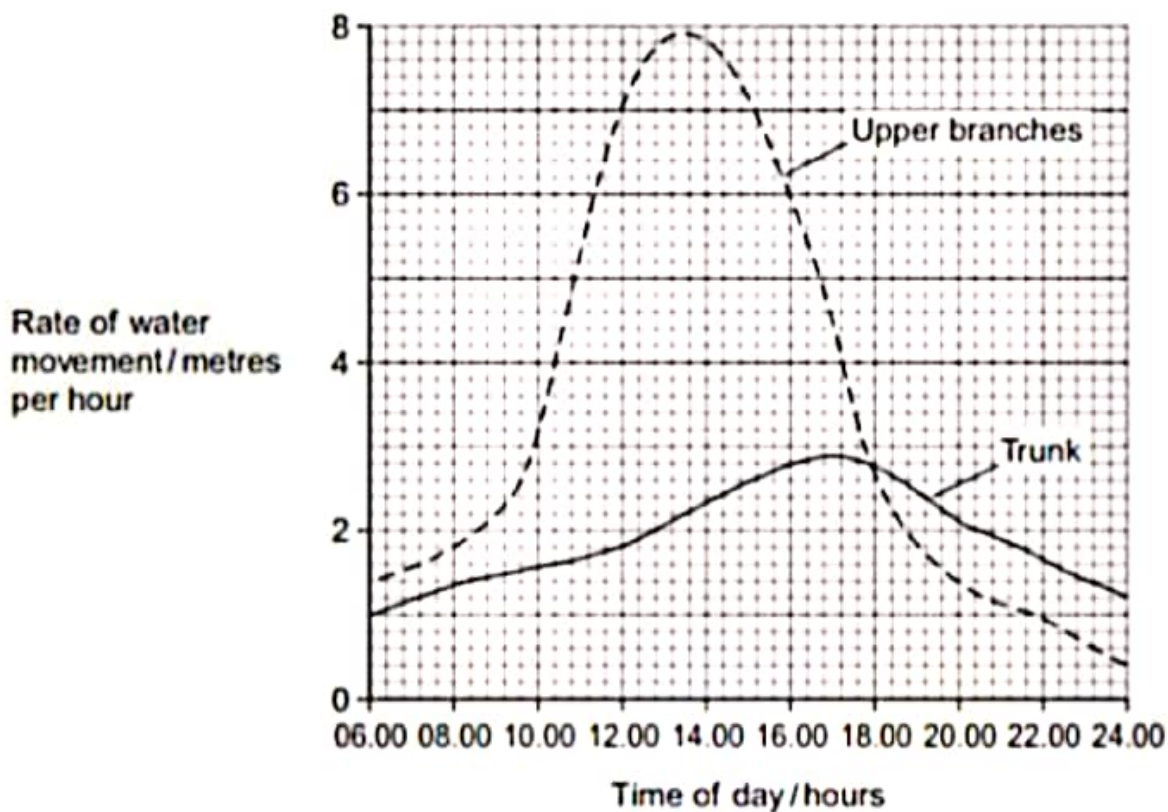
*Answer question **one** in section **A** plus **three** others from section **B**.*

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

## SECTION A (40 MARKS)

1. (a) Describe the cause of **root pressure**, and clearly state its role in the ascent of water up a plant. (06 marks)

(b) A graph in the figure below shows the rate of water movement over a 24-hour period in different parts of a tree. Study it *carefully* and answer the questions that follow.



(i) Describe the changes in the rate of water flow in the upper branches. (06 marks)

(ii) Compare the changes in the rate of water flow in the upper branches and the trunk

(06 marks)

(iii) Explain how the results of the investigation support the cohesion-tension theory. (04 marks)

(c) Explain the relationship between rate of water movement in the upper branches and in the trunk. (10 marks)

(d) How are plant tissues for water movement adapted to this function? (08 marks)

## SECTION B (60 MARKS)

2. (a) Explain how the co-existence of plants and animals in a terrestrial ecosystem is beneficial to them. *(12 marks)*
- (b) Explain the significance of predator-prey relationship towards the partners in the relationship. *(08 marks)*
3. (a) Give an example in each case, distinguish between;
- (i) Convergent and divergent evolution. *(04 marks)*
- (ii) Lamarckism and Darwinism. *(04 marks)*
- (b) Give an account of the evidence of evolution based on;
- (i) fossil record. *(05 marks)*
- (ii) Vestigial organs. *(05 marks)*
- (c) Give two pieces of evidence to show that evolution is still in progress. *(02 marks)*
4. (a) (i) Define the term Counter current exchange system. *(02 marks)*
- (ii) State the significance of any three countercurrent exchange systems to different groups of animals. *(06 Marks)*
- (b) Explain the mechanism by which the following organs conserve and maintain water balance;
- (i) Mammalian kidney. *(07 marks)*
- (ii) Insect Malpighian tubule. *(05 marks)*
5. (a) Explain the part played by the retina in colour vision. *(06 marks)*
- (b) Explain each of the following;
- (i) Cones are better than rod cells at distinguishing objects close together. *(08 marks)*
- (ii) Rod cells are more sensitive than cone cells to very low light intensities. *(06 marks)*
6. (a) What is meant by alternation of generations? *(03 marks)*
- (b) Compare alternation of generations in moss plant and in a fern. *(11 marks)*
- (c) To what extent do flowering plants show alternation of generation? *(06 marks)*

**END**