P530/2
BIOLOGY
Paper 2
August, 2022
2½ hrs

UNNASE MOCK EXAMINATIONS

Uganda Advanced Certificate of Education

BIOLOGY

PAPER 2

2HOURS 30MINUTES

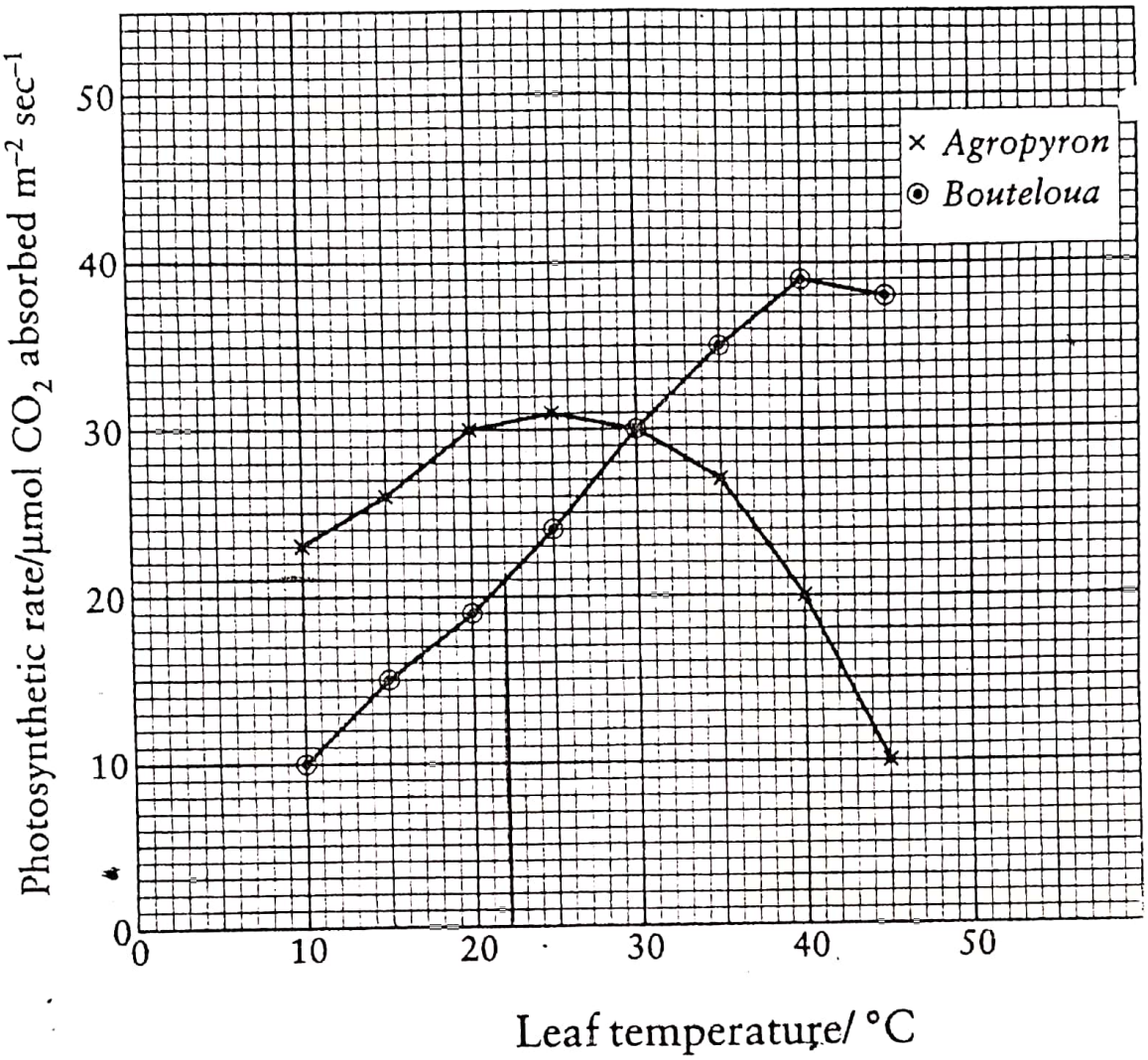
INSTRUCTIONS TO CANDIDATES

- *This paper consists of Sections* **A** *and* **B**.
- *Answer question* **one** *in section* **A** *plus* **three** *questions from Section* **B**.
- *Candidates are advised to read the questions carefully, organize their answers and present them precisely and logically, illustrating with well labelled diagrams where necessary.*

SECTION A: (40 MARKS)

*Question **1** is **compulsory.***

1. The graph below shows the effect of temperature on the rate of photosynthesis in two grasses, ***Agropyron*** and ***Bouteloua***



a) Compare the two curves. *(06 marks)*

b) Account for the rate of photosynthesis of ***Agropyron*** from:

(i) **10 - 25°C.** *(10 marks)*

(ii) **25 - 45°C.** *(04 marks)*

c) i) Describe the photosynthetic mechanism which is likely to occur in the cytoplasm of the mesophyll cells of ***Bouteloua***. *(05 marks)*

ii) Explain the physiological significance of the mechanism described in (e) (i) above. *(04marks)*

d) Basing on the data provided, outline the physiological and ecological advantages of ***Bouteloua*** over ***Agropyron***. *(06 marks)*

e) What is meant by **CAM**. *(05 marks)*

SECTION B (60 MARKS)

2) a) Explain how variation in light intensity affects exchange of gases between the leaf cells and the atmosphere. *(10 marks)*

b) Describe how non specificity of photosynthetic enzymes affects productivity. *(10marks)*

3) a) Compare the spores of a moss plant with the pollen grains of

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

4) a) Explain the glowing eyes of the cat at night, when shone with light. *(05 marks)*

b) Account for the sensitivity of rods towards light. (05 marks)

c) Describe the physiological behavior of a rod in darkness. *(10 marks)*

5) a) When inserted in a hypotonic solution Describe the changes in the;

i) pressure potential,

ii) water potential of the plasmolysed plant cell when inserted in a hypotonic solution. *(12 marks)*

b) Account for the negative water potential of any solutions. *(08 marks)*

6) In cats, short hair is dominant over long hair. The gene involved is autosomal. Another gene which is sex linked produces hair colour, its alleles produce black or white coat colour and the heterozygote combination produces tortoise shell coat colour.

a) If a long-haired black male is mated with a tortoise shelled female homozygous for short hair, what kind of off springs will be produced in F1? *(09 marks)*

b) i) If the F1 cats are allowed to interbreed freely among themselves, what are the chances of obtaining long haired males? *(07 marks)*

ii) Using specific examples, describe the common effects of mutations. *(04 marks)*

END