P530/2

BIOLOGY

PAPER 2

(THEORY)

Feb/Mar.2022

2 HOURS

Uganda Advanced Certificate of Education

S.6 POST-COVID TEST 2

BIOLOGY

Paper 2

2 hours 30 mins

INSTRUCTIONS

- This paper consists of two sections A and B.
- Attempt question 1 in section A and any three (3) from section B.
- Any additional (s) will not be marked.
- You are advised to read the questions carefully, organize your answers and present them precisely and logically. Illustrate your answers with clear labeled diagrams where necessary.

SECTION A (40 MARKS)

1. The **figure 1** below shows the effect of temperature on the rate of photosynthesis of two grass species A and B. use it to answer the questions below.

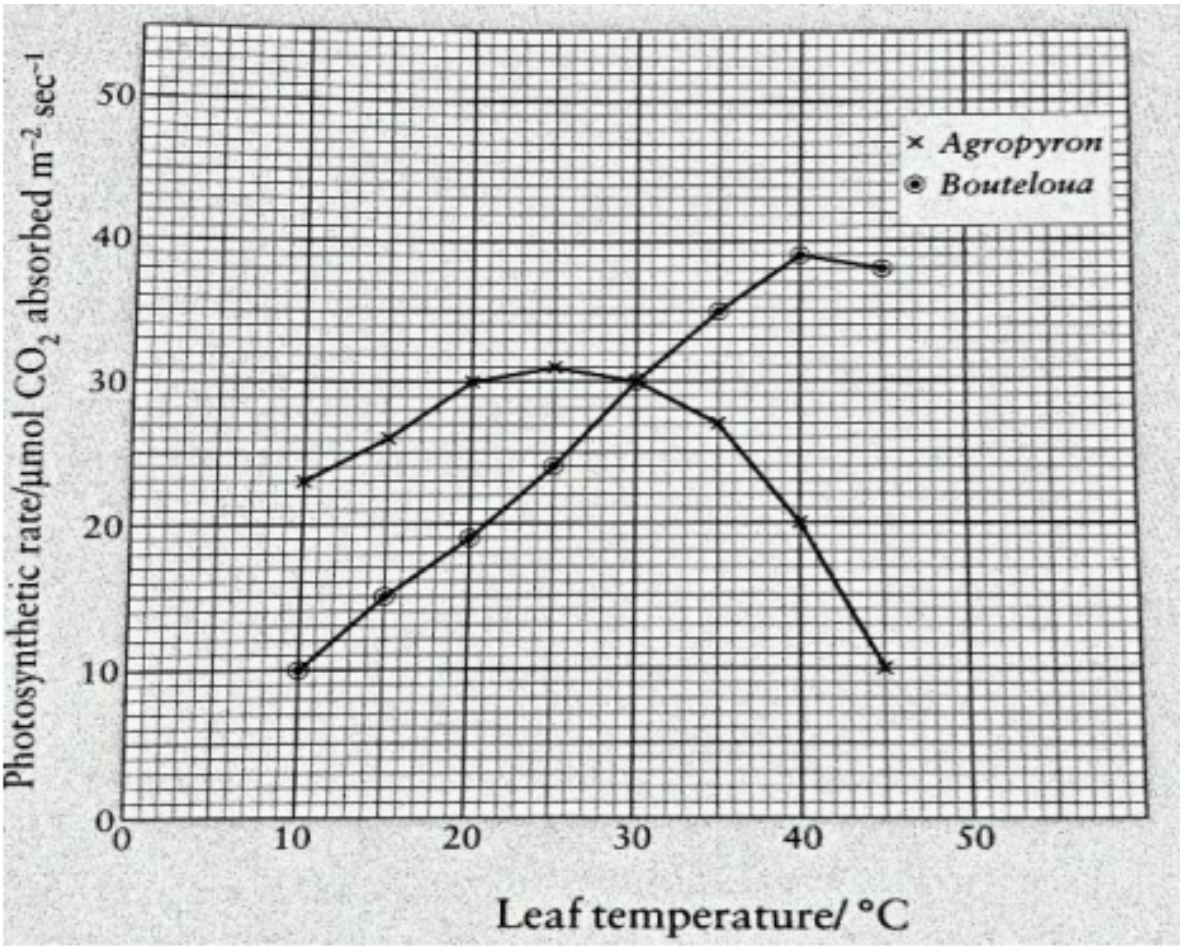

Table 1

The **table 1** shows the wave length of light received by shoot of Elodea plant, the amount of light energy absorbed by chlorophyll in arbitrary units and the rate of photosynthesis in mm^3 of oxygen released per minute.

Wave length(nm)	Amount of light absorbed (arbitral units)	Rate of photosynthesis (mm^3 of oxygen released per min)
420	33	95
450	21	80
500	10	40
550	02	20
600	04	40
630	12	60
660	24	90

a) From the graph state the;

i. Differences in the effect of temperature on the rate of photosynthesis of the two-grass species A and B. (07 marks)

ii. Similarities in the effect of temperatures on the rate of photosynthesis of the grass species. (03 marks)

b)

i. Suggest the likely climate from which the grass species was obtained.(02 marks)

ii. Basing on the graph, account for the choice of climate for each of the grass species suggested in (b)(i) above. (07 marks)

c)

i. State any four other factors which may be affecting the rate of photosynthesis of the two-plant species. (02 marks)

ii. Suggest the reason to why the rate of absorption of carbon dioxide is used to measure the rate of photosynthesis. (02 marks)

d) Measuring the rate of photosynthesis by counting bubbles of gas produced during photosynthesis(oxygen) is an inaccurate method. Explain your answer. (02 marks)

e) Using the data in **table 1** above;

i. Describe the relationship between wave length of light exposed to the plant, light energy absorbed by chlorophyll and the way it affects the rate of photosynthesis. (06 marks)

ii. Account for the pattern of change described in (e)(i) above. (09 marks)

SECTION B (60 MARKS)

*Answer **three** questions from this section*

2. Describe the structure, functions and distribution of epithelial tissues in the body. (20 marks)

3.

a) What is protein denaturation? (02marks)

b) Explain the factors that may denature proteins. (05marks)

c) Discuss the role of protein in living organisms. (13marks)

4.

a) What is meant by the term C4 plant? (02marks)

b)

i. Explain the significances of C4 plants for being more efficient in carbon dioxide fixation than C3 plants. (06marks)

ii. Explain how carbon dioxide is fixed by C4 plants. (06marks)

c) How are the leaves of C4 plant modified to suit it for carbon dioxide fixation? (06marks)

5.

a) Outline the functions of mammalian skin. (05 marks)

b) Distinguish between aestivation and hibernation. (04 marks)

c) How mammalian body temperature is regulated? (11 marks)

6. Describe the distribution and functions of membranes in eukaryotic cells? (20 marks)

END