

P530/2
BIOLOGY
(Theory)
Paper 2
Nov./ Dec. 2022
2½ hours



UGANDA NATIONAL EXAMINATIONS BOARD
Uganda Advanced Certificate of Education

BIOLOGY
(THEORY)

Paper 2

2 hours 30 minutes

INSTRUCTIONS TO CANDIDATES:

This paper consists of sections; A and B.

*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)

Question 1 is compulsory.

1. Studies were carried out to show how some of the complex organic compounds such as lignin, cellulose and pectin present in leaves are broken down by the action of organisms feeding on decaying organic matter over time. The results were plotted on the graph as shown in figure 1. Study the figure and answer questions that follow.

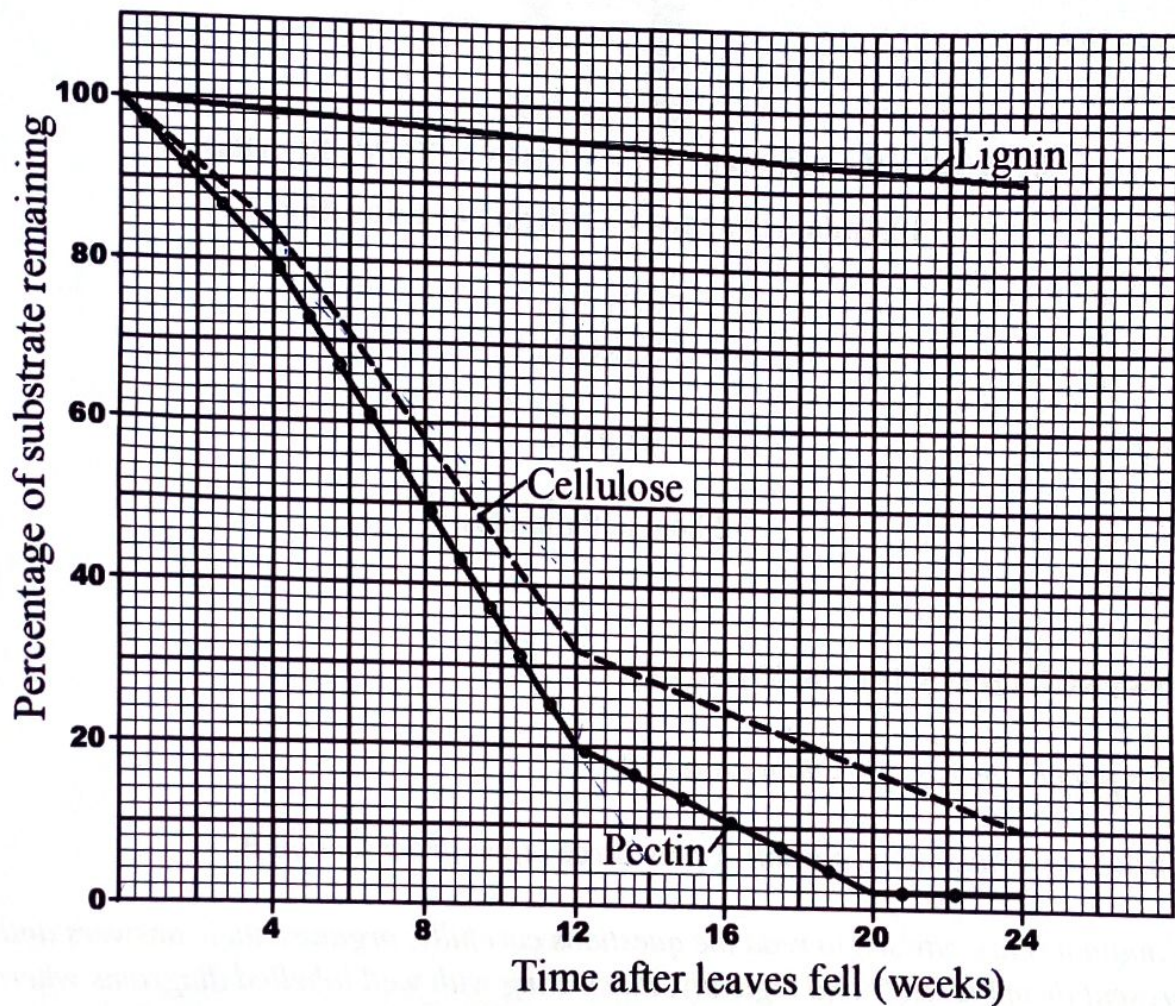


Fig. 1

- (a) (i) Describe the rate at which each of the complex organic compounds is broken down. (08 marks)
- (ii) Explain your descriptions in (a) (i). (14 marks)
- (b) Explain the ecological significance of the process of breakdown of plant materials shown in figure 1. (05 marks)
- (c) Explain how fungi are able to breakdown plant materials. (05 marks)

- (d) How is lignin
- (i) important in plants? (05 marks)
 - (ii) useful to man? (03 marks)

SECTION B (60 MARKS)

Answer any **three** questions from this section.

Any additional question(s) answered will **not** be marked.

2. (a) Describe the different mechanisms by which the human body prevents loss of blood. (08 marks)
- (b) Explain how the sodium-potassium pump mechanism brings about osmotic balance in a human body cell. (12 marks)
3. (a) How is mRNA formed from DNA in a cell? (10 marks)
- (b) Describe how the information on mRNA is used in the synthesis of an enzyme. (10 marks)
4. (a) How are flowering plants adapted for reproduction on land? (10 marks)
- (b) Describe the process of development of an embryo sac in flowering plants. (10 marks)
5. (a) Compare the structure of the cardiac and skeletal muscles. (06 marks)
- (b) Explain how each of the following is suited to its function:
- (i) Cardiac muscle. (07 marks)
 - (ii) Skeletal muscle. (07 marks)
6. (a) What are isolating mechanisms? (02 marks)
- (b) Explain how each of the isolating mechanisms lead to emergence of new species in a population. (18 marks)