

P530/2

BIOLOGY

(THEORY)

Paper 2

S.5

$2\frac{1}{2}$  hours

THE BIOLOGY DEPARTMENT CORNERSTONE SENIOR SECONDARY SCHOOL

UGANDA ADVANCED CERTIFICATE OF EDUCATION

BIOLOGY

(THEORY)

Paper 2

2 hours and 30 minutes

INSTRUCTIONS:

- ✓ This paper consists of section A and B
- ✓ Answer question one in section A plus three others from section B
- ✓ Illustrate your answers 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 the questions that follow

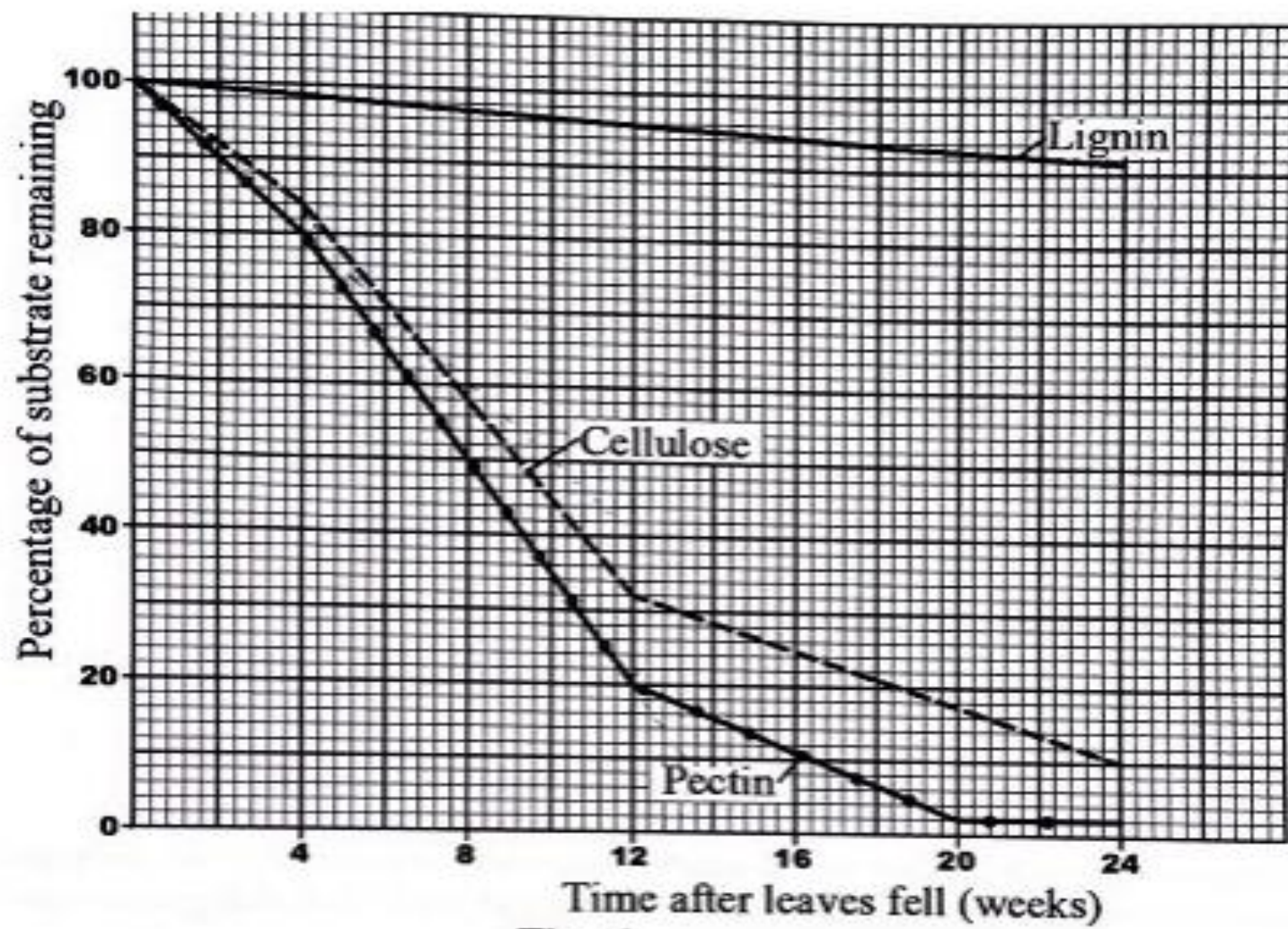


Fig. 1

- (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 break down plant materials. (05 marks)
- (d) How is lignin?
- (i) important in plants? (05 marks)
- (ii) useful to man?

### SECTION B

- 2.(a) Compare **DNA** and **RNA** molecules. (04marks)
- (b) Describe the role of **mRNA** in protein synthesis in a cell. (10 marks)
- (c) How does the molecular structure of protein relate to its functions? (06 marks)
- 3.(a) Describe the structure of cartilage and bone. (10 marks)
- (b) How is cartilage replaced by bone? (10 marks)
4. (a) What is meant by chemosynthesis? (03 marks)
- (b) Compare photosynthesis in purple Sulphur bacteria with that in higher plants.

(07 marks)

(c) Explain the mutualistic relationship between mammals and the micro organisms in their digestive tracts.

(10 marks)

5. Outline the process involved in the synthesis of carbohydrates in plants.

(20 marks)

6.(a) What is meant by the term population in ecology

(02 marks)

(b) What assumptions are made when using capture - recapture method of estimating population size?

(08 marks)

(c) Explain the ways in - breeding affects a natural population.

(06 marks)

(d) Suggest the factors which may contribute to a climax community being unstable. (04 marks)

END

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