

Student's Name: Stream:

School:

Class	Stream
S. 3	

(Write your Name, Class Stream and School in the spaces provided.)

553/1
BIOLOGY
(Theory)
Paper 1
APRIL 2023
2 hours



EDUCAN SCHOOL

Uganda Lower Secondary Certificate Of Education

S.3 END OF TERM 1 FORMATIVE ASSESSMENT

EXAMINATIONS

BIOLOGY

(THEORY)

Paper 1

2 Hours

INSTRUCTIONS:

- Answer **all** questions in section in the spaces provided.
- Illustrations in form of drawings should be made where necessary, with a sharp pencil.

For official use only

Number	Score	Teacher's comment
1.		
2.		
3.		
4.		

1. The following experiment was carried to determine the percentage of humus in a given soil sample. The soil sample weighing **120g** was heated in an oven kept at 100°C . The dry soil weighed **112g**. The soil was then heated slowly to burn away humus. The weight of soil after all humus had burnt was **106g**.

(a) Why was the soil not heated strongly at first?

(01 mark)

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(b) What was the weight of humus in the soil?

(03 marks)

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(c) Calculate the percentage of humus in the soil.

(03 marks)

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(d) Of what use is humus in the soil?

(03 marks)

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2. A group of students from EDUCAN school conducted an investigation in which they wanted to find identity of the food substances present in cabbage (family Brassicaceae). Using a mortar, the students chopped the cabbage leaves into smaller pieces and grinded them in a mortar to form a cabbage paste, added some distilled water and decanted off a turbid / thick extract which they put in a small glass beaker. They labelled it extract **R**. They then carried out food tests on extract **R** as shown in the table below;

(a) Complete the table by filling in the gaps.

(06 marks)

<i>Food test</i>	<i>Observation</i>	<i>Conclusion</i>
Sample mixed with Benedict's solution and boiled.		Small amounts of reducing sugars present.
	Turbid Solution turned to blue precipitate	Proteins absent
	Turbid solution turned to black solution	
To 1ml of DCPIP solution in a test tube, solution R was added drop by drop.		

(b) Give a reason why the students added distilled water to the cabbage paste, and not any other water.

(01 mark)

.....

(c) From the experiment, identify the food nutrients established to be contained in the cabbage.

(03 marks)

.....

(d) Of what importance are the food nutrients present in cabbage to our body?

(04 marks)

.....

.....

 (e) Suggest any three precautions that the students should have taken during the experiment. *(03 marks)*

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 (f) Individuals that are obese and seek to reduce weight are always advised to include vegetables like cabbage as part of their diet, briefly explain how this can help reduce weight in a long run. *(03 marks)*

.....

 3. A student investigated the factors needed for a plant to carry out photosynthesis.

He used a plant that had been kept in the dark for two days. He covered some of the leaves with bags, as follows:

Leaf 1: Transparent polythene bag containing air

Leaf 2: Transparent polythene bag containing air and a substance that absorbs carbon dioxide

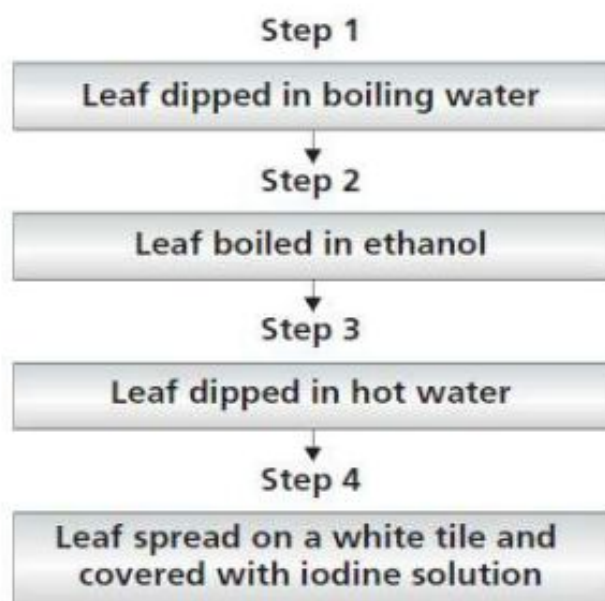
Leaf 3: Black polythene bag containing air

(a) Why does a plant become '*destarched*' when left in the dark for two days? *(01 mark)*

.....

 (b) Name a substance that could be used to absorb carbon dioxide. *(01 mark)*

.....
 (c) The student left the plant in the light for eight hours, then took the leaves off the plant and tested them for starch. The steps he used are shown in the diagram.



(i) In step 1, why is the leaf dipped in boiling water? (01 mark)

.....

.....

(ii) What is the purpose of step 2? (01 mark)

.....

.....

(iii) Describe two precautions that should be taken when carrying out step 2. (01 mark)

.....

.....

(iv) In step 4, what colour would the leaf be if starch was present, and if starch was absent? (02 marks)

Starch present

Starch absent

(d) Briefly explain any three environmental factors that affect the rate of photosynthesis. (03 marks)

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4. Figures 5.10 and 5.11 show lower jaws of two different mammals. Study them carefully and answer the questions that follow;

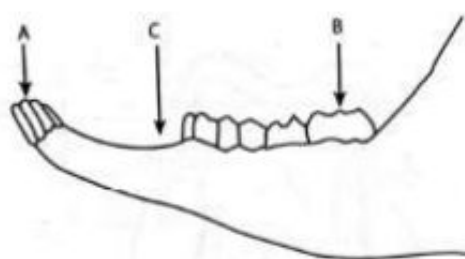


Fig. 5.10

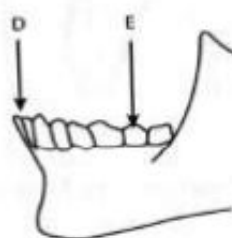


Fig. 5.11

- (a) State the type of teeth **A** and **B**, giving a reason for your answer in each case. (02 marks)

Type of teeth	Reason
A:	
B:	

- (b) Name the region marked **C**, and state its importance. (02 marks)

- (c) State the type of diet you would expect mammals with jaws shown in the figures 5.10 and 5.11. (02 marks)

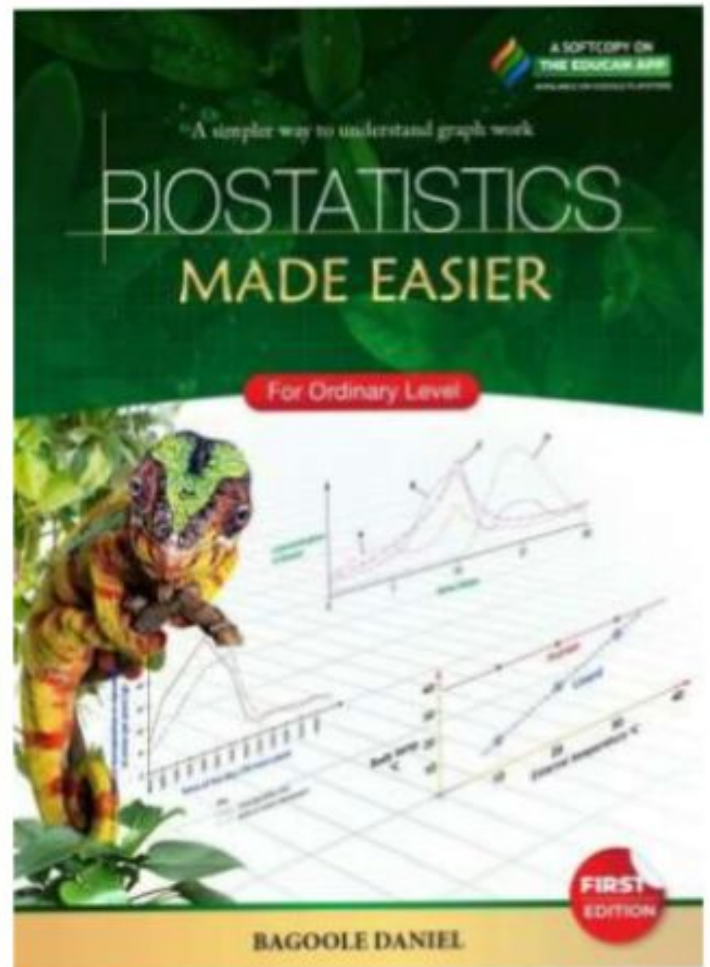
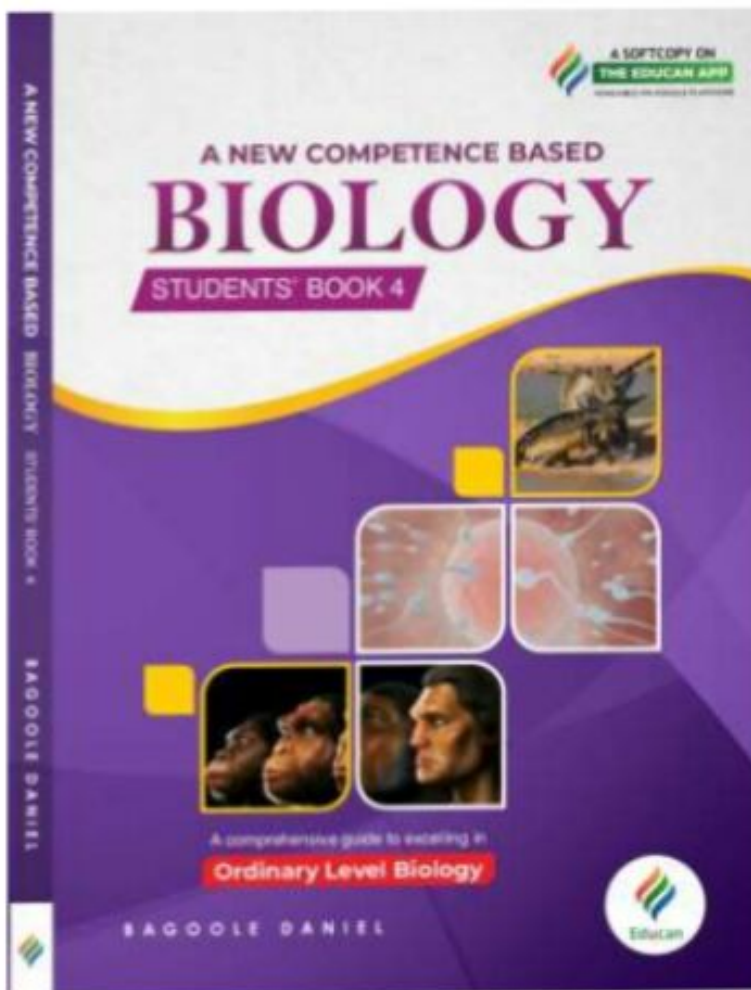
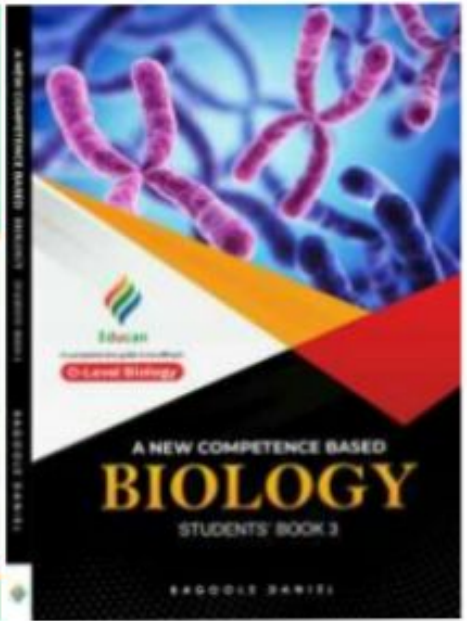
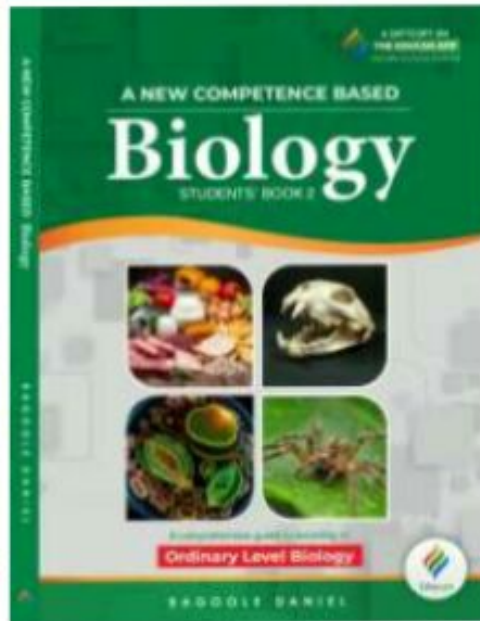
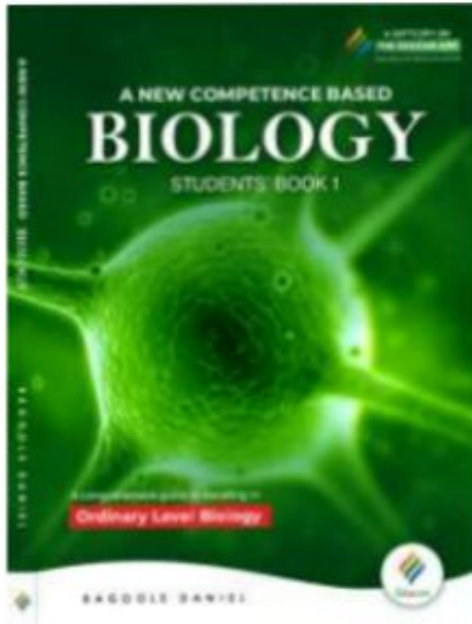
Type of food for mammal with jaw in 5.10:

Type of food for mammal with jaw in 5.11:

- (d) Write down the dental formula of the mammal with the jaw shown in figure 5.10.

(02 marks)

- (e) State two structural differences between teeth labelled **D** and **E**, in figure 5.11. (02 marks)







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