NAME: .....

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BIOLOGY PAPER 2

(PRACTICAL)

Jul/Aug. 2023

Uganda Certificate of Education

MOCK EXAMINATIONS

BIOLOGY PAPER TWO

(PRACTICAL)

2 HOURS

Instructions

- Attempt all questions.
- Answers to the questions must be written in the spaces of the question paper provided.
- Use sharp HB pencil for drawings.

FOR EXAMINERS' USE ONLY			
QUESTION		**Marks**	**Examiner's Signature & No.**
Question	**No. 1**		
	No. 2		
	No. 3		
TOTAL			

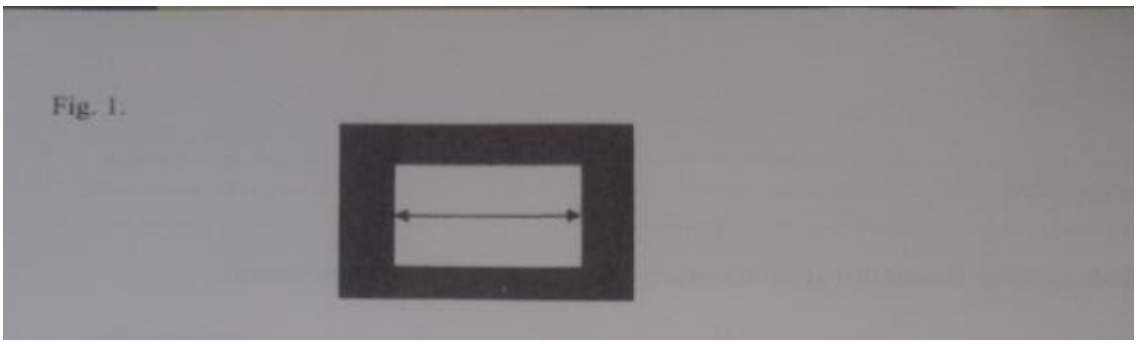
SECTION A (30 MARKS)

1. You are provided with specimen B. using a knife, peel the specimen then cut out two cubes from it. **Cube B1** measuring 1cm x 1 cm x 1 cm and **Cube B2** measuring 2cm x 2cm x 2cm.

(a) Calculate the surface area, volume and surface area to volume ratio of each cube. Show your working in the table below. (08 marks)

Cube	**Surface area (S.A)**	**Volume (V)**	**Surface area: Volume (S.A/V) ratio**
B1			
B2			

(b) Put the cubes in (a) above in a beaker containing iodine solution to be submerged completely and leave for 20 minutes. After 20 minutes, remove the cubes, dry them using a blotting or filter paper, then cut each cube into halves using a a razor blade. Using one half of each cube, measure the distance in mm across the uncolored/unstained portion as indicated in figure1.



Record your results below. (02 marks)

A .....

B .....

(c) (i) What process is responsible for the above results (01 marks)

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(ii) Explain how the results in (b) relate to the process identified in (c) (i) in living organisms. (04 marks)

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(iii) State any two ways that process is important in living organisms (02 marks)

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(d) Cut thin slices of the remaining pieces of specimen B. Using a mortar and pastel. Crush them and add 10 cm^3 of water, stir and then decant into a clean test tube. Label the extract B. Carry out the tests below on extract B.

(i) Record the observations and deductions in the table (ii) below. (06 marks)

Test Procedure	**Observation**	**Deduction**
(i) To 1 cm^3 of solution B in the test tube, add 3 drops of iodine solution		

(ii)	To 1 cm^3 of solution B in the test tube, add 1 cm^3 of benedicts solution and boil		
(iii)	To 1 cm^3 of solution B in the test tube, add 1 cm^3 of sodium hydroxide solution, followed by 3 drops of copper (ii) sulphate solution and shake		

(ii) State the food substance present in tissue B (01 marks)

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(iii) Basing on your observations in (d) (i) above, what function does the tissue have to offer to the plant from which the specimen was obtained. (02 marks)

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2. You are provided with specimen with specimen E and F which are freshly killed animals which belong to different phyla.

Examine them using a hand lens and answer the questions that follow.

(a) Identify the phylum and class to which specimens belong, give a reason for each. (04 marks)

Specimen	**Phylum**	**Reason for the phylum**	**Class**	**Reason for the class**
E				
F				

(b) State three structural similarities and differences between specimen E and F

(i) Structural differences (03 marks)

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(ii) (03 marks)

Specimen E	**Specimen F**

(c) Give two structural adaptations of each of the specimens to life in its habitat

(i) Adaptations of specimen E (02 marks)

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(ii) Adaptations of specimen F (02 marks)

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(d) Place the specimen E having its ventral side facing upwards exposing the parts at the last abdominal segments. Draw and label the observable parts from the last three abdominal segments. (06 marks)

3. You are provided with specimens A, B, C and D which are plant organs.

(a) With two reasons, identify the order of the plant from which the following specimens where obtained.

(i) Specimen A ..... (01 mark)

Reason: (01 mark)

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(ii) Specimen C ..... (01 mark)

Reason (01 mark)

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(b) Carefully the specimens are record the characteristic features of each in refence to venation, lamina, petiole and margin in the table below. (08 marks)

Specimen	**Venation**	**Petiole**	**Margin**	**Lamina**
A				
B				
C				
D				

(c) Using the features in the table in (b) above, construct a dichotomous key to identify specimen A, B, C and D. (03 marks)

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(d) With a reason, suggest the habitat of the plant from which specimen C was obtained (Aquatic or dump terrestrial or dry terrestrial or shade or sunny habitat)

Habitat: (01 marks)

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Reason: (02 marks)

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(e) Using a razorblade, cut specimen D transversely into half. Draw and label the half of the specimen towards the petiole. (06 marks)

END