CONFIDENTIAL
P530/3/ Ins. Sc.
BIOLOGY
PRACTICAL
INSTRUCTIONS
Paper 3
AUGUST, 2023

JINJA JOINT EXAMINATIONS BOARD

Uganda Advanced Certificate of Education

MOCK EXAMINATIONS – AUGUST, 2023

BIOLOGY

PRACTICAL

Paper 3

INSTRUCTIONS

CONFIDENTIAL:

This information is given **ONLY** *to facilitate the preparation of the examinations.*

Great care should be taken that the information given below DOES NOT reach the Candidates either directly or indirectly.

Each candidate should be provided with the following:

- Freshly killed cockroach labeled K
- Freshly killed toad labeled L
- $20cm^3$ of 20% extract obtained from a fresh eggplant fruit labelled A.
  NB: After crushing use sieve to obtain extract.
- $20cm^3$ of 20% extract obtained from a fresh white striped beans (NB-In a litre of extract add egg white from 2 eggs) labelled B.
- $5cm^3$ of 10% amylase enzyme labelled C
- $5cm^3$ of 10% trypsin enzyme labelled D
- $5cm^3$ of dilute hydrochloric acid labelled S
- $5cm^3$ of 2M sodium hydrogen carbonate solution labelled T.
- Inflorescence of tridax labelled W
- Inflorescence of lantana camara labelled X
- Morning glory flower labelled Y
- Clotalaria flower labelled Z
- Dissection board with pins
- 6 test tubes
- Plastic cup
- Hot and cold water
- Thermometer
- Hand lens
- Microscope
- Slide
- Heat source
- Reagents for food tests.

Name:.....Centre/Index No:...../.....

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3¼hours

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INSTRUCTIONS TO CANDIDATES

Answer **ALL** *questions.*

Answers must be written in the spaces provided.
Additional papers must not be inserted

For Examiner's Use Only

QUESTION	MARKS
1	
2	
3	
TOTAL	

1. You are provided with specimen K and L which are freshly killed.

(a) Using a hand lens, examine the foot of hind limb of specimen K. How is it adapted for locomotion? (3 marks)

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(b) (i) Cut out the head from specimen K and continue to extract the labrum and clypeus to be discarded. Using a hand lens, examine the front view. Draw and label observable mouth parts without displacement. (8 marks)

(ii) How are the lateral named mouth parts in (b)(i) above adapted for the organism's survival?

(3 marks)

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(c) Dissect specimen L in the normal way. Proceed to carefully cut out the parts of alimentary canal posterior to the duodenum with associated mesenteries. Continue to expose:

(i) Blood vessels on the floor of head region.

(ii) Vessels draining blood from remaining abdominal cavity structures, thoracic viscera and upper side of hind limb thigh region.

With heart turned upwards, draw and label your dissection. (26 marks)

2. You are provided with extracts A and B which were obtained from different plant organs, solutions C, D, S and T.

(a) (i) Carry out tests in Table 1 on extracts A and B. Record your tests and observations in the table. (14 marks)

Table 1

Tests	Observations	
Iodine test	A	
	B	
Benedict's test	A	
	B	
Biuret test	A	
	B	
DCPIP Test	A	
	B	

(ii) A mother feeds her child on organs A and B. Comment on the nutrient components, likely implications and give your advice to her. (4 marks)

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(b) (i) Label four test tubes (i)-(iv) and carry out procedures summarized in table 2.

Table 2.

Test tube	Contents
(i)	$2cm^3$ of solution B+$1cm^3$ of solution C+1 cm^3 of solution S
(ii)	$2cm^3$ of solution B+$1cm^3$ of solution C+1 cm^3 of solution T
(iii)	$2cm^3$ of solution B+$1cm^3$ of solution D+1 cm^3 of solution S
(iv)	$2cm^3$ of solution B+$1cm^3$ of solution D+1 cm^3 of solution T

(ii) Record the appearance of the contents in the test tubes. (1 mark)

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(iii) Incubete all the four test tubes (i) – (iv) at 35°C – 40°C for 30 minutes (Meanwhile you may continue with other work)

After 30 minutes of incubation, shake, observe and describe the appearance of the mixture in each test tube in comparison before incubation in Table 3.

Table 3 (2 marks)

Test Tube	Appearance
(i)	
(ii)	
(iii)	
(iv)	

(iv) Carry out tests on the mixture / content of the incubated test tubes as indicated in Table 4 and 5. Record your observations and deductions.

Table 4 (4 marks)

Iodine test		
Test tube	Observations	Deductions
(i)		

(ii)		
(iii)		
(iv)		

(4 marks)

Table 5

Biuret test		
Test tube	Observations	Deduction
(i)		
(ii)		
(iii)		
(iv)		

(c) From your results, explain the effect of the following solutions on extract B

(i) Solution C (2 marks)

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(ii) Solution D (2 marks)

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(d) From your results, explain the effect of the following solutions on the activity of substance in solution C and D

(i) Solution S (2 marks)

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(ii) Solution T (2 marks)

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3. You are provided with specimens W, X, Y and Z which are plant organs.

(a) Give three differences in the description of floret arrangement between specimen W and X in Table 6. (3 marks)

Table 6

W	X

(b) Describe the features of named parts of the androecum of

(i) Specimen Y (2 marks)

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(ii) Specimen Z (2 marks)

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(c) With the aid of hand lens, observe and state two differences between the following parts of specimen W and X florets, by filling Table 7 (6 marks)

Table 7

Part	W	X
Sepals		

Ovary		
Stigma		

(d) What benefits does specimen W derive from pattern of floret arrangement? (3 marks)

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(e) Using only primary features of florets / flowers, construct a dichotomous key for the identification of specimen W, X, Y and Z. (3 marks)

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(f) Remove whole mature inner floret from specimen W. Observe under low power of microscope (5 marks)

 End