P530/3 In st. Sch.

BIOLOGY

Practical Instructions

Paper 3

July/August 2022

TORORO ARCHDIOCESE EXAMINATIONS BOARD

Uganda Advanced Certificate of Education

MOCK EXAMINATIONS – AUGUST 2022

BIOLOGY PRACTICAL

P530/3 Inst. Sch.

CONFIDENTIAL

Great care should be taken that the information here in does not either directly or indirectly reach the candidates.

Each candidate should be provided with;

INSTRUCTIONS FOR PREPARING APPARATUS AND CHEMICALS

[NB: The Headteacher must ensure that the teacher responsible for preparing the apparatus hands in his/her trial results properly sealed in a separate envelope and firmly fastened/attached to the candidates scripts envelope(s)]

Turn Over

Each candidate should be provided with the following;

E	-	Freshly killed adult cockroach.
F	-	Fresh Irish potato tuber.
G	-	Sprouting Irish potato tuber.
H	-	3% Hydrogen peroxide solution.
W	-	Hibiscus flowers.
X	-	Maize inflorence.
Y	-	Morning glory flower.
Z	-	Bougainvila inflorescence.
Solution **A**	-	Distilled water
Solution **B**	-	0.8m sucrose solution

12 test tubes

Reagents for food tests.

Heat source.

Cork borer (5mm diameter)

Thermometer

Labels.

Dissection board.

Microscope, 2 slides and 2 cover slips.

Pins.

END

NAME_____SIGNATURE_____

P530/3
BIOLOGY
(*PRACTICAL*)
Paper 3
3 ¼ Hours
August 2022

TORORO ARCHDIOCESE EXAMINATIONS BOARD
Uganda Advanced Certificate of Education
MOCK EXAMINATIONS 2022
BIOLOGY
(Practical)
Paper 3
3 Hours 15 Minutes

INSTRUCTIONS

Attempt all questions.

All answers must be written in spaces provided; no addition sheets of paper must be inserted in this booklet.

FOR OFFICIAL USE ONLY		
No.	**Mark**	**Signature**
1		
2		
3		
Total		

1. You are provided with specimen E

(a) Examine the specimen and the external features which are characteristic of the phylum to which the specimen belongs (3 marks)

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(b) With the aid of a hand lens, examine the head of the specimen. Using any three observable features of the head, explain how each of them suits the animal to survive in the habitat.

(3 marks)

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(c) Cut off the wings and limbs of the specimen from their bases. Observe the trunk from the dorsal view with the last abdominal segment lifted using pair of forceps to expose the structures beneath.

(i) Draw and label (8 marks)

(ii) Giving a reason from your observation in (c) above, state the sex of the specimen

(1 mark)

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(d) Dissect the Thorax and the first three segments of the abdomen. Cut out the exposed parts of the gut. Deflect the dorsal cuticle to the left and salivary gland to the right.

Draw and label the exposed structures. (17 marks)

2. You are provided with specimen F and G and solution A, B and H.
Using a cork borer provided, obtain eight cylinders of uniform length of 3 cm from each of the specimens F and G respectively.

(a) (i) Label four test tube A_1, A_2, B_1 and B_2

(ii) To each of the test tube A_1 and A_2, add 6 cm^3 of solution A; Add 6 cm^3 of solution B to each of the test tube B_1 and B_2.

(iii) Add a cylinder in each of the test tube A_1, A_2, B_1 and B_2 and wait for a Period of 30 minutes [You may meanwhile proceed with the other work]

(iv) After 30 minutes remove the cylinders from the solution and measure the final length of each. Work out the corresponding changes in the length of each and record in Table 1 below.

(6 marks)

Table 1

Test tube	Final length (cm)	Change in length (cm)
A_1		
A_2		
B_1		
B_2		

(b) Grind two cylinders of specimen F in a mortar into a paste then add 10 cm^3 of distilled water, stir, leave to settle and decant. Label it solution F. Repeat the above procedure using specimen G.

(i) Label two test tubes F and G respectively and add contents as shown in Table 2.
Record your observations and deductions in table 2 below. (4 marks)

Table 2

Test tube	Contents	Observations	Deductions
F	2 cm^3 of H + 2 cm^3 of F		
G	2 cm^3 of H + 2 cm^3 of G		

(ii) Carry out the following tests to determine the relative abundance of starch, reducing sugars and proteins in extracts F and G prepared in (b) above. Record your tests, observations and deductions for each extract in Table 3.

(15 marks)

Table 3

Test	Extract	Observations	Deductions
Starch	F		
	G		
Reducing Sugars	F		
	G		
Proteins	F		
	G		

(c) Explain the differences in your results in;

(i) Table 1 (5 marks)

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(ii) Table 2

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(iii) Table 3

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

(a) Observe specimen X and Z and describe the pattern of arrangement of florets
(4 marks)

X

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Z

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(b) Remove one floret from specimen X and Z. examine the florets and specimen W and Y using a hand lens where necessary.

(i) Give two structural descriptive features on each of the following floral parts.
(12 marks)

Table 4

Specimen	Anthers	Petals	Bracts
W			
X			
Y			
Z			

(ii) With reference to the information in Table 4 in b (i) above, construct a dichotomous key to identify the specimens. (4 marks)

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(c) Label two slides W and X and dust the pollen grains from the respective specimens. View under medium power of a microscope.

(i) Draw but do not label

Pollen grain from W (1 ½ marks)

Pollen grain from X (1 ½ marks)

(ii) State the differences in the pollen grains observed in (c) above (3 marks)

Pollen grain of W	Pollen grain for X

(iii) From your observation in (c) above, state how the specimen X and W are adapted to their modes of pollination

Specimen W (1 mark)

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Specimen X (1 mark)

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(c) Cut specimen Y symmetrically into two halves. Draw one half and label only the pistil. (5 marks)

END