Name…… **Signature**……

P530/3

BIOLOGY

Practical

Paper 3

July /Aug 2019

3 ¼ hours

MUKONO EXAMINATION COUNCIL

Uganda Advanced Certificate of Education

BIOLOGY PRACTICAL

3 hours 15 Minutes

INSTRUCTIONS TO CANDIDATES

*This paper consists of **three** questions.*

*Answer **all** questions.*

Write answers in the spaces provided. Additional sheets of paper must not be inserted in this booklet.

FOR EXAMINERS' USE ONLY

Question	Marks	Examiner's Signature
1		
2		
3		
Total		

1. You are provided with specimen **K** which is freshly killed.

(a) (i) State four observable differences between the fore and hind limb. **(*04 Marks*)**

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(ii) How is the structure of the hind foot adapted to its function? **(*02 Marks*)**

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(b) Pin the specimen on the board the usual way. Dissect and remove the skin and observe the main blood circulation on the skin.

(i) Describe the pattern of blood circulation on the skin. **(*03 Marks*)**

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(ii) What is the significance of the pattern of blood circulation described in (b)(i) above in the life of the animal? **(*03 Marks*)**

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(c) By further dissection, leave the heart and turn over to display the main blood vessels;

(i) supplying the structures for uptake of nutrients and excretory organs.
(ii) draining the trunk region towards the heart.

With the heart displaced anterior, draw and label. [***Do not throw away your dissection***.]

(*20 Marks*)

2. (a) You are provided with solutions **A_1**, **A_2** and **A_3** which are extractsof different plant organs. Carry out the following tests in tables 1, 2, 3 and 4 to determine the nutrients of each solution. Record your tests and observations in the tables below.

(i) ***Benedict's test*** **(*04 Marks*)**

*Table **1***

Test		Observations
	A_1	
	A_2	
	A_3	

(ii) ***Biuret test*** (*04 Marks*)

*Table **2***

Test		Observations
	A_1	
	A_2	
	A_3	

(iii) ***DCPIP*** **(*04 Marks*)**

*Table **3***

Test		Observations
	A_1	
	A_2	
	A_3	

(b) From your results, suggest the plant arts that the solutions were obtained from. Explain your answer. **(*02 Marks*)**

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(c) Obtain the stomach from your dissection in question **1** and remove its contents (***Do not squeeze***). Chop it into small pieces on a mortar, grind into a fine paste and add 3cm^3 of water. stir, leave to settle and decant to obtain extract **M**.

Divide the extract equally into three test tubes labelled as **A_1**, **A_2**and **A_3**.

To test tube A_1, add 3cm^3 of solution **A_1** to test tube A_2 add 3cm^3 of solution **A_2** and to test tube **A_3** add 3cm^3 of solution **A_3**. Incubate the test tubes at 35 – 40^{o}C for 20 minutes. After 20 minutes, carry out the tests in tables on the contents of each test tube to establish the effect of extract **M** on solutions **A_1, A_2**and **A_3**.

(i) Record your observations in the tables. **(*06 Marks*)**

Contents	**Observations after 20 minutes**		
	Biuret test	Iodine test	DCPIP test
of test tube $\mathbf{A_1}$			
of test tube $\mathbf{A_2}$			
of test tube $\mathbf{A_3}$			

(ii) Explain your results of the tests with the contents of;

(*04 Marks*)

test tube $\mathbf{A_1}$

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test tube $\mathbf{A_2}$

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test tube $\mathbf{A_3}$

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(iii) From your results in (c)(i), state two properties of the active substances in extract **M.** **(*02 Marks*)**

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3. You are provided with specimens **P**, **Q**, **R**, **S** and **T** which are plant organs.

(a) Identify, with reasons the specimens. **(*03 Marks*)**

Identity.

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Reasons:

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(b) Open specimen **P** and cut the others transversely.

(i) Describe the arrangement of seeds in each of the specimens: **(*10 marks*)**

Specimen **P**

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Specimen **Q**

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Specimen **R**

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Specimen **S**

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Specimen **T**

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(ii) For each specimen, give the descriptive features of the mesocarp. **(*05 Marks*)**

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(c) What advantages does;

(i) **P** has over **R** in dispersal? **(*02 Marks*)**

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(ii) **R** has over **P** in propagation? **(*02 Marks*)**

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(d) Draw one cut section of specimen **Q**. **(*04 Marks*)**

(e) Limiting yourself to the internal structures only described above, construct a dichotomous key to identify the specimens. (*05 Marks*)

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END