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**Each candidate should be provided with**

- A mature freshly killed Toad, labeled **F**.
- A leaf of mature water lily labeled **G**
- A mature commelina plant from open terrestrial environment, labeled **H**
- A mature commelina plant shoot from shade, labeled **I**
- A mature dicotyledonous plant, labeled **J**
- A mature monocotyledonous plant labeled **K**
- 12 test tubes.
- A mortar and pestle
- A microscope , 2 slides and coverslips
- Labels
- Thermometer
- 4 petridishes

**Access to**

- Source of heat
- Reagents for carrying out food tests
- 5% hydrogen peroxide ( $H_2O_2$ ) labeled  $A_1$
- 10% hydrogen peroxide ( $H_2O_2$ ), labeled  $A_2$

Name:.....Index No.....

Signature:.....

P530/3  
BIOLOGY  
PAPER 3  
JULY/AUG 2022  
3 Hours

**ASSHU MBARARA JOINT MOCK EXAMINATIONS 2022**  
**Uganda Advanced Certificate of Education**  
**BIOLOGY**  
**PAPER 3**  
**3 HOURS**

**INSTRUCTIONS TO CANDIDATES**

- This paper consists of three questions
- Answer all questions.
- Write the answers in the spaces provided.
- You are not allowed to start working with apparatus in the first 15 minutes.  
You are advised to use this time to read through the paper and ensure that you have all the apparatus, chemicals and specimens you may require.

**FOR EXAMINERS' USE ONLY**

QUESTION	MARKS	EXAMINER'S INITIALS
1		
2		
3		
TOTAL		

### Question 1

You are provided with a freshly killed animal labeled F.

(a) Examine the hind and fore feet of the animal.

(5 mks)

(i) Draw and label the ventral side of one hind foot

(ii) State the differences between the digits of the hind foot and those of the forefoot. (3 mks)

Fore foot digits	Hind foot digits

- (iii) State the significance of any 3 differences between the fore foot and hind foot to the mode life of the animal. (3 mks)

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- (iv) Identify 3 structures on the head of the specimen that are used for sensitivity and for each structure, describe its suitability to the role it performs. (5 mks)

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(b) Dissect the specimen to display.

- (i) The blood vessels that supply blood to the left hand side of the head, fore limb and lung.
- (ii) The blood vessels that drain the urinogenital system and outer part of the hind limb without displacing the heart.

Draw and label your dissection.

(24 mks)

N.B (Keep your dissection to be used in number 2)

## Question 2

You are provided with solutions  $A_1$  and  $A_2$  prepared from the same lab chemical, but of different molarities

(a) Cut bean- sized tissues from specimen F as follows,

Liver; 4 pieces

Lung; 1 piece

Abdominal wall; 1 piece

Thigh muscle; 4 pieces

Wash off any blood from the tissues and transfer them into petridishes labeled B, C, D and E respectively.

(i) Carryout experiments in table 1 below and record your observations and deductions. (10 mks)

Experiment	Observations	Deductions
1. To $3\text{cm}^3$ of $A_1$ in a test tube, add one piece of B		
2. Repeat the above procedure using one boiled piece of B		
3. To $3\text{cm}^3$ of $A_1$ in a test tube, add one piece of D		
4. To $3\text{cm}^3$ of $A_1$ in a test tube, add one piece of E		
5. To $3\text{cm}^3$ of $A_2$ in a test tube, add one piece of E		

(5 mks)

(ii) Explain the observations in experiment 1 – 3

[illegible]

(iii) What was the purpose of carrying out experiments 4 and 5? (1 mk)

This image shows a single sheet of white paper with ten horizontal dotted lines. The lines are evenly spaced and run across the width of the page, typical of handwriting practice paper. There is no text or other markings on the paper.



(iv) Explain your observations in experiments 4 and 5 (3 mks)

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(b) Boil one piece of tissue B for 3 minutes. Allow the tissue to cool and settle before conducting experiments in

Table 2 . Record your observations and deductions (6 mks)

Experiment	Observations	Deductions
1. To 3cm <sup>3</sup> of A <sub>1</sub> in a test tube, add an unboiled piece of tissue B followed by 2cm <sup>3</sup> of HCl.		
2. To 3cm <sup>3</sup> of A <sub>1</sub> in a test tube, add a boiled piece of tissue B		
3. To 3cm <sup>3</sup> of A <sub>1</sub> in a test tube, add un boiled piece of B followed by 2 cm <sup>3</sup> of NaOH		



(c) Explain your results in table 2

(3 mks)

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(d) From your result, state the nature of the active substance in B and give a reason for your answer.

(2 mks)

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### Question 3

You are provided with specimens G, H, I, J and K. Specimens J and K are whole plants while G, H and I are plant parts. Specimens H and I are of the same plant but from different habitats.

- (a) State the phylum and class to which I belongs and give a reason to support your answer (2 mks)

Classification	Reasons
Phylum	
Class	

- (b) State 3 observable differences between H and I (3 mks)

H	I

- (c) Obtain a small piece of the epidermis from the upper surface of specimen G. Mount each epidermis in a drop of water, one at a time. View under low power of a microscope, count and record the number of stomata in a field of

view, for each surface, in the table below. Repeat the procedure with the leaves of specimens H and I. (6 mks)

Specimen	Surface	No. of stomata
<b>G</b>	Upper	
	Lower	
<b>H</b>	Upper	
	Lower	
<b>I</b>	Upper	
	Lower	

(d)(i) Suggest a suitable habitat from which each specimen was obtained. (3 mks)

**G**.....

**H**.....

**I**.....

(ii) State adaptations of each specimen to its habitat stated in d(i). (9 mks)

Specimen G

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Specimen H

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**Specimen I**

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- (e) Draw and label a stoma from specimen H. (7 mks)

**END**