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

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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.

(i) Draw and label the ventral side of one hind foot (5 mks)

(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 $3cm^3$ 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 $3cm^3$ of A_1 in a test tube, add one piece of D		
4. To $3cm^3$ of A_1 in a test tube, add one piece of E		
5. To $3cm^3$ of A_2 in a test tube, add one piece of E		

(ii) Explain the observations in experiment 1 – 3 (5 mks)

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

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(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 $3cm^3$ of A_1 in a test tube, add an unboiled piece of tissue B followed by $2cm^3$ of HCl.		
2. To $3cm^3$ of A_1 in a test tube, add a boiled piece of tissue B		
3. To $3cm^3$ of A_1 in a test tube, add un boiled piece of B followed by 2 cm^3 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
G	Upper	
	Lower	
H	Upper	
	Lower	
I	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