P530/3
BIOLOGY
Paper 3
July. / Aug. 2022
3 ¼ hours

MATIGO MOCK EXAMINATIONS 2022

Uganda Advanced Certificate of Education

BIOLOGY
(PRACTICAL PAPER)

Paper3

3 hours 15 minutes

INSTRUCTIONS TO CANDIDATES:

This paper consists **three** *sections.*

Answer **all** *questions*

Answers must be written in the spaces provided **not** *anywhere else.*

Use a sharpened pencil to make neat and accurate drawings.

Additional pages must **not** *be inserted.*

For Examiner's Use Only	
1	
2	
3	
TOTAL	

 Turn Over

QUESTION 1: 75 minutes (40 marks)

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

a) Describe the structure of the hind foot from the ventral view. *(3 marks)*

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b) Draw and label the features labeled in the head region from the ventral view. *(7 marks)*

c) Show how any **four** of the features labeled above are adapted for the survival of the specimen in its habitat. *(4 marks)*

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d) Pin the specimen with the dorsal side lying on the board and dissect to display;

i) The major muscles in the thorax and proximal part of the left fore limb.
ii) The blood vessels that drain the left thigh plus abdominal structures with alimentary canal cut and removed.
iii) Draw and label the structures displayed in **(i)** and **(ii)** above in one drawing. *(26 marks)*

QUESTION 2: 60 minutes (30 marks)

2. You are provided with solutions $\mathbf{A_1}$ and $\mathbf{A_2}$ of the same compound but different molarity.

a) Cut popcorn sized tissues from specimen **W** that you dissected in **question 1**. Wash off any blood and transfer the tissues into separate petri dishes labeled as follows;

- **B**: Four pieces of liver
- **C**: Fur from the neck region
- **D**: One piece from the abdominal wall
- **E**: Four pieces of muscle from the thigh

i) Carry out experiments in **table 1** below and record your observations and deductions. *(10marks)*

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

ii) Explain the observation in experiments **1 - 3**. *(6 marks)*

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

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iv) Explain your observations in experiment **4** and **5**. *(3 marks)*

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a) Boil one piece of tissue **B** for 3 minutes and strongly heat half a spatula endful of substance **F** for the same duration. Allow the tissue and substance to cool. Carryout the following experiments and record your observations in **table 2** below. *(5 marks)*

Experiments	**Observations**
To $1cm^3$ of $\mathbf{A_2}$ in a test tube, add one un boiled piece of tissue **B** followed by $2cm^3$ of HCl after 1 minute.	
To $1cm^3$ of $\mathbf{A_2}$ in a test tube add one boiled piece of tissue **B**.	
To $3cm^3$ of $\mathbf{A_2}$ in a test tube add heated substance **F**.	

i) Explain the results in **table 2** above. *(4 marks)*

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ii) From you results in **table 2**, suggest the nature of substance **F** and give a reason for your answer. *(1 marks)*

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QUESTION 3:60 minutes (30 marks)

3. Examine specimens **X**, **Y** and **Z** and answer the questions that follow;

a) i) Describe the structure of specimens **X** and **Y**.

Structure of specimen **X** *(4 marks)*

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Structure of specimen **Y** *(3 marks)*

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ii) How does each specimen benefit from its structural uniqueness as described in a **(i)** above?

Specimen **X**. *(2 marks)*

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Specimen **Y**: *(2marks)*

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b) i) Carefully remove a whole floret from the inner part of specimen **X** and observe under a microscope. Draw, but label only the fully exposed floral parts.

(5.5 marks)

ii) Repeat the procedure in b **(i)** above for a floret from the periphery of specimen **X**. Give **one** outstanding difference and **two** similarities in the structure of the florets.

Difference. *(1 mark)*

Floret from the inner part of specimen X	**Floret from the periphery of specimen X**

c) **Similarities**. *(2 marks)*

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d) Remove a mature floret from specimens **Y** and **Z**. Open the florets longitudinally and observe each floret using a hand lens. Describe ;

i) The floret from specimen **Z**. *(5 marks)*

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ii) A floret from **Y** using a floral diagram. *(5.5 marks)*

END