NAME……INDEX NO…….

P530/3
BIOLOGY
(Practical)
Paper 3
$3^{1}/_{4}$ hours

RESOURCEFUL MOCK 2023

Uganda Advanced Certificate of Education

BIOLOGY
(PRACTICAL) **Paper**
3

3 hour 15 minutes

INSTRUCTIONS TO CANDIDATES:

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

*Answer **all** questions*

Write the answers in the spaces provided. **No** *additional sheets of paper must be inserted in this booklet.*

*You are **not** allowed to start working within 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 Signature and No.**
1		
2		
3		
Total		

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

a) Examine the hind limb of the specimen and give three observable adaptive features that Enable the specimen to survive in its habitat. ***(3 marks)***

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ii ……..

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iii. ……

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b) Describe the role of the skin in the effecting the following functions.

i. locomotion ***(02 marks)***

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ii. Respiration ***(02 marks)***

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iii. Protection ***(02 marks)***

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(c) Dissect specimen P to display superficial structures posterior to head region on the ventral side. Draw and label muscles displayed ***(14 marks)***

(d) By further dissection, cutout the gut (keep it for question 2) display routes of blood flow
(i) Returning blood from the left anterior half of the specimen excluding those in the head region
(ii) Supplying the left kidney and right hind limb. With the heart displaced anteriorly draw and label your dissection. ***(17 marks)***

2. You are provided with solutions A, B and C and specimen T.

a. You are required to carry out the following tests on solutions A, B and C.***(13$\frac{1}{2}$ marks)***

Procedure	Solution	Observation	Conclusion
Iodine test	A		
	B		
	C		
Reducing sugar test	A		
	B		
	C		
Burette's test	A		
	B		
	C		

(b) Dissect specimen T to expose the abdominal viscera and the walls of the buccal cavity. Using a pair of scissors, dissecting blade and forceps to obtain a tissue of1cm^2 respectively. Crush each tissue in a mortor to form extract D (from the stomach wall) and E (from the buccal cavity).

Treatment

Test tube 1	$2cm^3$ of D + $2cm^3$ of A
Test tube 2	$2cm^3$ of D + $2cm^3$ of B
Test tube 3	$2cm^3$ of D + $2cm^3$ of B and boil for 2 minutes
Test tube 4	$2cm^3$ of E + $2cm^3$ of A
Test tube 5	$2cm^3$ of E + $2cm^3$ of B
Test tube 6	$2cm^3$ of E + $2cm^3$ of A and boil for 2 minutes

b. Incubate the six test tubes at 35 to 40°C for thirty minutes in water bath. Record your observations in the table below.

(09 marks)

Procedure	Test tube	Observation	Conclusion
Burette's test	1		
	2		
	3		
Reducing sugar test	4		
	5		
	6		

(d)Explain your observations in;

i. Test tube 1 ***(02 marks)***

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ii. Test tube 4 ***(03 marks)***

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iii. Test tube 6 ***($2\frac{1}{2}$ marks)***

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3. You are provided with seeds of two contrasting colours representing factors for inheritance in plants. Label the envelopes provided **A** and **B**.

In the envelopes put seeds of contrasting colours as in rounds X. Y and Z in table of instructions. Rounds Y and Z represent crosses of subsequent generations carried out.

(a) (i) Table of instructions

	Envelope **A**	Envelope **B**
Round **X**	20 white seeds(W) 20 black seeds(B)	20 black seeds(B) 20 white seeds(W)
Round **Y**	20 white seeds(W) 12 black seeds(B)	12 black seeds(B) 20 white seeds(W)
Round **Z**	20 white seeds(W) 06 black seeds (B)	06 black seeds (B) 20 white seeds(W)

(ii) Starting with round **X,** shake the seeds in each envelope thoroughly, without hesitation and looking into the envelope, pick one seed from each envelope to make a pair. Place the envelopes back carefully taking care not to spill the seeds out. Transfer the pairs of seeds picked into petri dishes labelled WW. WB and BB. Corresponding to the colours of the pairs picked. Continue picking seeds from both envelopes till the envelopes are empty. Count the number of pairs of seeds in each petridish and record in the table below.

(iii) Repeat the procedure in a(ii) above to obtain results for rounds Y and Z.

Table of results ***(09marks)***

Rounds	X			Y			Z		
No. of pairs	WW	WB	WW	WW	WB	BB	WW	WB	BB
Ratio									

(b) From your results in round X, suggest giving reasons what the following represent in genetics:

(i) Black and white colour of seeds. ***(02 marks)***

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(ii) Envelope A and B ***(02 marks)***

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(iii) Procedure of picking seeds**.** ***(02 marks)***

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(iv) Procedure of pairing seeds ***(02 marks)***

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(c) Explain why the envelopes were shaken thoroughly before seeds are picked.

(02marks)

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(d) Suggest and explain the genetic principles exhibited by the results obtained in;

i) Round X ***(03 marks)***

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ii) Round Y and Z ***(04 marks)***

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(e) (i) With evidence deduce the type of selection taking place ***(02 marks)***

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(ii) With explanations predict, what will happen if the crosses were continued in further subsequent generations ***(02 marks)***

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END©MS