Name:.....Signature.....

Index No. ....

P 530/3 BIOLOGY PRACTICAL PAPER 3 3 HOURS 15 MINS

## 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 your answers in the spaces provided.
- Additional sheets of paper MUST not be inserted in this booklet.
- Read the questions carefully then organize your answers, present them precisely and logically.

1	
2	
3	
TOTAL	

#### FOR EXAMINER'S USE ONLY

Question 1(70 Minutes, 42 marks)

You are provided with specimen **T** which is freshly killed.

(a) Examine the external features of specimen. State four features necessary for aquatic existence of the specimen.	(04 marks)
(b) Place the specimen on its back.	
(i) Draw the left fore and hind limbs of the specimen without str	retching them.
Do not label.	(06 marks)

Fore limb

Hind limb

(ii) Account for the difference in the shape of the two limbs as drawn in (b) (i) above. (01 mark)

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(c) Dissect the specimen to display the heart and blood vessels supplying blood to the left forelimb and abdominal structures.Draw and label your dissection.(32 marks)

## Question 2(65 minutes, 30 marks)

You are provided with specimens  $N_1$  and  $N_2$  which are parts of fruits at different stages of development, and specimen  $N_3$  which is a plant organ. Use them to answer the questions that follow.

(a) Using a knife/scalpel, peel specimen  $N_1$  and cut out a piece measuring 3cm by 3cm. Using a mortar and pestle, grind the piece from  $N_1$  into a paste, add 10cm<sup>3</sup> of water, stir well and leave to settle. After settling, decant off the solution and label it solution E. Repeat the procedure using the piece from specimen  $N_2$  and label it solution F. Carry out an Iodine test, a Benedict's test and Biuret's test on each solution. Record your observations and deductions in table 1. (12marks)

Tests	Solution	Observation	Deduction
Iodine test	E		
	F		
Benedict's test	E		
	F		
Biuret's test	E		

	F		
(b) (i) Explain how the di	stribution	of food substances in solution I	E and F relate to the
development of the fr	uit from w	hich specimens $N_1$ and $N_2$ were	obtained. (04marks)
(ii) From the results i	n table 2, c	omment on the suitability of sp	ecimen $N_1$ and $N_2$ as
the main diet for a yo	ung growin	g child.	(02marks)

- (c) Using a knife, peel specimen  $N_3$ , cut out a cube measuring 2cmX2cmx2cm. Using s mortar and pestle, crush it. Add  $10cm^3$  of water to it. Stir then decant the liquid part into a test tube.
  - (i) Carry out the following tests on solution, using the reagents provided. Record your tests, observations and deductions in table 2 below. (09 marks)

Tests	Observations	Deductions
Iodine test		
Benedict's test		
Biuret's test		

(ii) From your results in (c)(i) above, suggest the age group would you recommend to include specimen N<sub>3</sub> in its diet. Give a reason for your answer. Age group (01mark)
Reason (02 marks)

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# Question 3(45 minutes, $22\frac{1}{2}$ marks)

You are provided with specimen **V** and solution  $H_1$  and  $H_2$ .

(a) Exan	nine specimen V and state how it is adapted to its functions.	(05 marks)
(i)		
(ii)		
(;;;;)		
(III)		
(iv)		
		••••••

(b) Obtain four thin strips from the lower epidermis of specimen V and place them in water in a petri dish.

Labe two petri dishes as  $H_1$  and  $H_2$  and pour into each the corresponding solutions  $H_1$  and  $H_2$ .

Transfer two strips of specimen V into solution  $H_1$  in the petri dish.

Transfer the remaining two strips of specimen V into solution  $H_2$  in the petri dish. Leave the set up to stand for 20 minutes.

After 20 minutes;

(i) Remove one strip from solution  $H_1$  and mount it in a drop of solution  $H_1$  on a microscope slide. Observe under medium power of a microscope.

Draw and label two adjacent cells.

 $\left(06\frac{1}{2} \text{ marks}\right)$ 

Remove one strip from solution  $H_2$  and mount it in a drop of solution  $H_2$  on a (ii) microscope slide. Observe under medium power of a microscope. Describe the appearance of the cell parts. (03 marks) ..... ..... ..... (c) Explain the effect of each of the solutions  $H_1$  and  $H_2$  on the cells of specimen V. (05 marks) Solution  $H_1$ (i) (ii) Solution *H*<sub>2</sub> ..... . . . . ..... (d) From your observation, what is the significance of the effect of solutions  $H_1$  and  $H_2$ to the plant from which specimen V was obtained? (03 marks) Solution *H*<sub>1</sub> (i) ..... ..... (ii) Solution *H*<sub>2</sub> ..... .....