Name:.....

Signature:.....School: .....

P530/3
BIOLOGY
(Practical)
Paper 3
Jul/Aug. 2024
3¼hours

UGANDA TEACHERS' EDUCATION CONSULT (UTEC)

Uganda Advanced Certificate of Education

BIOLOGY

(Practical)

Paper 3

3 hours 15 minutes

INSTRUCTIONS TO CANDIDATES:

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

*Answer **all** the questions*

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

*You are **not** allowed to start working with 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 require.*

For Examiner's Use Only		
Question	**Marks**	**Examiner's Signature & No.**
1		
2		
3		
Total		

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

(a) Describe how the following structures of specimen **P** are adapted to their functions.

i) Ear drum (02 marks)

.....

.....

ii) Mouth (02 marks)

.....

.....

(b) Observe the hind and fore feet of specimen **P**.

(i) State **two** structural differences between them. (01 mark)

.....

.....

(ii) State how the hind foot is adapted to locomotion. (02 marks)

.....

.....

(iii) Examine the left hind foot fully. Draw and label.

(04 marks)

(c) (i) Stretch both the left fore and hind limbs of the specimen. Measure their length and record in mm. (01 mark)

Fore limb = ...

Hind limb = ...

(ii) State the ratio of fore limb length to hind limb length. *(01 mark)*

.....

.....

(iii) State the significance of the above length ratio in locomotion of the specimen. *(07 marks)*

.....

.....

(d) Dissect specimen **P** to open the body cavity. Display vessels carrying blood from the mouth floor and upper trunk region. Carry out the necessary displacement to also expose blood vessels that supply blood to the abdominal structures responsible for chemical digestion of food and removal of metabolic wastes.
Draw and label your dissection with a displaced heart. *(25 marks)*

2. You are provided with specimen **K** and **L** from the same plant and solutions **A**, **B** and **C**. Cut two cubes from each specimen;

(a) Crush one cube from specimen **K** in a motar using a pestle to form a paste. Add $10cm^3$ of water and stir well to form an extract. Pour off the extract into a test tube labelled as T_1. Repeat the same procedure in (a) above with specimen **L** and label as T_2.

(b) Carryout food tests on extracts in the test tubes T_1 and T_2 using the reagents provided in order to determine their nutrient levels. Record your tests, observations and deductions in the tables below. (17 marks)

TESTS	OBSERVATIONS	DEDUCTIONS
Buiret's test	T_1	
	T_2	
Iodine test	T_1	
	T_2	
Benedict's test	T_1	
	T_2	

(c) (i) Explain the differences in the nutrient levels of extracts in T_1 and T_2. (06 marks)

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

(ii) State the factor being investigated in the table 1 above. (01 mark)

.....

.....

(d) (i) Cut the remaining cube obtained from specimen **K** into two equal halves and place them in separate test tubes labeled T_3 and T_4. Repeat this procedure with the cube obtained from specimen **L**, label the test tubes as T_5 and T_6. Treat the test tubes $T_3 - T_6$ as below;
To T_3 add $1cm^3$ of solution A and $2cm^3$ of solution B.
To T_4 add $2cm^3$ of solution B
To T_5 add $1cm^3$ of solution C and $2cm^3$ of solution B
To T_6 add $2cm^3$ of solution B.

(ii) then observe what happens in test tube and record your observations and deductions in table 2 below. (08 marks)

Table 2

TEST TUBES	OBSERVATIONS	DEDUCTIONS
T_3		
T_4		
T_5		
T_6		

(e) Explain your results obtained in each test tube $T_3 - T_6$. (08 marks)

T_3 : .....

.....

T_4 : .....

.....

T_5 : .....

.....

T_6 : .....

.....

(f) Outline two properties of the active substance in the specimens being investigated in (d) above. (02 marks)

.....

.....

3. You are provided with specimens **Q,R,S** and **T** which are all plant organs.

(a) Cut specimens **Q**, **R** and **S** transversely and open specimen **T** longitudinally.
Identify the specimens with a reason. (02 marks)

Identity : .....

Reason

.....

.....

(b) By observing the seeds and their arrangements, state;

(i) Two common features exhibited by specimens **Q**, **R** and **S**. (02 marks)

.....

.....

.....

(ii) One feature unique only to specimen **R**. (01 mark)

.....

.....

(c) Describe seed arrangement in each of the following;

(i) Specimen **Q** (02 marks)

.....

.....

.....

(ii) Specimen **S** (02 marks)

.....

.....

.....

(d) With a reason, state the mode of dispersal of specimen **Q**. (02 marks)

Dispersal : .....

Reason : .....

.....

.....

(e) Examine the sections of specimens **R** and **T**. Draw and label their structural plans in the spaces provided.

Specimen **R** (04 marks)

Specimen T (04 marks)

END

Each candidate MUST be provided with the following:

A mature freshly killed toad, labeled **P**

A large raw matooke finger labeled **K**

A large ripe matooke finger labeled **L**

5cm^3 of 2M hydrochloric acid labeled **A**

5cm^3 of 0.2M sodium hydroxide labeled **C**

20cm^3 of 20% hydrogen peroxide labeled **B**

NB: Specimens **K** and **L** should be obtained from the same plant.

Fresh passion fruit labeled **Q**

Fresh raw pawpaw fruit labeled **S**

Fresh bean pod labeled **T**

Fresh orange fruit **R**

10 test tubes

A mortar and a pestle

Labels

A ruler

A 20cm long thread

A knife

Access to;

Reagents for food tests

Source of heat

Distilled water

END