NAME: ..... INDEX NO: .....

P530/3
Biology
Practical
Paper 3
July 2024
3 ¼ hours

ACEITEKA JOINT MOCK EXAMINATIONS 2024

Uganda Advanced Certificate of Education

Biology

PRACTICAL

Paper 3

Time: 3 Hours 15 Minutes

Instructions

- *Answer all questions in the space provided.*
- *Make neat clear drawings where necessary.*

1. You are provided with a freshly killed specimen **Q**

(a) Examine the fore and hind limbs and with two reasons, state the habitat of the animal. *(03marks)*

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b). Place the animal ventral side uppermost. Open the mouth and cut through the angle of the jaw of the left side of the animal and display the buccal cavity of the animal.

c). Dissect the specimen to expose the alimentary canal. Deflect the stomach to the left, the liver lobes to the sides and turn thebulk of the duodenum and ileum to the left. Draw and label

(i) the roof of the buccal cavity

(ii) blood drainage to structures on the abdominal left from the heart. *(13 marks)*

(d)(i) Identify the sex of specimen **Q**. *(01 mark)*

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(ii) Examine the structures used in sex identification of the specimen. Describe the structures usedto determine the sex of the specimen. *(02 marks)*

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(f) (e) Cut out and discard the alimentary canal.

Dissect further to display

(i) the blood vessels supplying blood to the right upper trunk region.

(ii) the blood vessels returning blood back to the heart from the left side of the head

(iii) the blood vessels that return blood from the left hind limb with the heart undisplaced.

Draw and label *(18 marks)*

2. You are provided with solutions **Y**, **X**, and **Z**. Solutions **X** and **Y** contain food nutrients. You are required to carry out tests to determine the food nutrients contained in the solutions and investigate the action of solution **Z** on solutions **X** and **Y** following the instructions provided.

(a) Carry out the iodine and Buiret's testson solutions **X** and **Y** and record your tests, observations anddeductions in the table. *(12 marks)*

Test	Solution	Observations	Deductions
Iodine Test	**X**		
	Y		
	Z		
Buiret's Test	**X**		
	Y		
	Z		

Label the test tubes **X** and **Y**, add to each of them $2cm^3$ of the corresponding solution followed by $2cm^3$ of solution **Z**. To two other test tubes labeled X_1 and Y_1, add $2cm^3$ of the corresponding solution, add 3 drops of HCl followed by 2 cm^3 of solution **Z**. To two other test tubes labeled X_2 and Y_2, add $2cm^3$ of the corresponding solution followed by $2cm^3$ of solution **Z**. Incubate

the mixtures **X**, **Y**, **X_1** and **Y_1** at a temperature of 37^0C- 40^0C for 20 minutes. Maintain test tubes **X_2** and **Y_2** on the test tube rack for 20 minutes. (You may proceed with other work in the meantime)

After 20 minutes, carry out the iodine and Buiret's tests and record your observations in the following table. ***(12marks)***

Test	**Solutions**	**Observations**
Iodine test	X + Z	
	Y + Z	
Buiret's test	X + Z	
	Y + Z	

(b) (ii)

Test	Solutions	Observations
Iodine test	X_1 + Z	
	Y_1 + Z	
Buiret's test	X_1 + Z	
	Y_1 + Z	

Test	Solutions	Observations
Iodine test	X 2+ Z	
	Y2 + Z	
Buiret's test	X2 + Z	
	Y2 + Z	

(i) Suggest explanations for your results in (b) *(08marks)*

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3. You are provided with plant specimens **A, B, C, D** and **E** which are reproductive parts. Using a hand lens, examine the specimens and answer the questions that follow.

(a) Describe the androecium and gynoecium of each of the specimens **A, B** and **C**.

(12 marks)

Table 2

Specimen	Androecium	Gynoecium
A		
B		
C		

(b) Observe the structure of specimen **A**, and state with a reason the type of pollination inthe specimen

(02marks)

Type of pollination

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Reason

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(c) Carefully remove the calyx and the corolla from the specimen **E**.

(i) Observe one large petal and any one of the adjacent petals and using the graph paper provided, work out the surface area of each of the petals. *(3marks)*

(ii) Calculate the ratio of the surface area of the large petal to that of the adjacent petal. Show your working *(2 marks)*

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(iii) Relate the ratio in (c) (ii) above to the adaptation of the specimen to its mode of pollination *(2 marks)*

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(d) Examine the gynoecium of specimens **D** and **E**. State two differences. *(2marks)*

D	**E**

(e) In the space below, draw and label the androecium of specimen **C** *(5marks)*

(f) Using features of the gynoecium only, construct a dichotomous key to identify specimens **A, B, C** and **D**. *(3 marks)*

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Number 1

- Freshly killed frog Q
- Kit
- Dish
- Wash bottle
- Pins
- Thread
- Cotton wool

Number 2

- Blended unripe pawpaw solution Z
- Solution X (15 cm^3) 0.5 g in 1000cm , 10 mls of egg albumen
- Solution Z (15 cm^3) 0.1 g in 1000cm , 30 mls of egg albumen
- $CuSO_4$ solution
- Iodine solution
- NaOH solution
- 2M HCl
- Droppers
- 8 test tubes
- 3 Boiling tubes X, Y, Z
- Plastic beaker
- Labels
- Thermometer

Number 3

- *Flower* A Bougainvillea
- Flower B Banana
- Flower C Gynandropsis gynandra
- Flower D Morning glory
- Flower E Crotolaria
- Pin
- Hand lens
- **Graph paper**