

Name..... Centre /Index No

School Signature

P530/3
BIOLOGY
(Practical)
PAPER 3
July/August 2019
3¹/₄ hours



WAKISSHA JOINT MOCK EXAMINATIONS

Uganda Advanced Certificate of Education

BIOLOGY PRACTICAL

Paper 3

3 hours 15 minutes

INSTRUCTIONS TO CANDIDATES:

- *This paper consists of **three** questions.*
- *Answer **all** questions.*
- *Answers must be written in the spaces provided.*
- *Additional sheets of paper must **not** be inserted in this booklet.*

FOR EXAMINER'S USE ONLY		
Question	Marks	Examiner's signature
1		
2		
3		
Total		

1.

You are provided with specimen O which is fleshly killed. Examine the specimen and answer the questions that follow:

- a) (i) Using any two abdominal features, state the order to which the specimen belongs. (1½ marks)

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- (ii) Remove and anteriorly observe the whole mouth part associated with the three segments of left maxillary palp under low power magnification. Draw and label. (8 marks)

- b) Cut off the legs and left wings of the specimen. With the dorsal side upper most, stretch out the right wings away from the thorax. Draw and label structures on the thorax including two abdominal segments. (10½ marks)

- c) Pin the specimen and dissect it along the left lateral line. Displace the dorsal cuticle to display all parts of the gut. Cut and remove parts of the gut not involved in digestion of food. Draw and label the internal structures of the animal with remaining parts of the gut displaced. (22 marks)

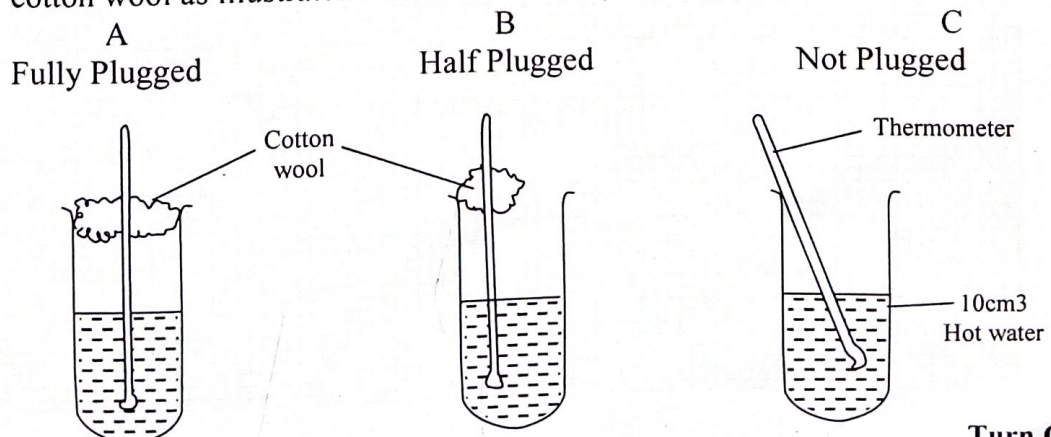
2.

60 MINUTES (32 marks)

You are provided with three boiling tubes, boiled water and cotton wool.

a) Experiment 1:

To each tube, add 10cm³ of boiled water at temperature 60°C. Immediately plug cotton wool as illustrated below:



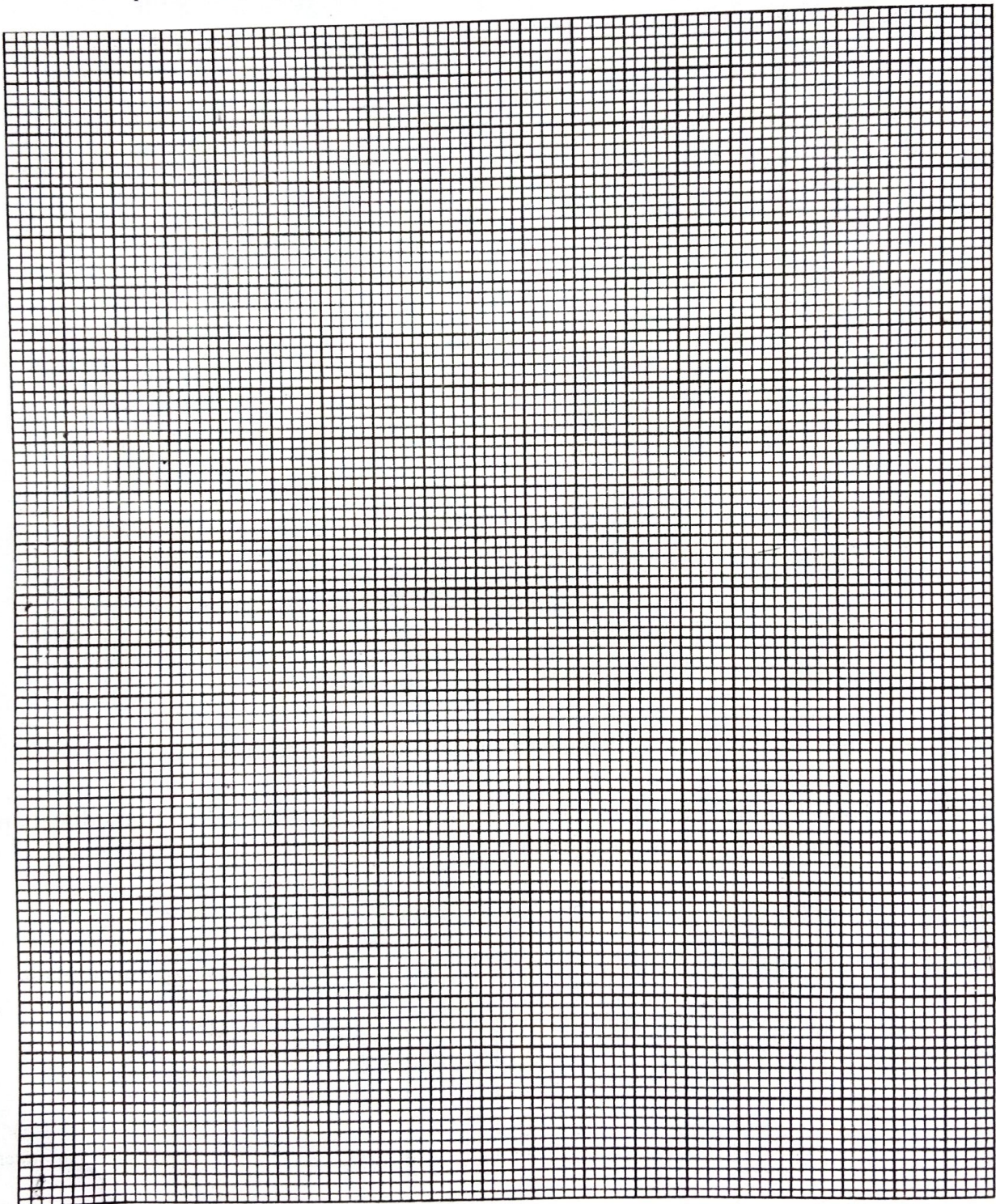
Turn Over

Record temperature at 2 minutes interval from each tube for 10 minutes.
Enter your results in Table 1 below:

(06 marks)

TUBES	TIME IN MINUTES					
	0	2	4	6	8	10
A	60°C					
B	60°C					
C	60°C					

- (i) Using the data in the table above and on the same axes, plot a graph of temperature ($^{\circ}\text{C}$) against time (minutes). (06 marks)



- (ii) From the graphs, compare the trends in temperature change for tubes A, B, and C. (04 marks)

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- (iii) Explain the differences (if any) in the trends of temperature change in the three tubes and relate this to similar occurrence in animals occupying varied habitats. (4½ marks)

Tube A

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Tube B

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Tube C

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- b) Experiment 2:
Boil 10 cm³ of water in Tubes A₁, B₁, and C₁ as below; and record the temperature change of the water as follows.
Tube A₁ – boil for 2 minutes, record temperature immediately and after 2 minutes.
Tube B₁ – boil for 4 minutes, record temperature immediately and after 2 minutes.
Tube C₁ – boil for 6 minutes, record temperature immediately and after 2 minutes.
Record your results for each tube in Table 2 below: (03 marks)

TUBES	A ₁	B ₁	C ₁
TEMPERATURE IMMEDIATELY AFTER BOILING			
TEMPERATURE AFTER 2 MINS			

- i) Compare the results in Tables 1 and 2 above
Similarity: (01 marks)

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Differences:

(02 marks)

TABLE 1	TABLE 2
1.	
2.	

- ii) Explain the effect of duration of boiling on heat gained in Table 2 for the three tubes. (03 marks)

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- c) Relate the results of experiments 1 and 2 to biotic systems in nature. (03 marks)

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(26 Marks)

You are provided with specimens K, L, M and N which are from different plants. Examine each specimen using a hand lens where necessary and answer the following questions:

- a) From the structures observed, state the identity of the specimens giving reason(s). Identify; (½ mark)

Reasons; (01 mark)

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- b) Describe the structure of specimens K and M. K (04 marks)

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M

(03 marks)

- c) (i) Remove a single floret from specimen L and inner parts of specimen K. Examine each of the florets in detail and describe each part:

	K	L
Petals	1.	
	2.	
Androecium	1.	
	2.	
Gynoecium	1.	
	2.	

(06 marks)

- (ii) Open one floret removed from Specimen L. Draw one half of the specimen and label. (6½ mark)

Turn Over

Using the essential reproductive parts only; Construct a dicotomous key to identify the specimens in order L, K, M and ending with N. (05 marks)

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END

Each candidate must be provided with

No. 1

✓ Mature cockroach (Freshly killed)

- Microscope (can be shared)

✓ - Hand lens

✓ - Dissecting board

✓ - Measuring cylinder (10 ml)

- Ruler

No. 2

✓ 3 boiling tubes

✓ Stop clock

✓ 3 thermometers (same type)

- Boiled water

- Cotton wool.

No. 3

K – *Bidens pilosa* (Black jerk) – Inflorescence

L – Mature male maize inflorescence

M – Mature guinea grass – inflorescence

N – Cassia inflorescence

