

Candidate’s name.....
Index No.....Sign.....

P530|3
BIOLOGY PRACTICAL
Paper 3
July/August 2019
3¼ hours.



WESTERN JOINT MOCK EXAMINATIONS
Uganda Advanced Certificate of Education
BIOLOGY PRACTICAL
Paper 3
3Hours 15Minutes.

- INSTRUCTIONS TO CANDIDATES:**
- This paper consists of **three** questions
 - Answer **ALL** questions
 - Write the answers in the space provided. Additional sheets of paper **MUST NOT** be inserted in the 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 EXAMINER’S USE ONLY		
Question	Marks	Examiner’s signature and No.
1		
2		
3		
TOTAL		

1. You are provided with a freshly killed specimen T.
- (a) (i) Identify the sex of the specimen. Draw and label those external features which help to determine the sex of the specimen. (07 marks)

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(ii) List those characteristic external features which would be found on a specimen of the opposite sex. (03 marks)

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- (b) Observe the lateral sides of the specimen using a hand lens.
- (i) How many spiracles are found in the;
- Thoracic region?

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Abdominal region?

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02 marks)

(ii) Strip off a piece of tissue bearing a spiracle from between the first and second legs. Place it on a slide with the spiracle upper most. Mount it in a drop of water and place a cover slip on. Examine under low/medium power of a microscope. Make a large labeled drawing of the thoracic spiracle.
(06 marks)

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(iii) Using the same procedure as in (ii) above, mount and examine a spiracle from the abdominal region. Point out three observable differences between the thoracic and abdominal spiracles.(04 marks)

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(c) Remove the wings of the specimen. Pin down the specimen on the dissecting board with the dorsal side uppermost. Lift the free edge of the tergum in the middle of the abdomen. Cut away at each side and free the underlying tissue as the tergum is raised. Cut the anterior edge of the tergum and remove all the terga except the posterior most. Avoid damaging the organ.

(i) List the visible structures after removing the terga. (01 mark)

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(ii) Make a fully labeled drawing of the digestive system displaced to the right. (14 marks)

(iii) Remove the unnecessary materials and expose the nervous system. Draw and label it in the space below. (08 marks)

2. You are provided with specimen M and sucrose solutions of different concentrations A, B, C, D and E. Cut a piece of stem from specimen M of 3cm in length. Cut it longitudinally into four equal pieces. Obtain a fifth piece of stem following the same procedure. Put each piece of stem into the respective sucrose solution A, B, C, D, and

E in petri-dishes at the same time. Leave the set up to stand for 40 minutes (meanwhile you can proceed with other work). Peel off the lower epidermis from the leaf of specimen M and place one strip in each of the following solutions A, B, C, D and E in petridishes at 5minutes intervals. After 10 minutes, mount one epidermal strip from each solution on a glass slide and examine under medium power of a microscope. Select an area with uniform distribution of cells that have a purple pigment and count 20 cells. Count the number of plasmolysed cells out of the 20 coloured cells initially counted.

(a) (i) Compute the percentage plasmolysis and enter your results in the table below. (07½ marks)

Sucrose solution	Number of plasmolysed cells	Percentage plasmolysis
A		
B		
C		
D		
E		

(ii) Plot a graph of percentage plasmolysis with/against sucrose solutions on a graph paper provided. (06½ marks)

(iii)On your graph, mark point P to show the solution that would cause half the number of the cells to get plasmolysed. (01 mark)

(b) After 40 minutes, observe the pieces of stems from the solutions. Note the direction of curvature in relation to the cut surface and the degree of curvature. Record your observations in the table below. (05 marks)

Piece of stem from solution	Direction and degree of curvature
A	
B	
C	
D	
E	

(c) From your results of this experiment,
 (i) Suggest the solution with the concentration nearest to that of the cell sap of specimen M. Explain your answer (05 marks)

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(ii) Arrange the sucrose solutions in order of increasing water potential. Explain your answer. (05 marks)

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(d) Suggest the ecological significance of your observations from the above table in (b) above. (03 marks)

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3. You are provided with specimen P. Mount it on a slide and cover with a coverslip. Observe under the medium power of a microscope.

(a) Identify with three reasons the specimen.
Identify of P.

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Reasons:-

(07 marks)

[illegible]

Habitat:

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Adaptations:

(i)
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(ii)
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END