

Name.....Combination.....
Signature.....

EASTERN WING EXAMINATION OBSERVORS.
UGANDA ADVANCED CERTIFICATE OF EDUCATION.
SENIOR FIVE.
BIOLOGY PAPER 3.
P530/3.
3 HOURS AND 15 MINUTES.

Instructions.

- This paper has three questions. Attempt all the questions.
- Write your answers in the spaces given. Answers written on another sheet of paper will not be marked.
- All drawings should be made in a sharp pencil. Drawings made in pen or crayons will not be marked.
- Silent non programmable calculators may be used.
- Maintain neatness and a good handwriting.

For examiners' use only.

QUESTION	MARKS SCORED	INITIALS
1		
2		
3		

You are provided with specimen K which is a freshly killed animal.

- (a) State the phylum to which the specimen belongs. Give three structural features to support your answer.

Phylum.

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Observable structural features.

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- (b) Using a hand lens, observe the following structures on the head. State four descriptive features of the following parts.

- (i) Antennae.

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- (ii) Eyes.

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- (iii) Mandibles.

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- (c) (i) Lay the specimen on a soft board fitted with a plain sheet of paper. Cutoff the left fore outer wing and the left inner wing. Spread the outer wing on a graph paper and spread it fully. Trace to obtain the outline using a pencil. Remove the wing from the graph paper and then calculate the area. Record your answer in the table below. Unfold fully the inner wing fully and repeat the same procedure. Record in the table below.

Wing	Area
Outer wing	
Inner wing	

(Please hand in the graph paper on which you have traced)

- (ii) Explain the relevance of area of each wing to its function.

Outer wing.

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Inner wing.

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- (d) How is the left hind leg suited for the survival of the specimen in its habitat?

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- (e) Cutoff the antennae and all the limbs. Lay the specimen dorsal side uppermost. Cut along the right lateral line from the thorax to the abdomen. Pull the dorsal cuticle to the left of the specimen. Remove the fatty materials to expose the structures fully without displacing any in on both the ventral and dorsal cuticles. Draw and label your dissection.

2 You are provided with solutions X and Y. Carry out the following tests on X. Record your tests, observations and deductions in the table below.

Test	Observation	Deduction
Starch test.		
Reducing sugar test.		
Non reducing sugar test.		
Protein test.		

(b) Label three test tubes as 1, 2 and 3. Then add to each test tube the contents as described in the table below.

Test tube	Contents
1	1 cm ³ of X + 1 cm ³ of hydrochloric acid solution + 1 cm ³ of Y.
2	1 cm ³ of X + 1 cm ³ of sodium hydroxide solution + 1 cm ³ of Y.
3	1 cm ³ of X + 1 cm ³ of Hydrochloric acid + 1 cm ³ of boiled and cooled Y.

Insert all the test tubes with their contents in warm water maintained at 38° C for 30 minutes.

(You may proceed with another work in the meantime).

After 30 minutes, carryout the Benedict's test on the contents in each test tube. Record your observations and deductions in the table below.

Test tube	Observations	Deductions
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2		
3		

(c) Explain your results in each test tube.

(i) Test tube 1.

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(ii) Test tube 2.

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(iii) Test tube 3.

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(d) Suggest two properties shown by the active substance in Y.

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(e) (i) Giving one reason in each case, suggest the;

Nature of solution Y.

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Reason.

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Identity of the active substance in Y.

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Reason.

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3 You are provided with specimens L and M.

Using a knife or scapel, cut through specimen M longitudinally to obtain two halves.

(a) (i) Describe the fleshy leaves.

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(ii) State how the specimen is adapted to survive in its habitat.

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(b) Peel-off one thin layer from the upper epidermis of one leaf of specimen M. Put one layer on a microscope slide, add one drop of water and then cover with a cover slip. Then observe under medium power of the microscope.

(i) Describe the cells observed.

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(ii) Draw and label three neighboring cells as observed under medium power of a microscope.

(c) Place one filament of specimen L on a microscope slide. Add one drop of water and then coverslip. Observe under low power of the microscope.

(i) State the mode of nutrition in L. Give one reason for your answer.

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Reason

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(ii) Habit of L. Give one reason for your answer.

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Reason

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(iii) Mode of asexual reproduction in L. Give one reason for your answer.

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Reason

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(d) Describe five adaptations of specimen L to survive in its habitat.

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(e) Draw and label two neighboring cells in L as observed under low power of the microscope.

END

Confidential

- ✓ K-Freshly killed cockroach.
- ✓ X-5g of sucrose dissolved in 100 cm³ of distilled water.
- ✓ Y-5g of yeast dissolved in 50 cm³ of distilled water and kept for 1 day in a tightly closed container.
- ✓ L-Spirogyra.
- ✓ M-Large fresh onion bulb.