P530/3
BIOLOGY
PRACTICAL
INSTRUCTIONS.
Paper 3
July / Aug. 2022

Uganda Advanced Certificate of Education

BIOLOGY

(Practical Instructions)

Paper 3

CONFIDENTIAL:

Great care should be taken that the information given below does **not** reach the candidates either directly or indirectly.

Turn Over

Each candidate MUST be provided with the following:

A mature freshly killed toad / frog labeled ***T.***

A large Irish potato tuber labeled ***S.***

Sucrose solutions, 5cm³ each, labeled as follows:

i) *0.5M labelled as solution* ***A***

ii) *0.25M labeled as solution* ***B***

iii) *0.15M labelled as solution* ***C***

iv) *0.05M labelled as solution* ***D***

v) *0.00M labeled as solution* ***E***

- *A cork borer of 0.5cm diameter*
- *A stop clock*
- *Ruler*
- *Atleast 5 test tubes*
- *Inflorescence of;*

  Guinea grass labeled ***P***

  Bidens pilosa labeled ***Q***

  Banana labeled ***R***
- *A glass slide and a cover slip*
- *Microscope*

END

Name:.....

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

P530/3
BIOLOGY
(Practical)
Paper 3
July / Aug. 2022
3¼hours

UGANDA TEACHERS' EDUCATION CONSULT (UTEC)

Uganda Advanced Certificate of Education

BIOLOGY

(Practical)

Paper 3

3 hours 15 minutes

INSTRUCTIONS TO CANDIDATES:

Answer **all** *questions.*

All answers **must** *be written in the spaces provided.*

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

(a) (i) Stretch the left hind limb of the specimen. Carefully stripe off the skin of the limb to expose the features of the ventral side. Draw and label.

(10 marks)

(ii) State the adaptations of the feet of the specimen to its mode of life in its habitat.

(03 marks)

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(b) Observe the eyes of the specimen in relation to the position of the tympanic membrane.

(i) Describe the position of the eyes. (02 marks)

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(ii) State the significance of the structure and position of the eyes to the life of the specimen. (03 marks)

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(c) Dissect specimen **T** to display;

(i) The route of blood flow from the right side of the head and right fore limb to the heart.

(ii) Blood vessels that supply nutrients and oxygen to the parts of the alimentary canal anterior to the ileum including those of urinogenital organs situated on the left side of the abdominal cavity.

With undisplaced heart, draw and label your dissection on the same drawing. (29 marks)

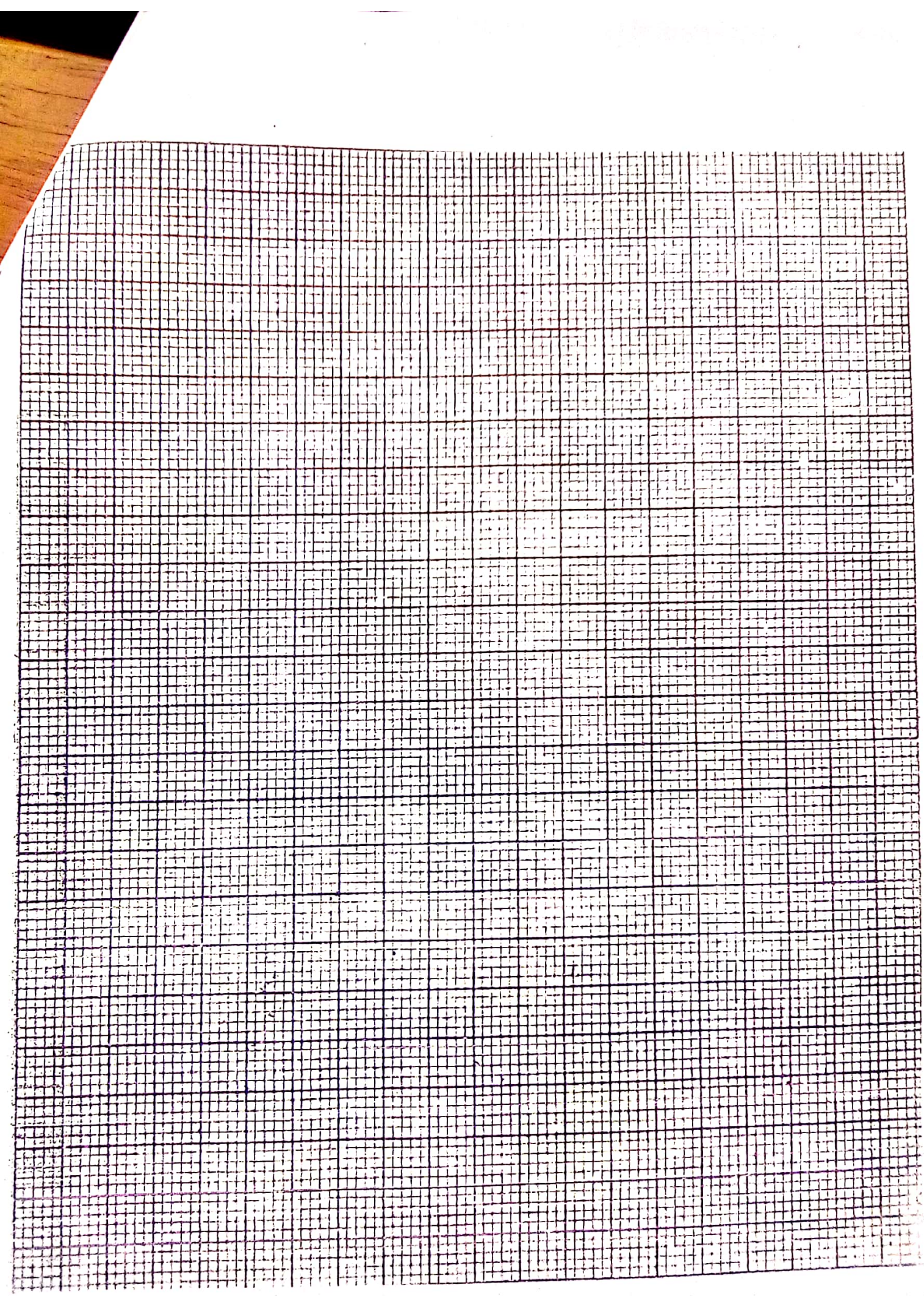
2. You are provided with specimen S which is a plant organ, and sucrose solutions A, B, C, D, E of concentrations **0.5M, 0.25M, 0.15M, 0.05M, 0.00M** respectively.

Using a cork borer of diameter 0.5cm, obtain five cylinders of length 3cm each from specimen S. Place one cylinder in each solution and wait for **1 hour**. After this period, remove the cylinders from the solutions.

(a) (i) Measure the final lengths of the cylinders and record your results in the table below. (06 marks)

Solution where cylinder was placed	Final length of cylinder /cm	Initial length of cylinder /cm	Change in length of cylinder /cm
A			
B			
C			
D			
E			

(ii) Plot a graph of the variation in change in length of cylinders against the concentrations of the sucrose solutions provided. (05 marks)



(iii) Comment on the graph plotted in (ii) above. (05 marks)

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(b) (i) Using the graph above, determine the final length of a cylinder that would be placed in 0.2M sucrose solution in the same experiment. (show your working). (03 marks)

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(ii) Explain your answer in b(i) above. (04 marks)

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(c) Explain the texture and nature of the cylinders placed in the following solutions after 1 hour.

(i) Solution A. (05 marks)

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(ii) Solution **E** (05 marks)

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3. You are provided with specimens **P, Q** and **R** which are plant parts.

(a) (i) Describe specimen **P** (04 marks)

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(ii) Remove a floret from specimen **P** and examine it fully. Draw but label only the structures that are directly involved in reproduction.

(04 marks)

(iii) Sprinkle a few pollen grains from specimen **P** on a glass slide. Observe one pollen grain under low power of a microscope. Draw but **do not** label.

(02 marks)

(b) (i) Remove the gynoecium of the floret of specimen R and examine it fully. Draw and label. (04 marks)

(ii) State one adaptive feature for reproduction exhibited by the gynoecium of the floret of specimen **R.** (01 mark)

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(c) Using the structural features for the florets of specimens **P, R** and the disc floret of specimen **Q,** construct a dichotomous key for the specimens in the order of **Q, P** and **R.** (05 marks)

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