NAME .....

RANDOM/PERSONAL No. ...../..... SIGNATURE .....

P530/3
BIOLOGY PRACTICAL
Paper 3
Wednesday 9th August 2023 (Morning)
3 hours 15 minutes

ACHOLI SECONDARY SCHOOLS EXAMINATIONS COMMITTEE

Uganda Advanced Certificate of Education

Joint Mock Examinations, 2023

BIOLOGY PRACTICAL

Paper 3

3 hours 15 minutes

INSTRUCTIONS TO CANDIDATES:

- ✓ This paper consists of THREE questions. Answer **all** the questions.
- ✓ Write the answers in the spaces provided. Additional sheets of paper MUST not be inserted in this 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 require.

For Examiner's Use Only		
Question	Marks	Examiner's Name & Sign:
1		
2		
3		
TOTAL		

Question 1:
You are provided with a freshly killed animal B. examine the animal carefully and answer the following questions:

(a) Classify the animal into the following taxa. (03 marks)

(i) Phylum .....

(ii) Class .....

(iii) Order .....

(b) Identify the sex of the animal and state the features you have used to identify the sex. (03 marks)

(i) Sex .....

(ii) Features .....

(c) Describe the structures listed below and state the importance of their positions. (12 marks)

(i) Cloaca .....

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(ii) Ear drum .....

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(iii) Eyes .....

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(d) (i) Dissect the animal to display the heart and the great blood vessels supplying the right forelimb of the animal. Draw and label.
(08 marks)

(ii) Now proceed to display the vessels draining the left hind limb. Draw and label.
(06 marks)

Question 2:

You are provided with solutions P, Q, R and S plus specimen O. The concentrations of solutions P, Q and R are unknown but solution S is of concentration 1.0M. Carry out the following instructions:

(i) Obtain a broad strip of the outer epidermis (coloured) from the fleshy leaf of specimen O.

(ii) Divide the strip into three equal sized portions and transfer onto three glass slides labelled P, Q and R.

(iii) Using a dropper flood the epidermal strips with the corresponding solutions P, Q and R and leave to stay / stand for 20 minutes before observing under medium power magnification of a microscope.

(a) (i) Draw one typical cell observed from each set up. Label only the cell from solution Q.

Cell P

Cell Q

Cell R

(ii) State the common magnification of your drawing and show how you have arrived to this magnification. (03 marks)

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(b) (i) From your observation in (a), arrange cells P, Q and R in order of increasing turgo pressure. (03 marks)

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(ii) Explain how you have arrived at the order in (b) (i) above. (03 marks)

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(c) (i) Using distilled water, dilute S (1.0M) to obtain $10cm^3$ of solutions S_1, S_2, S_3 and S_4 of concentrations 0.0M, 0.25M, 0.5M and 0.75M respectively. Record the volume of distilled water used. (04 marks)

Solution	S_1	S_2	S_3	S_4
Volume of water (cm^3)				

(ii) Showing your method, explain how you have determined the volume of water used to make the 0.5M solution. (03 marks)

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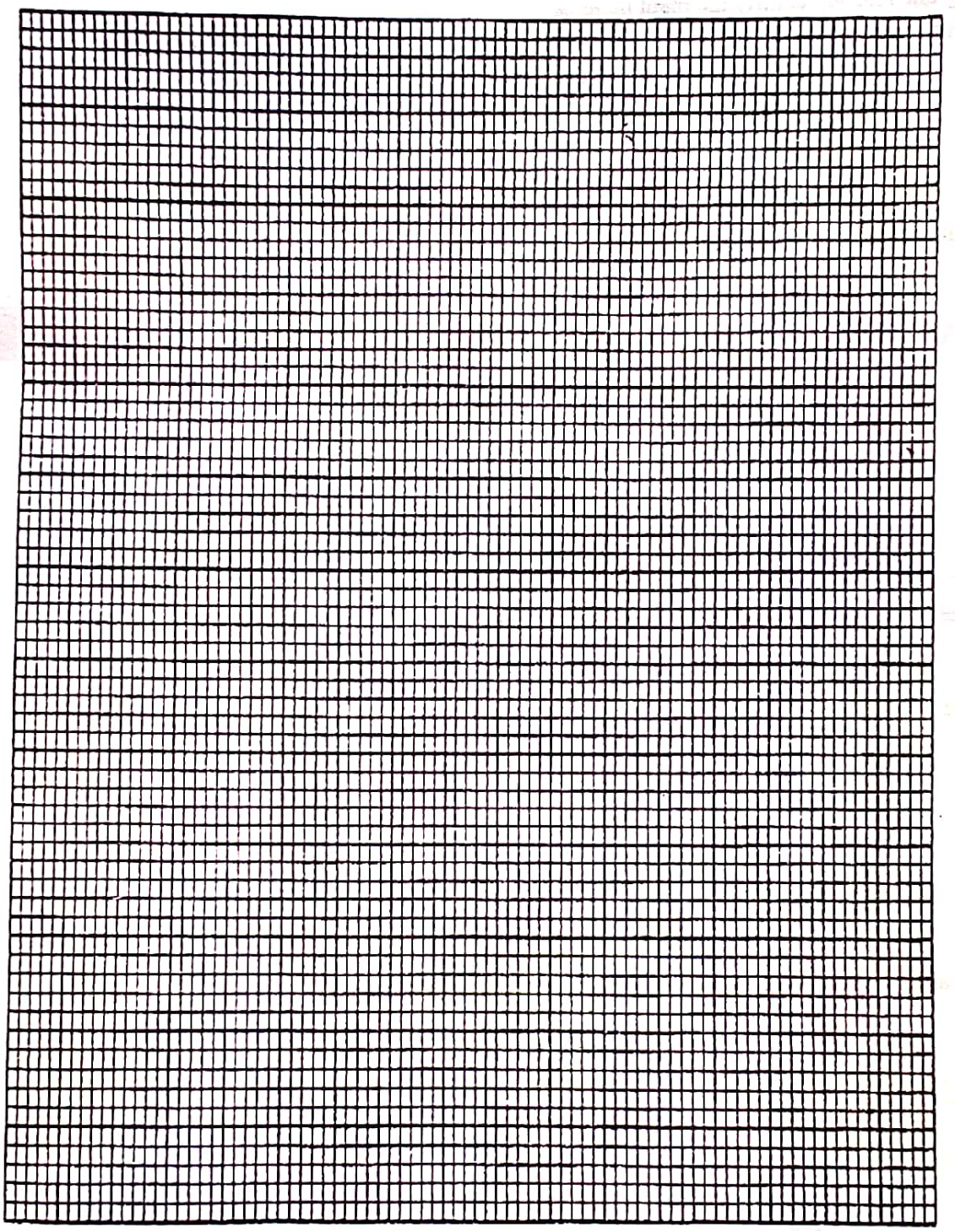
(iii) Obtain another strip from the outer epidermis of fleshy leaf of specimen O. Flood with solution S on a glass slide and observe under medium power after 10 minutes. Count the number of cells with shrunken cytoplasm out of the ten cells observed. Repeat the above procedure with solutions S_1, S_2, S_3 and S_4 (use a freshly obtained strip each time). Record your results in the table below. (10 marks)

Solution (C)	No. of cells with shrunken cytoplasm	% cells with shrunken cytoplasm (P)
S_1		
S_2		
S_3		
S_4		

(iv) Plot a graph to show the relationship between (P) and the concentration (C of the solutions.
(12 marks)



Question 3:

You are provided with a plant material X_1. Cut transverse sections from the specimen. Place the cut section on a glass slide or watch glass and apply three drops of acidified phtoroglucinol stain. Observe the preparation under lower power magnification of a microscope after 5 minutes.

(a) Giving one reason, identify the plant material.

(i) Identity of X_1 (03 marks)

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Reason:

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(ii) Make an enlarged plan drawing to show the location of the stained tissue. (xx marks)

(iii) Name the tissue and state its functions in the plant. (03 marks)

Name .....

Functions

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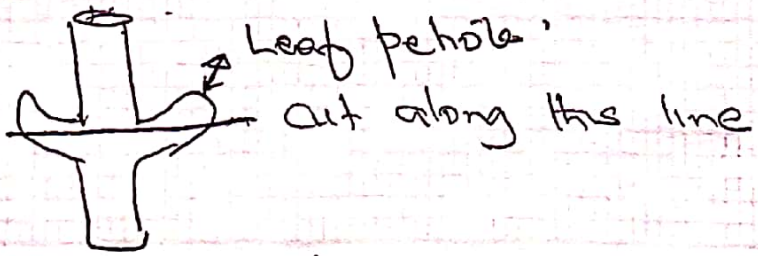
(b) Prepare another transverse section from plant material X_2 as illustrated.



(c) Repeat the staining procedure as for plant material X_1. Observe under low power after 5 minutes.

(i) Make a plan drawing to show the distribution of the stained tissue X_2. (04 marks)

(ii) Compare the distribution of the stained tissue in X_1 with that in X_2. (04 marks)

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(iii) Attempt to explain the difference (if any) in the distribution of the stained tissue in X_1 and X_2. (04 marks)

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END