Name..I AM MUZAFALU..... Centre /Index No .....

School ..... Signature .....

P530/3
BIOLOGY
(Practical)
PAPER 3
July/August 2024
3 1/4 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 EXAMINERS' USE ONLY | | |
|---|---|---|
| **Question** | **Marks** | **Examiner's Initials & No.** |
| 1 | | |
| 2 | | |
| 3 | | |
| Total | | |



**Turn Over**

**Question 1** **75 MINUTES (40 marks)**

(a) Dissect the Specimen T to expose the superficial structures with the skin stretched out fully and pinned.

(i) Describe how the features of the skin suit its function. **(07 marks)**

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(ii) Describe the significance of the arrangement of muscles on the chest. **(04 marks)**

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(iii) Draw and label the structures in the chest region. **(6 marks)**

(b) Dissect the specimen further to display the blood circulation:-
(i) associated with the mesentery including the digestive structures drained and
(ii) supplying body parts lying anterior to the liver lobes on left side of the specimen.

Draw and label the blood vessels and respective structures served in (i) and (ii) above with the heart inverted. **(23 marks)**

**Question 2** **60 MINUTES (30 marks)**

You are provided with solutions **A** and **B**.

(a) Carry out tests on the solutions as follows:
Add three drops of coloured solution **C** to 0.5 $cm^3$ of solution **A** in a tube and stir to mix thoroughly. Then obtain the coloured mixture in a dropper and introduce the tip of dropper half way into 6 $cm^3$ of solution **B** in a test tube. Carefully dispense one drop of the mixture from the dropper into solution **B**. Observe the behavior of the drop of coloured solution.

(i) Record the behavior of the coloured drop **(01 mark)**

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(ii) Explain the observation recorded in (a) (i) above. **(02 marks)**

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(b) Label the four petri dishes provided 1 - 4 and prepare in each Petridish 25 $cm^3$ of solutions1 - 4 by mixing solutions **A** and **B** as indicated in Table 1 below:-

**Table 1**

| **Petri dishes** | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Solution **A** in $cm^3$ | 25 | 18 | 12 | 4 |
| Solution **B** in $cm^3$ | | | | |

(i) Record the amount of solution **B** used in each tube. **(02 marks)**

(ii) Using a scalpel / razor blade, cut plant material **–P** length wise to obtain ten strips each of thickness 2 mm and length 5 cm. Describe how the strips bend when they are cut from **P.** **(02 marks)**

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(iii) Suggest why the strips bend as described in b(ii) above **(02 marks)**

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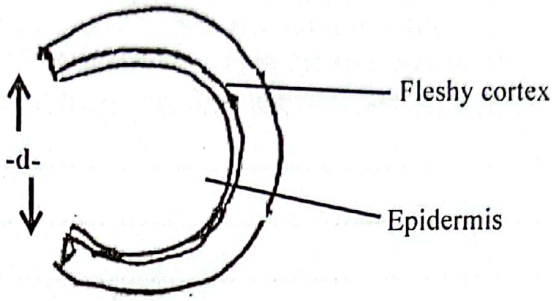
(iv) Transfer two strips into each petri dish 1 - 4 and the 5th strip into 25 $cm^3$ of solution A in a beaker maintained at 35 - 40 $^0C$. Leave the strips in the solutions for 32 minutes. **NB**: for strips in solutions 1 and the 5th strip measure the distance between the ends of the strips (as illustrated below) every 8 minutes for 32 minutes. Do this very quickly and put back the strips in respective solutions.




Record distance **–d-** in millimeters in Table 2 below: - **(05 marks)**

**Table 2**

| Time in minutes | | 0 | 8 | 16 | 24 | 32 |
|---|---|---|---|---|---|---|
| Distance –d- in mm | 1st strip | | | | | |
| | 5th strip | | | | | |

(c) After 32 minutes measure and record distances **(-d-)** for the remaining strips in petri dishes 2 - 4 in Table 3 below **(02 marks)**

**Table 3**

| Strip | 2 | 3 | 4 |
|---|---|---|---|
| Distance **(-d-)** in mm | | | |

(i) Explain the results in:-
Table 2: **(02 marks)**

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Table 3, where distance **(-d-)** is above 45 mm **(02 marks)**

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**Turn Over**

(ii) From the results in Table 3, suggest giving reason the solution with concentration nearest to that in cell sap of plant material from which the strips were obtained . **(03 marks)**

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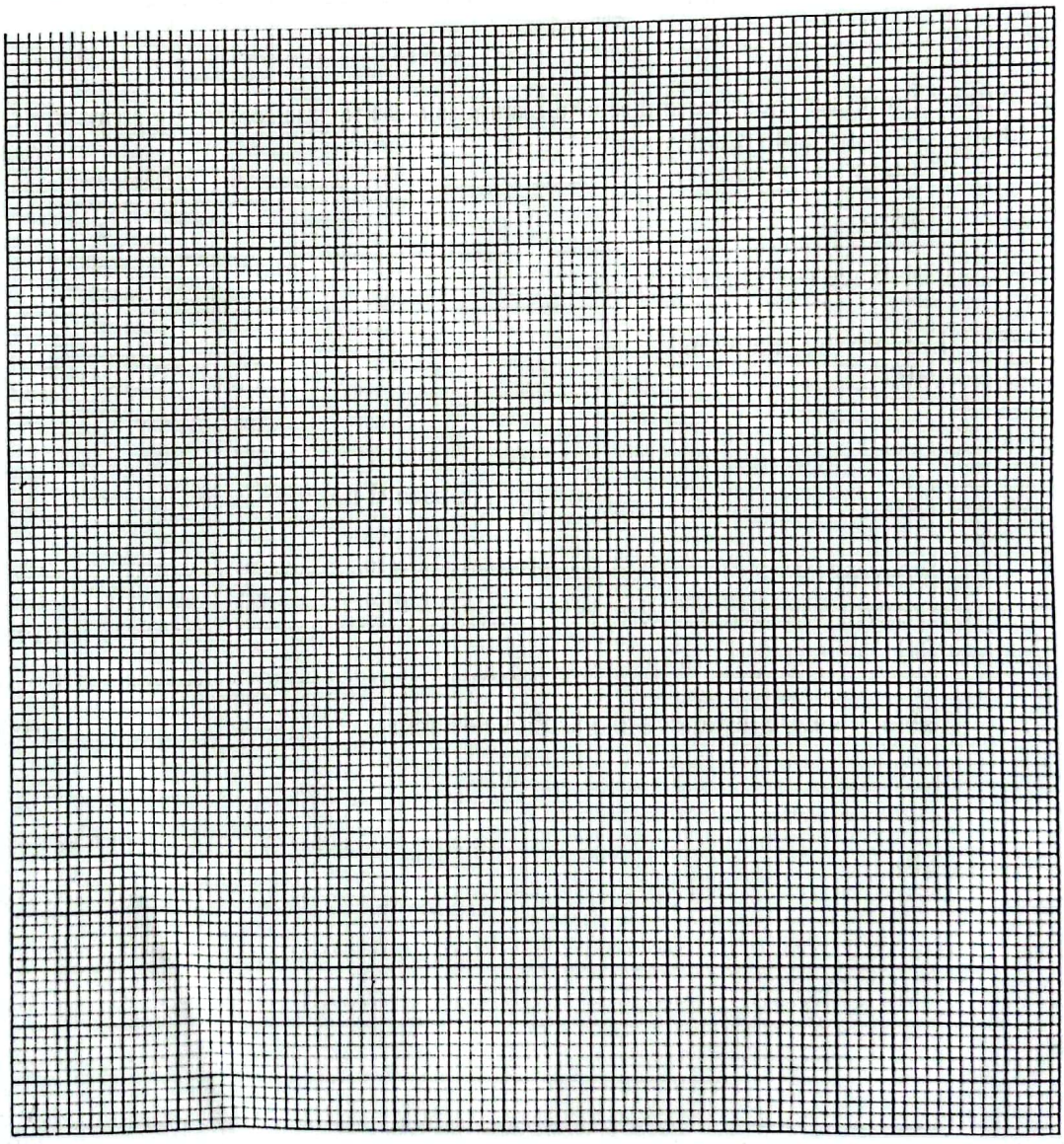
(d) Using the volume of solution **A** in Table 1 and distance **(-d-)** recorded in Table 3, plot a graph. **(07 marks)**



**Question 3** **60 MINUTES (30 marks)**

You are provided with specimen **D** which is a plant part. Bryophyllum Stem

(a) Cut razor thin transverse sections from the stem of specimen **D**. Then prepare a temporary mount using one section stained in two drops of acidified phloroglucinol stain. Leave to stand for 5 minutes before placing a cover slip. **NB. Do not touch the stain.**
Observe the section under a microscope and take note of the stained tissues.

(i) Describe the distribution and nature of any **five** named tissues observed. **(10 marks)**

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(ii) Using high power magnification, observe the structure of dominant cells from any four clearly visible tissue zones.
At the same magnification, draw one typical cell from each of the four tissue zones. **(08 marks)**
**Do not label**

(b) From your observations in (a) above: **(02 marks)**

(i) Identify two stained tissues

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(ii) state a major taxon to which the plant from which specimen **D** was obtained. Give evidence for your answer. **(03 marks)**

Taxon:.....

Evidence:-

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(iii) Give two adaptations of the stained tissues named in (b) (i) above to their common function in the plant. **(02 marks)**

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(c) Cut another razor thin transverse section from part of specimen **D** where the leaf petioles are found. Mount this section using same procedure in (a) and observe under a microscope.

(i) Compare the distribution of stained tissue in (a) and that observed in (c) above. **(04 marks)**

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(ii) Suggest explanations for any difference in the arrangement of stained tissue in the two sections observed. **(01 mark)**

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**END**