NAME: ..... **SIGNATURE:** .....

SCHOOL .....**COMBINATION:** .....

P530/1

BIOLOGY

PAPER 1

(THEORY)

April 2025

TIME: $1\frac{1}{2}$ HOURS

Educan

S.5 END OF TERM 1 ASSESSMENT

UGANDA ADVANCED CERTIFICATE OF EDUCATION

BIOLOGY

PAPER ONE

(THEORY)

1 HOUR: 30 MINUTES

Instructions

- This paper consists of **three** items
- Attempt **all** Items, in the space provided
- Your answers must be precise, accurate and in proper handwriting

FOR SCORER'S USE ONLY

Item	Score	Scorer's comment
1		
2		
3		
Total		

Item 1

Scenario

In one of the practical sessions on microscopy, Herman was provided with both plant and animal tissues on already prepared slides A, B and C with descriptions as showed in the tables below, to observe and make deductions about the tissues.

Slide A	Extracted from inner lining of alveolus of rat lung
Slide B	Extracted from outer lining of onion bulb
Slide C	Thin slice of Irish potato tuber stem

Herman was amazed about the cell structure and cell arrangement in these tissues

Task

(a) Identify the tissues A, B and C that were observed by Herman and the role of each in the organisms where each was extracted. *(06 scores)*

Tissue	Identity	Role
A		
B		
C		

(b) Describe the structure and arrangement of cells in the tissue observed on slide B

(i) Structure of cells *(02 scores)*

(ii) Arrangement of cells *(04 scores)*

(c) How is the tissue observed on slide **A**, adapted for its role in the organism? *(04 scores)*

Item 2

Scenario

Nangobi, a student of pharmacy at Makerere university is researching on a pesticide to combat the army worms that have attacked their village, and destroyed many food crops by eating their leaves and stems in Kamuli district. She has so far formulated two drug samples, **M** and **N**. In her laboratory tests, she noted that drug sample **M** freely passes through the membranes of the cell and blocks movement of vesicles within the cell. Drug sample **M** targets the respiratory pathway and inhibits one of the enzymes that catalyse respiration in the cytoplasm, but must be aided by some molecules to enter the cell.

Task

(a) Explain why the molecules of the two drug samples move across the cell membrane in different ways. (*04 scores*)

(b) Explain how drug samples **M** and **N** will be able to control the pest as expected by the researcher. (*08 scores*)

(c) With a reason, advise Nangobi which of the two drugs is most suitable for controlling the pest (*02 scores*)

Item 3
Scenario

In one of their usual study trips to Lweera swamp, Shadrach, a member of the research team from EDUCAN institute of research and innovation, noted that the lung fish contained a lot of unsaturated fatty acids in their cell membranes and also had a lot of adipose tissues in their bodies especially during the dry seasons when some pools could dry and the fish gets buried in the mud for a longer time. He was also amazed by small insects walking on water in the different pools without sinking. The team also observed that activity of the animals in the swamp greatly decreased during the extreme cold conditions, yet surprisingly they became more active during day time as environmental temperatures increased.

Task

(a) Explain the significance of the lung fish having much;

(i) Unsaturated fatty acids in their cell membrane. (*04 scores*)

(ii) Having much adipose tissues during the conditions described in the scenario. (*04 scores*)

(b) Explained the fact that Shadrach observed some insects walking on water without sinking. (*04 scores*)

(c) Explain the effect of environmental temperature on the activity of the animals in the swamp (*08 scores*)

END

*All the best is what I have and continue to wish you my dear young stars, and once again at this new day of adding another profound and indeed imperative stone on our house of success, I pray for all the best for you... the journey might seem too long and indeed tough as expected, but it is walkable. For "**easy**", isn't for the **great**!*

[Tr. BAGOOLE DANIEL]