MATIGO EXAMINATIONS BOARD
UGANDA CERTIFICATE OF LOWER SECONDARY EDUCATION
END OF YEAR ASSESSMENT 2022
SENIOR TWO
BIOLOGY: THEORY
Time allowed: 2 hour 15 minutes

Please write clearly in block capitals

Learner's Number:

Name:

Signature:

Materials

For this paper you must have:
- ✓ a ruler
- ✓ a scientific calculator

Instructions:
- ✓ Use black ink or black, blue ball-point pen.
- ✓ Fill in the boxes at the top of this page.
- ✓ Answer all questions in the space provided in section A.
- ✓ Use separate answer sheets for section B
- ✓ In all calculations, show clearly how you work out your answer.

Information
- ✓ There are 80 marks available on this paper.
- ✓ The marks for questions are shown in brackets.
- ✓ You are reminded of the need for good English and clear presentation in your answers

For Examiner's Use	
Question	Mark
1	
2	
3	
4	
5	
6	
7	
8	
TOTAL	

SECTION A

(Attempt ***all*** question)

1. (a) The figure below shows a ring-tailed lemur

Table 1 shows part of the classification of the ring-tailed lemur.

Classification group	**Name**
Kingdom	*Animalia*
Phylum	*Chordata*
	Mammalia
	Primates
	Lemuroidea
Genus	*Lemur*
	catta

(i) Complete Table 1 to give the names of the missing classification groups (04 marks)

(ii) Give the binomial name of the ring-tailed lemur. Use information from Table 1 (01 mark)

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(b) Joshua grouped spiders differently from houseflies during classification

(i) state features that may have compelled Joshua to do this (03 marks)

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(ii) Explain how the above features led Joshua to group organisms as indicated above (02 marks)

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2. (a) Plants transport water and mineral ions from the roots to the leave plants move mineral ions:
• from a low concentration in the soil
• to a high concentration in the root cells.
What process do plants use to move these minerals ions into root cells?
Tick one box. (01mark)

Active transport ☐

Diffusion ☐

Evaporation ☐

Osmosis ☐

(b) Describe:
(i) How water moves from roots to the leaves. (03marks)

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(ii) Plants lose water through the stomata in the leaves. (02 marks)

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(iii) The epidermis can be peeled from a leaf. (02 marks)

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(iv) The stomata can be seen using a light microscope. (02 marks)

3. Table 2 shows the data a student collected from five areas on one leaf.

Leaf area	Number of stomata	
	Upper surface	Lower surface
1	3	44
2	0	41
3	1	40
4	5	42
5	1	39
Mean	**2**	**X**

(i) Describe how the student might have collected the data in Table 2. (04 marks)

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(ii) What is the median number of stomata on the upper surface of the leaf? (02 marks)

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(iii) Calculate the value of X in Table 2. Give your answer to 2 significant figures. (02 marks)

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(iv) The plant used in this investigation has very few stomata on the upper surface of the leaf. Explain why this is an advantage to the plant. (02 marks)

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4. (a) Nakiirya Usuwah was seeking an admission in S.1 at AWTAD secondary School. She was assigned to match the pathogens in set A to their respective diseases in set B. Given that Wisdom scored full marks in the test, show how she worked out the assignment. (Use a pencil) (05 marks)

SET A		**SET B**
Malaria		Corona Virus
Measles		virus
AIDS		Bacteria
COVID-19		Plasmodium
CassavaMosaic		HIV

(b) Outline the different ways of spreading covid19, the symptoms and prevention measures. (05 marks)

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5. In multicellular organisms; we all understand that not all cells are of the same size and shape, some cells adopt unique structural features to enable them perform particular functions effectively.

(a) In the space below, outline five different examples of specialized cells (any from either plants or animals or both); state the specific roles played by each in the body. (10 marks)

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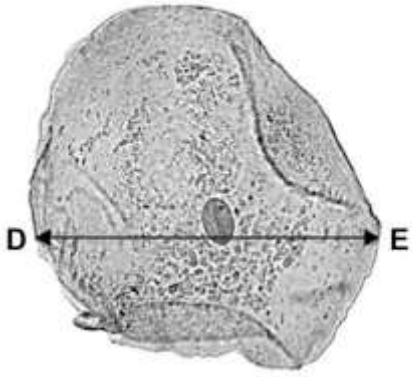
SECTION B

(Attempt only ***three*** questions)

6. (a) The cheek cell in Figure 6 is magnified 250 times. The width of the cell is shown by the line D to E.

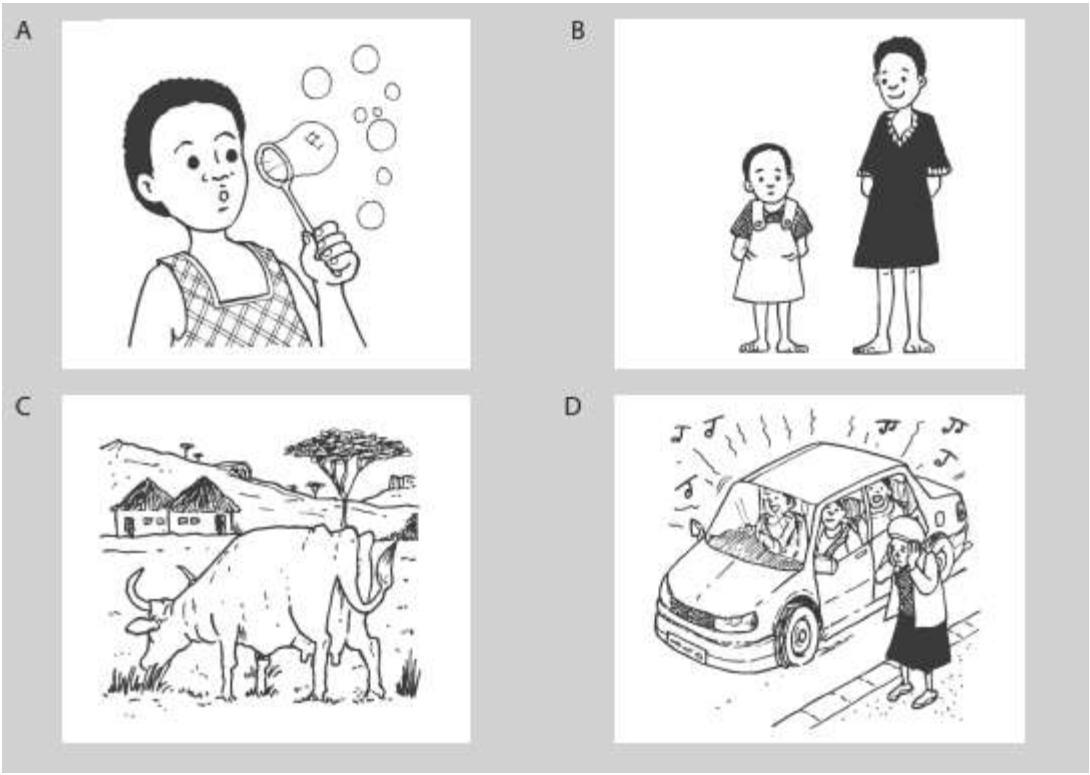


(i) Measure and record the width of the cheek cell in centimeters (02 marks)

(ii) Use the equation to work out the real width of the cell in cm: (04 marks)

$$Real\ size = \frac{image\ size}{magnification}$$

(b) Look at the pictures, and then write down which characteristic of life each one shows. (04 marks)



7. (a) Match the description in Column A with the correct term in Column B. (04 marks)

Column A	Column B
2.1 Toxic	A. Excretion
2.2 Making energy from the Sun's energy, carbon dioxide and water in plants	B. Poisonous
2.3 Getting rid of waste substances	C. Variety of living organisms
2.4 Responding to the environment	D. Respiration
2.5 Using food molecules and oxygen to get energy	E. Photosynthesis
2.6 Biodiversity	F. Reproduction
2.7 Producing offspring	G. Sensitivity

(b) If you spill a chemical on a laboratory bench, what is the first thing that you should do? (01 mark)

(c) Describe the treatment you would give to a learner who has cut him or herself. (02 marks)

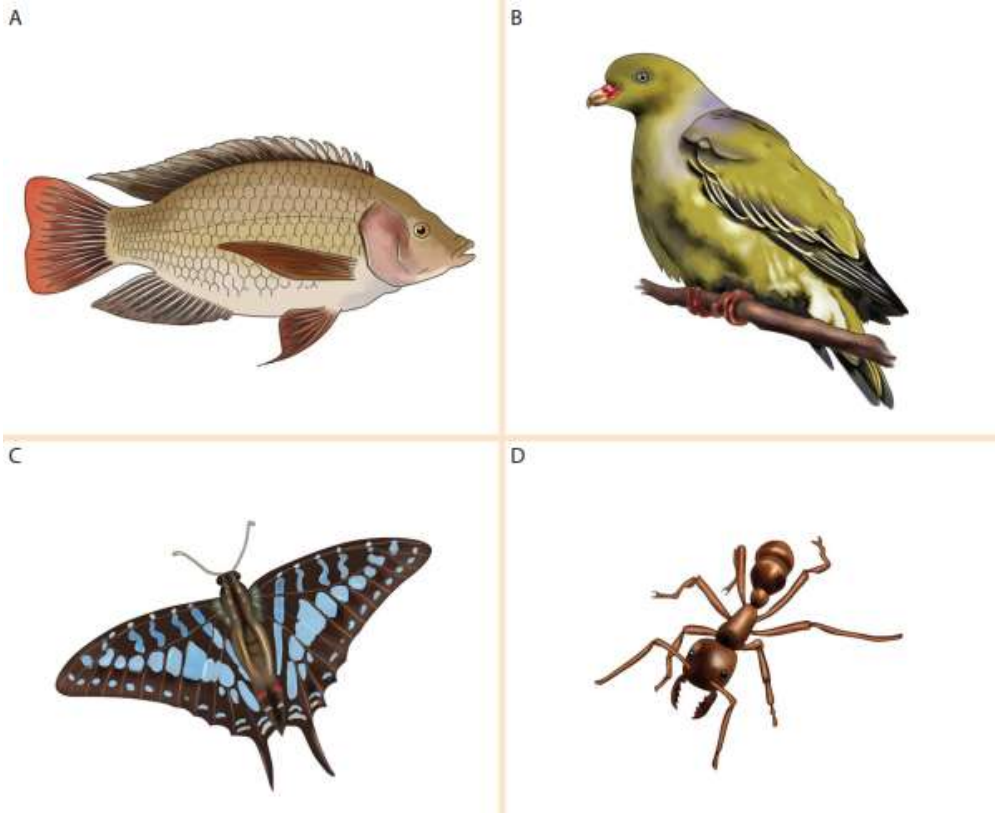
(d) Give the correct name or word for each of the following:

(i) the biologist who developed the binomial system. (01 mark)

(ii) a system that groups things into smaller and smaller groups. (01 mark)

(iii) the naming and classification of organisms. (01 mark)

8. (a) Figure below shows four animals: A, B, C and D. Construct a dichotomous key that can be used to identify the animals. (03 marks)



(b) Give the correct word or term for each of these descriptions.
(i) the thin, flat, wide area of a leaf. (01 mark)
(ii) A root system that has one main root and small lateral roots(01 mark)
(c) Draw a picture of a flower, showing all its parts labelled (02 marks)
(d) Explain Why both eucalyptus and paspalum are used in Uganda to prevent soil erosion. (03 marks)

9. (a) A family has four members: an 80-year-old grandfather, a 35-year-old father, and 28-year-old pregnant mother, and a 2-year-old boy.
(i) Between the boy and the grandfather, who should be given more milk?
(ii) Why? (03 marks)

(b)

Read the case study and then answer the questions that follow

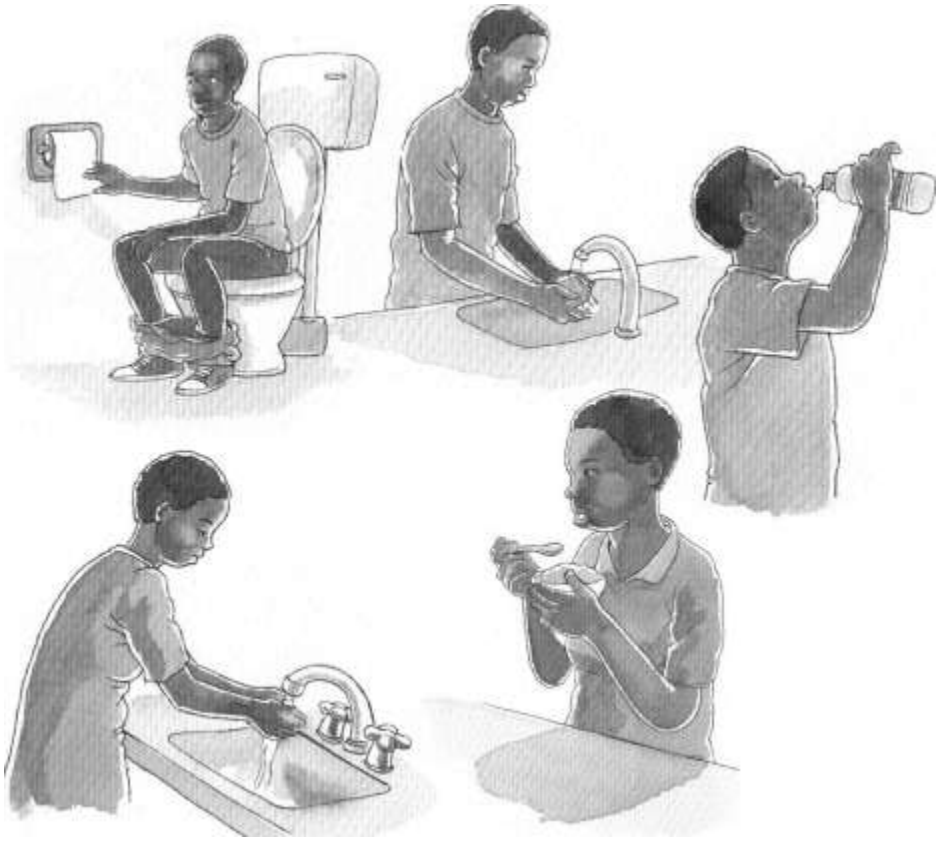
A nutritional disorder is also called malnutrition. It happens when a person's body has either too little or too much of a certain food nutrient.
As a result, their body does not grow or function properly. Examples of nutritional disorders include deficiency diseases, starvation, obesity and constipation.
There are many reasons for malnutrition. It can be caused by poverty, where people are either too poor to buy enough food, or can only buy cheap food that does not provide all the nutrients they need. Malnutrition can also be caused by poor food choices and poor cooking methods

Kalisa recorded the number of children at his local clinic that suffered from nutritional disorders over three months in the year 2022. His results are shown in this table.

Nutritional disorder	January	February	March
Rickets	5	4	6
Kwashiorkor	1	3	1
Anaemia	6	3	4

(i) How many children in total had kwashiorkor? (01 mark)
(ii) In which month were there the most children with anaemia? (01 mark)
(iii) Which foods should children with anaemia eat? (03 marks)
(iv) Which vitamin and mineral should children with rickets eat more of in their diet. (02 marks)

10. (a) The wall chart below shows some ways to prevent cholera. Analyse it, and then answer these questions.
(i) Use the wall chart to suggest ways to prevent cholera. (04 marks)
(ii) Suggest any two other ways to prevent cholera. (02 marks)
(iii) How can we help someone with cholera? (02 marks)



(iv) We often hear in the news that people in refugee camps die of cholera. As a senior two student explain factors that make cholera common in such camps. (02 marks)

END