INTERSECONDARY SCHOOLS EXAMINATION SERIES
ISESE

FORM TWO OPENING TEST JULY
043 BIOLOGY

TIME 2:30 HRS **Year 2026**

INSTRUCTIONS

1. This paper consists of sections A and B with a total of **ten (10)** questions.
2. Answer **all** questions in the spaces provided.
3. Section A and C carry **fifteen (15)** marks ach and section B carries **seventy (70)** marks.
4. All writing must be in **black** or **blue** ink **except** diagrams which must be in pencil.
5. Communication devices and any unauthorized materials are **not** allowed in the assessment room.
6. Write your **name** at every page.

FOR EXAMINER'S USE ONLY		
QUESTION NUMBER	**SCORE**	**EXAMINER'S INITIAL**
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

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SECTION A (15 MARKS)

Answer **all** questions in this section

1. For each of the following items (i) to (x) choose the most correct answer from the given alternatives and write its letter in the box provided

i. A student is using a light microscope to observe a stained onion bulb epidermis. If the image is blurred despite the specimen being visible, which part of the microscope should be adjusted first to obtain a crisp, clear image?
A. Coarse adjustment knob
B. Fine adjustment knob
C. Mirror
D. Diaphragm

ii. Muscle cells in the legs of a marathon runner contain significantly more of a certain organelle compared to the skin cells of the same person. Which organelle is this likely to be?
A. Chloroplasts
B. Ribosomes
C. Vacuoles
D. Mitochondria

iii. During an experiment, a potato cylinder is placed in a concentrated salt solution. After two hours, the cylinder becomes soft and decreases in length. What biological process explains this observation?
A. Active transport
B. Osmosis
C. Diffusion
D. Phagocytosis

iv. Two organisms belong to the same Class but different Orders. Which of the following statements is true regarding their taxonomic relationship?
A. They belong to the same Phylum.
B. They belong to the same Family.
C. They belong to the same Genus.
D. They belong to different Kingdoms.

v. A person frequently experiences bleeding gums and slow wound healing. A nutritionist would likely suggest increasing the intake of which vitamin?
A. Vitamin A
B. Vitamin C
C. Vitamin K
D. Vitamin D

vi. In the human digestive system, the stomach maintains a very low pH. How does this acidic environment primarily assist in the digestion of proteins?
A. It activates salivary amylase.
B. It neutralizes the bicarbonate from the pancreas.

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C. It provides the optimum pH for pepsin to function.
D. It emulsifies fats for easier breakdown.

vii. Why is it dangerous for a person to stay in a closed room where a charcoal stove is burning?
A. Carbon dioxide prevents the lungs from expanding.
B. Carbon monoxide binds more strongly to hemoglobin than oxygen does.
C. Nitrogen gas produced by the charcoal causes suffocation.
D. The heat from the stove destroys the alveoli in the lungs.

viii. Which structural feature of the alveoli directly facilitates the rapid diffusion of gases between the lungs and the blood?
A. They have a very small total surface area.
B. They are surrounded by thick muscular walls.
C. The inner surface is kept completely dry.
D. The walls are only one cell thick.

ix. A farmer notices that during a very hot afternoon, the leaves of maize plants roll up. How does this behavior help the plant survive the heat?
A. It helps the plant shed excess water through the leaf tips.
B. It reduces the surface area exposed to sunlight, decreasing transpiration.
C. It allows the plant to absorb more carbon dioxide from the air.
D. It increases the rate of photosynthesis to produce more food.

x. Viruses are often described as being at the 'borderline' between living and non-living things. Which characteristic of viruses supports the argument that they are non-living?
A. They contain genetic material like DNA or RNA.
B. They can mutate and evolve over time.
C. They can reproduce inside a living host cell.
D. They can be crystallized and stored like chemicals.

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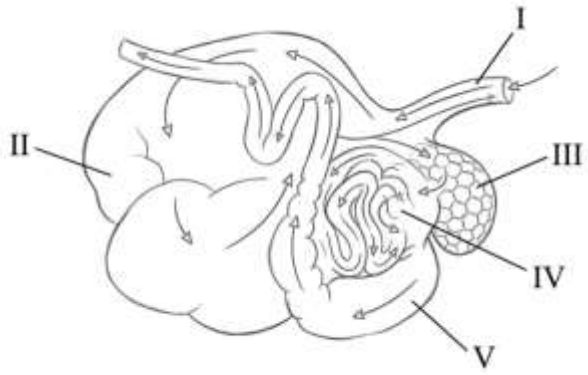
ANSWER

I	ii	iii	Iv	V	vi	vi	vii	ix	X

2. Use the sketched diagram of the ruminant stomach to complete the matching activity. Match the roman numeral from the diagram (Column A) with the correct anatomical function (Column B).

Column A	Column B
	A. The 'true stomach' where enzymatic digestion begins. B. The largest chamber, responsible for bacterial fermentation. C. The first chamber food enters, used for sorting and regurgitation. D. The tube that transports food to and from the mouth. E. The highly folded chamber that absorbs water and nutrients.

ANSWER

I	II	III	IV	V

SECTION B (70 MARKS)

Answer **all** questions from this section

3. (a) How does biology help in food production?

_____
_____
_____
_____
_____
_____

(b) Which branch of biology would study?

i) A person with a broken leg?

_____

ii) Protecting cows from tsetse flies?

_____

iii) Conserving a drying river?

_____

4. John attempted to observe plant cell using a prepared slide under a light microscope, but he was unable to obtain a clear image due to the following challenges:

(a) The slide containing specimen did not settle on the stage for observation.

(b) He was unable to achieve sharp focus.

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(c) The image was too bright, making it difficult to see the details of specimen. Educate your friend on how to address the challenges faced in order to obtain a clear image of the plant cells.

i._____

_____

ii. _____

_____

iii. _____

_____

5. Name the parts of the cell described in each of the following statements:

(a) The semi-permeable membrane that enclose the cytoplasm of a cell.

_____

(b) A large cellular organelle that contains hereditary information.

_____

(c) The site for respiration in the cell.

_____

(d) A jelly-like mixture consisting mostly of water, located between the cell membrane and the nucleus.

_____

(e) A part that protects, supports and gives shape to plant cells.

_____

6. (a) Starting from the highest rank, outline the hierarchical ranks of classification in biology.

_____

_____

_____

_____

(b) A student struggles to remember the characteristics of millions of species. How does classification simplify the study of biodiversity, and what hierarchical levels would the student use to group similar organisms?

i._____

_____

ii. _____

_____

iii. _____

_____

iv. _____

_____

7. (a) Briefly explain the term virus as used in biology.

_____

_____

_____

(b) What are the two components of virus?

i. _____

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ii. _____

(c) Explain why viruses are considered as both living and non-living things.

_____

_____

_____

_____

8. (a) In a biology lab, students observe green algae producing bubbles when exposed to light. What process is occurring, and which gas is being released as byproduct?

_____

_____

_____

_____

(b) A student argues that all autotrophs use sunlight to make food. Is this statement correct? Provide an example to support your answer.

_____

_____

_____

_____

(c) Explain how minerals contribute to maintaining fluid and electrolyte balance in the body. Name two minerals involved in this process and describe one consequence of deficiency for each.

_____

_____

_____

_____

Minerals (i)_____

(ii)_____

Consequence _____

_____

_____

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9. (a) Explain the role of the epiglottis during swallowing and describe what might happen if it fails to function properly. Support your answer with examples.

_____

_____

_____

_____

_____

(b) Explain why active transport is necessary for the uptake of mineral salts in plant roots and describe one other example in living organisms where active transport occurs.

_____

_____

_____

_____

_____

SECTION C (15 MARKS)

Answer question **number ten (10)** in this section

10. Form two students in biology lesson debate what makes human lungs so effective at gas exchange. Referring to the biology knowledge, name five structural adaptations in the human respiratory system and explain the specific role of each.

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INTERSECONDARY SCHOOLS EXAMINATION SERIES
ISESE TIME TABLE
FORM TWO PRE NECTA SERIES 01
13th July – 18th July 2026

DATE	SUBJECT(S)
13th July	HISTORY + B.STUDIES
14th July	BIOLOGY + ENGLISH
15th July	CHEMISTRY + HTM
16th July	PHYSICS + KISWAHILI
17th July	MATHEMATICS + GEOGRAPHY
18th July	COMPUTER SCIENCE

GHARAMA

*** SOMO MOJA KWA KIDATO KIMOJA = 20,000/= KWA MUHULA MZIMA

*** FULL SET KWA KIDATO KIMOJA (KWA MASOMO 11 TU) = 150,000/= KWA MUHULA MZIMA

ZINGATIA :-

*** GHARAMA ZA MITIHANI HUPANDA KADRI PRE-NECTA SERIES ZITAKAVYOKUWA ZINAENDELEA KUFANYIKA HIVYO LIPIA MAPEMA ILI KUEPUKA USUMBUFU

*** PRE-NECTA SERIES ZITAKUWA ZAIDI YA 10

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