

Candidate's Name:

Signature:

Random No.						Personal No.		

(Do not write your School/ Centre Name or Number anywhere on this Booklet.)

553/1
BIOLOGY
Paper 1
2025
2($\frac{1}{2}$) Hours



ALLIANCE

EXAMINATIONS BOARD

ALLIANCE EXAMINATIONS BOARD-2025

Uganda Certificate of Education

Biology

Paper one

2 Hours and 30 minutes

INSTRUCTIONS TO CANDIDATES.

- This paper consists of ***seven*** examination items. It has two sections; A and B.
- Section A has ***three compulsory*** items.
- Section B has two Parts; I and II. Answer one item from each part.
- Answer ***five*** items in all.
- Any additional item(s) answered will not be scored.

SECTION A

Answer all the items in this section in the spaces provided.

Item One.

Mr. Kibet's maize farm was trampled and grazed upon by stray cattle from a nearby ranch during the tasseling stage. The ranch owner has denied responsibility, and Mr. Kibet is concerned about the potential loss of his harvest.



Fig. 1 Shows cattle damaging maize plants.

Tasks:

- a) **Identify** the specific parts of the maize plants that were most likely damaged by the cattle.

- b) **Explain** how the trampling and grazing could disrupt the growth and development of the maize plants.

- c) **Suggest** two measures Mr. Kibet could take to protect his farm from future invasions by stray animals.

Item Two.

Sarah was returning home from a late-night study session at the library. As she walked through a dimly lit park, she suddenly noticed a large, aggressive dog blocking her path. The dog began growling and baring its teeth. Sarah's heart started pounding, her palms

became sweaty, and she quickly scanned the area for an escape route. She spotted a low wall nearby and jumped over it just as the dog lunged toward her.



Fig. 3 shows Sarah encountering the aggressive dog in the park.

Tasks for the Learner:

- a) Describe the role of the autonomic nervous system in Sarah's physical reactions when she encountered the dog.

[illegible]

David, a college student, frequently engaged in unprotected sex with multiple partners. Despite knowing the risks, he avoided regular health check-ups and STI screenings. After contracting HIV, David continued his behavior without disclosing his status to his partners. Later, he fathered a child with his girlfriend, who was unaware of his HIV status. During the pregnancy, the girlfriend skipped antenatal

visits, assuming everything was fine. After birth, the baby showed signs of failure to thrive, recurrent infections, and developmental delays. Medical tests confirmed the baby had HIV and also exhibited features of a genetic disorder, including a small head size and distinct facial abnormalities.

Tasks:

- a) Spot out three consequences of David's actions on his child's health.

- b) Create a dialogue between a healthcare worker and David explaining the importance of antenatal care and safe sex practices.

- c) Compare and contrast any ethical responsibilities of David and his girlfriend in this scenario. Discuss how their choices impacted the child's health and propose ways to prevent similar situations in the future.

SECTION B

Part I

Answer only one item from this part. Answers should be written in the answer booklet(s) provided.

Item Four.

In the **Nakasongola District** of Uganda, vast stretches of wetlands and swamps have been drained for large-scale rice farming and brick-making. This has led to declining water tables, loss of native wildlife (such as the endangered **Sitatunga antelope** and migratory birds), and increased soil salinity. The district environment officer organized a community dialogue on wetland conservation, but a local farmer, **Kato**, arrived late and only heard the closing statement: *"If we destroy our wetlands, we destroy our future."*

Task:

Explain to Kato the **ecological and socio-economic impacts** of draining wetlands in Nakasongola.

Item Five.

Due to a severe drought in a neighboring country, a large number of people fled to Uganda as refugees. The local government allocated land near a lake and a forest reserve for their settlement. Over time, the refugees cut down trees for firewood and shelter, polluted the lake with waste and plastic, and burned trash for warmth. This led to increased soil erosion, water contamination, and outbreaks of malaria and cholera.

Task:

Identify **two** environmental impacts and **two** health impacts caused by the refugee settlement in the scenario above.

Part II

Answer only one item from this part. Answers should be written in the answer booklet(s) provided.

Item Six.

Two Ugandan cities, **Mbarara** and **Jinja**, have factories that release smoke, dust, and harmful gases into the air. The air pollution levels in these cities are recorded in **Table 1**.

Table 1: Air pollution levels in **Mbarara** and **Jinja**

CITY	LEVEL OF AIR POLLUTION (UNITS)
Mbarara	20
Jinja	60

(According to the *Uganda National Environment Management Authority (NEMA)*, 2023, the safe air pollution range is 0–30 units.)

David lived in **Mbarara**, where he enjoyed morning runs without any health problems. After moving to **Jinja** for work, he continued his running routine but soon developed a persistent cough, itchy eyes, and fatigue.

Task;

- Explain why David had no health issues in **Mbarara** but developed symptoms in **Jinja**.
- Suggest **two** ways David can reduce his exposure to air pollution in **Jinja**.
- Propose **one** measure the government can take to lower air pollution in **Jinja**.

Item Seven.

Maria, a 35-year-old woman from Kampala, Uganda, has been a heavy alcohol consumer for 8 years. Recently, she has been suffering from liver pain, frequent fatigue, swollen legs, and memory lapses. During her last pregnancy, she gave birth prematurely at 6 months. Although the baby girl survived, she had breathing difficulties and showed signs of developmental delays.

Tasks for the Learner:

- Explain the causes of the health challenges faced by Maria and her baby, linking them to her alcohol consumption.
- Advise Maria on lifestyle changes and medical steps she should take to improve her health and support her baby's development.

END