

Candidate's Name: _____

Index number: _____ Signature: _____

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BIOLOGY
Paper 1
July/August, 2025
2½ hours



MASAKA DIOCESAN EXAMINATIONS BOARD
Uganda Certificate of Education
JOINT MOCK EXAMINATIONS 2025
BIOLOGY
Paper 1
Theory
2 hours 30 minutes

INSTRUCTIONS TO CANDIDATES:

*This paper consists of two sections: A and B. It has **seven** examination items.*

*Section A has **three** compulsory items*

*Section B has **two** parts: I and II. Answer one item from each part*

*Answers to section A **must** be written in the spaces provided while answers to*

Section B must be written in the answer booklet(s) provided.

*Answer **five** items in all*

*Any additional item(s) answered will **not** be scored*

SECTION A:

Attempt all Questions in this section

Item 1

Solanum tuberosum, commonly known as Irish potato is largely grown in Uganda for food. Farmers in Rakai district have been engaged in mass production of Irish potatoes every season for many years for their livelihood.

Last year, the district was invaded by the moth caterpillar that affects the crops of Solanaceae family, which bore into the leaves, stems and tubers that caused rotting of the tubers.

The Irish harvest was very poor, affecting food security and livelihood. Many farmers are worried about growing Irish potatoes, which caused financial loss last season.

Task

- (a) Identify the process affected due to destruction of the Irish plant structures.

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- (b) Explain how the caterpillar invasion affected the processes in the Irish potato plants.

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(c) Explain the control measures farmers in Rakai can put in place to ensure sustainable production of Irish potatoes for food security and livelihood.

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Item 2

It's recommended to take at least two litres of water per day. On learning this, a village farmer started to take excessive volumes of alcohol instead of water. He lost his appetite for posho and beans. Later he developed body weakness, muscle wasting and a swollen abdomen with pain inside the upper right side. He further complains of much thirst, urinating frequently and sometimes in bed while sleeping. When he visited the hospital, he was diagnosed with high blood sugar in urine and liver diseases. The doctor told him that his poor health condition was due to his lifestyle.

Task

(a) State how his body organs were carrying out their functions before he changed his lifestyle.

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Item 3

A goat farmer in Ssembabule after visiting an agricultural exhibition was convinced that goats with black fur give better returns than goats with white fur. He purchased two goats with black fur to start a goat farming business. He allowed them to mate several times within a confined area while feeding them on hay to have many black goats.

Unfortunately, among the goats produced, there were goats with white fur, which made the farmer angry and returned the goats with white fur to where he bought the parental stock. He urged that he never wanted the white goats and that the productivity on the farm was not as expected.

Incidentally, when the white kid grew and was allowed to mate with the black goat, it produced only black kids. The farmer is now claiming it is his white goat which produced more black goats than goats with black fur.

Task

- (a) Explain why there are changes in the fur colour of the goats.

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SECTION B:

Part I

Answer only ONE item from this part.

Answers should be written in the answer booklet(s) provided

Item 4

The agricultural sector contributes over 20% of Uganda's GDP. To boost the sector, the government of Uganda gave a wetland located on the shores of Lake Victoria to the investors for rice growing. The investors cleared the wetland for rice growing. They use strong herbicides, garden flooding and deep trenches for efficient water flow and drainage that have contributed to successful rice production.

However, last year the environmental officer recorded increased flooding, reduction in fish catch, water pollution, malaria and poor air quality in the area.

Task

Explain;

- (a) how the practices used contribute towards the environmental challenges in the area.
- (b) why it's necessary to conserve this wetland on the shores of Lake Victoria.

Item 5

Tomo is a known vegetable farmer in Kyampisi Village. He cultivates tomatoes on the slopes of Kyampisi hill. He irrigates his vegetables in the dry season during the day and uses non-selective pesticides and excessive inorganic herbicides to manage pests and diseases, especially during the rainy season. The village depends on the only open well located in the swamp for domestic purposes, which causes competition for the resource during the dry season.

The community has noticed that when it rains, there is a lot of silt deposit in the well coupled with water colour changes. There are few tomato fruits developed on the plants causing financial loss.

Task

- (a) Explain how Tomo's activities are responsible for his poor yield and the challenges in the village and suggest the possible solutions.
- (b) Suggest the measures that can be put in place to avoid the challenges in the village sustainably.

Part II

Answer **only ONE** item from this part.

Answers should be written in the answer booklet(s) provided

Item 6

The surge of COVID-19 affected the activity of schools coupled with the total local down of the country. At the time of school re-opening, Ritah and Jane recorded great physical and physiological differences as shown in table 1 below.

Table 1. Physical and Physiological differences

	Body weight in Kg	Body height in m	Heart beat in bpm	BMI
Ritah	86	1.63	92	32.5
Jane	65	1.65	71	23.3

Table 2. Standard BMI Chart

Descriptions	BMI
Underweight	<18.5
Normal	18.5-24.9
Overweight	25.0 – 29.9
Obese	>30.0

The class teacher was puzzled by the differences in her students. She found out that Ritah spent more time with her mother in Bukoto feeding on a lot of red meat, yoghurt and tiktoking during her leisure time while Jane spent time with the grandmothers' place practicing agriculture, largely depending on fresh beans and vegetables. The class teacher recommended that Ritah change her feeding pattern and lifestyle.

Task

- Explain to Ritah how her lifestyle contributed to her condition.
- Advise Ritah on how change in her lifestyle can contribute to better living.

Item 7

Robert, the biology teacher organized an ecological study tour to Kasese as recommended in the syllabus. The activities for the trip included climbing the Rwenzori Mountain. In preparation for the trip, students ate carbohydrate-rich meals and drank lots of water.

Initially, the students climbed the mountain enthusiastically and energetically. After climbing about 3000 m, the teacher noticed some learners developing difficulty in walking, breathing and dizziness. The learners got worried about their colleague's condition as they saw the local people climbing with ease. The tour guide told them that normally this condition happens to first-time climbers, which makes climbing to the summit hard. Many students didn't understand the context.

Task

Explain;

- (a) the students' experiences as they climbed the Rwenzori Mountain.
- (b) why the local people ably climb this mountain to about 5,000 meters.

END