**TENDER TALENTS MAGNET SCHOOL**

**Uganda Certificate of Education**

**BIOLOGY**

**Paper 1**

**Theory**

**TIME: 2 hours 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 1.**

Mr. Nsamba’s cassava garden was invaded by the neighbour’s goats at the time of tuber formation. The owner of the goats has refused to compensate Mr. Nsamba, and Mr. Nsamba is worried that the yields will be poor.



**Fig. 1** shows Mr. Nsamba in his garden which was invaded by the neighbour’s goats.

Task

(a) Identify the plant structures affected by the goats.

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(b) Explain how the goats affected the processes in the cassava plants.

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(c) Why should Mr. Nsamba be compensated even if the cassava plants were able to grow again?

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**Item 2.**

John was suspended from school as a result of drinking alcohol. He engages in heavy drinking of alcohol in the nearby trading center. One day, as John approached a swamp on his way home staggering from drinking alcohol at 6:00 pm, he encountered a snake. His heart started beating faster and his breathing rate increased. He tried to pick a nearby stick but he could not get hold of it on several attempts, so the snake escaped.

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(b) What are the likely effects of John’s lifestyle as described in the scenario?

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(c) Suggest ways in which John can change his lifestyle.

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**Item 3.**

Use the pictures below to answer the following questions.



a). (i) Identify the organisms in the above diagram.

ii). with reasons, identify the life processes carried out by the above organisms.

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iii) How is the above life process beneficial to the above organisms?

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b). (i) Give any other life processes apart from those demonstrated in the above diagram.

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ii). You are in a community around a grassland. There is a lioness which always come at night and attack the livestock of the locals. The locals are planning to attack and kill the lioness because they are fade up with the losses. You are a Biologist who is interested in conservation, prepare to sensitize the angry community and give them measures of how to deal with this challenge.

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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.**

In a village in western Uganda, swamps have been cleared for cattle farmlands and sand mining. The area environment officer organized a radio talk show on sustainable use of natural resources in swamps. Unfortunately, Mary a resident of the area only heard the concluding statement, “*From the presentation, I kindly request everybody to use our natural resources sustainably*.”

**Task**

Explain to Mary the environmental problems being addressed by the environment officer and how they can be solved. Explain why the village should conserve the natural resources in the swamps.

**Item 5.**

As a result of a civil war in one of the countries neighbouring Uganda, many people entered Uganda as refugees. The local authority decided to settle the refugees on a piece of land, part of which was covered by a forest reserve next to a swamp. Several challenges arose in the community.

**Task**

Explain to the community how the environmental challenges came about. Advise them on how to minimize effects of the challenges and show the value of conserving the environment in the area.

**Part II**

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

**Item 6.**

Two Ugandan Towns **A** and **B** each have industries that release carbon dioxide gas, smoke and dust. The levels of air pollution in the two towns are as shown in table **1**.

Table **1**: levels of air pollution in two towns **A** and **B**.

|  |  |
| --- | --- |
| Town | Level of air pollution |
|  |  |
| A | 30 |
| B | 70 |

(According to **American Lung Association**, 2023, *the normal range of air pollution is 0 – 50 units*).

Samuel was living in town **A**. He used to jog every day, and would experience normal changes in his body during and after jogging.

When he shifted to town **B**, he continued with his usual routine of jogging. However, he started experiencing complications such as difficulty in breathing, chest pain and coughing.

**Task**

Explain to Samuel his experiences while living in town **A** and the new ones encountered in town **B**. Advise Samuel on how to manage the challenges experienced in town **B**.

**Item 7.**

In preparation for an inter-house competition, Chesang, a 40 kg female athlete ate a meal containing 470 g of carbohydrates in the morning. She believes the meal will help her perform better during the competition. However, her young brother does not seem to understand how the meal will contribute to Chesang’s success.

Chesang finally won the competition but experienced muscle cramps. She rested for 20 minutes, returned home walking but the brother wondered how she still had the strength to walk home after the competition.

[*The recommended daily carbohydrate intake of a 40* kg *female athlete is* (*280 – 480* g)]

**Task**

Explain to Chesang’s brother the processes that the meal she ate went through to enable her win the race, be able to come back home and how her body regained the normal state.

END