



**UNNASE MOCK EXAMINATIONS**  
**Uganda Certificate of Education**

**BIOLOGY**

**Paper 1 (Theory)**

**2 Hours**

**INSTRUCTIONS TO CANDIDATES:**

This paper consists 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.

| For Scorer's use |                |       |                   |
|------------------|----------------|-------|-------------------|
| Item No          | Basis code     | Score | Scorer's Initials |
| Item 1           | U <sub>1</sub> |       |                   |
|                  | A <sub>1</sub> |       |                   |
| Item 2           | U <sub>4</sub> |       |                   |
|                  | A <sub>4</sub> |       |                   |
| Item 3           | U <sub>6</sub> |       |                   |
|                  | A <sub>6</sub> |       |                   |
| Item 4/5         | U <sub>1</sub> |       |                   |
|                  | A <sub>1</sub> |       |                   |
| Item 6/7         | U <sub>3</sub> |       |                   |
|                  | A <sub>3</sub> |       |                   |

## SECTION A

*Attempt all items in the spaces provided*

### Item 1

Mr. Magezi had a tree in his Irish potato garden located in a wetland. One day he made a cut through the bark of the tree and observed some fluids coming out of the tree bark. The next day, he found many small insects gathered around the cut area of the tree bark.

When rains came, the Irish potato garden was flooded with water and the plants began to wither, their leaves turned yellowish and stems became weaker. The plants became stunted. When the flooded water was no more, the Irish potato plants revived. Their stems became taut, developed more roots and buds with greener leaves. Mr Magezi had a harvest of Irish potatoes.

#### Task:

(a) Explain how

- (i) the fluids coming out of the cut tree bark are formed within the tree.

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- (ii) the observations made about the Irish potato plants came about when the garden was flooded with water.

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| U <sub>1</sub> |  |  |
| U <sub>e</sub> |  |  |

(b) How did the Irish potato plants revive when the flooded water was no more?

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| A <sub>1</sub> |  |  |
| A <sub>e</sub> |  |  |

### Item 2

Joseph is a school-going teenager who joined a group of boys known for crime and drinking alcohol. One day, as he moved back home from drinking, he heard a very loud sound of a roaring lion from the bushes. His heart pounded, eyes protruded and he sweated profusely. While trying to run, he fell down and started to scream for help.

### Task

(a) Explain

(i) the effects of Joseph's lifestyle

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(II) how his body reactions came about after the sound of the roaring lion.

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| U <sub>1</sub> |  |  |
| U <sub>e</sub> |  |  |

(b) Advise Joseph on how he can live a better life.

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| A <sub>1</sub> |  |  |
| A <sub>e</sub> |  |  |

### Item 3

A Research Organization based in a certain community has two clear mandates:

1. Sensitizing the population on how to curb the spread of HIV/AIDS
2. Providing specimens for study in Science learning institutions.

The organization is working on a project to breed cockroaches for use in institutions for study purposes as specimens. They should however understand the stages of development of the specimens before identifying the right breed to multiply for supply in institutions. Research has shown that specimens with medium-sized wings are appropriate for study purposes. However, the gene for short wings is recessive over the one for long wings. When the researchers crossed a short winged specimen with a long winged one, all the products had long wings. This surprised them and has prolonged the research.

#### Task

(a) Using appropriate illustrations, explain

- (i) how the research results were obtained from the two specimens used.

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(11) the stages of development undergone by the specimen

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| U <sub>i</sub> |  |  |
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(b) How can the organization advise the community in line with their first mandate?

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| A <sub>i</sub> |  |  |
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## SECTION B

*Attempt a total of two items from this section, taking one item from each part*

### PART I

*Answer only **one** item from this part. Answers should be written in the answer booklets provided.*

#### Item 4

An urban swamp originally filled with numerous trees and papyrus plants was demolished to set up an industrial park for several investors in the country. Ten years later, the area started experiencing prolonged drought with high temperatures. Whenever it rains, the area floods. The locals complain of suffering from diseases they used to treat using herbal medicines from the swamp.

#### Task

- (a) To what extent are the challenges experienced in the area attributed to the destruction of the swamp?
- (b) Suggest why such areas should be conserved.

#### Item 5

A farmer purchased a fertile, bushy piece of land for maize cultivation. He cleared the bush, cut down all trees, and burnt the cut vegetation before planting maize. His harvests were excellent for the first two years. To maintain high yields, he regularly applied herbicides to control weeds and pesticides to protect his crop from army worms. However, in the third year, his maize harvest declined significantly. Disappointed, he was unsure of the cause.

#### Task

- (a) How did the farmers' practices lead to the decline in his crop yields?
- (b) What should the farmer do to improve the crop yields in his garden?

## PART II

Answer only **one** item from this part. Answers should be written in the answer booklets provided.

### Item 6

Mr. Kato took a cup of porridge before going for his routine exercises in the gym. He started exercising with vigor but later felt muscle pain and fatigue. He decided to sit down but continued to experience rapid breathing and feeling hot which later stopped and the pain also disappeared. He took a glass of juice, and went back home.

#### Task

- (a) (i) Describe how the porridge enabled Mr Kato carry out his exercises in the gym.
- (ii) Explain the challenges his body experienced during the exercise.
- (b) How did his body handle the challenges to enable him go back home?

### Item 7

Mr. Bbosa (blood group A) had a motorcycle accident. He injured his head and lost a lot of blood. When taken to the hospital, it was discovered that he had also damaged his pancreas.

The hospital decided to do blood transfusion, however further blood tests revealed that Mr. Bbosa was HIV positive. In the blood bank of the hospital are all blood group categories to choose from for transfusion.

#### Task:

- (a) Explain how the accident affected the normal functioning of Mr. Bbosa's body.
- (b) Suggest with reason(s)
  - (i) how Mr. Bbosa can manage his newly discovered health status.
  - (ii) the possible blood groups that can be transfused into Mr. Bbosa.

**E N D**