

Candidate's Name:.....

Signature.....

Random No.						Personal No.		

553/1  
BIOLOGY  
PAPER 1  
(Theory)  
SET FOUR  
2 ½ Hours  
SET.....003



**SELF-STUDY: HANDS-ON BIOLOGY**  
**Uganda Certificate of Education**  
**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**

**Answer all items in this section in the spaces provides**

**ITEM 1**

In Kiryandongo, farmer Okello planted cassava and maize at the beginning of the rainy season. However, unexpected hailstorms damaged the leaves, breaking some stems and slowing growth. Additionally, nutrient depletion in the soil resulted in thin maize stalks and small, weak cassava tubers. Despite these challenges, some plants managed to produce food.

**TASK:**

(a) Explain how the following factors affected the cassava and maize plants, leading to poor growth and yields:

(i) Hailstorm damage

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(ii) Nutrient depletion in the soil

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(b) Describe how the plants managed to survive and still produce food despite these conditions.

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**ITEM 2**

Sarah, a 19-year-old student in Mbale, joined a group of friends who frequently drink alcohol. Over time, she became forgetful, felt weak, and experienced poor coordination while walking. One evening, while heading home, she suddenly lost balance, fell down, and bruised her knee.

**TASK:**

(a) Explain how alcohol consumption affected Sarah’s brain and muscle coordination.

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(b) Suggest ways Sarah can overcome the challenges associated with excessive drinking.

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**ITEM 3**

Derrick, a 16-year-old Senior Four student in Lira, noticed that he can't see red and green clearly. He thought he was just tired from reading too much. During science practicals, his classmates teased him when he labelled red fruits as green. At home, his father insists that he is just being careless. Meanwhile, Derrick is also going through puberty, with mood swings, sudden anger, and lack of focus at school.

**Tasks:**

(a) (i). Use a genetic diagram to show how colour blindness, a sex-linked condition, can be inherited.

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(ii). Why puberty causes emotional and behavioural changes in teenagers

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(b) Explain how schools and parents can support learners with special needs and adolescent challenges.

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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 5**

In Kasese, a community near a lake has built many fish ponds by draining parts of a nearby wetland. They also dump waste like food scraps and plastic bags near the ponds, which attracts flies and smells bad. The fish in the ponds are dying, and crops near the wetland are not growing well because the soil is too wet. Local clinics report more cases of stomach illnesses. A nearby community with an intact wetland has healthier fish and fewer illnesses.

**Task:**

- (a) Explain how the community’s actions caused the fish deaths and health problems.
- (b) Suggest:
  - (i) Solutions to restore the wetland and improve fish farming.
  - (ii) Why it is important to conserve wetlands.

**ITEM 6**

In the small agricultural community of Hoima, increasing population density has forced farmers to continuously cultivate the same plots for many consecutive seasons, abandoning traditional shifting cultivation. They have observed: signs of nutrient deficiency in staple crops like maize and beans (e.g., yellowing leaves); consistently low yields; fewer earthworms and other beneficial soil organisms; and soil that feels harder and less crumbly compared to previous years.

**TASK:**

- (a) Explain how the continuous cultivation of the same land without proper replenishment leads to soil exhaustion and affects the overall components of fertile soil and its organisms.

- (b) (i) Advise the farmers on practical soil conservation methods that can improve soil fertility and sustain crop yields in their limited land.
- (ii) Why is it important to maintain fertile soil and healthy soil organisms for sustainable agriculture in Hoima?

## **PART II**

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

### **ITEM 6**

Nalongo Sarah, a mother of twins in Gulu, noticed that one of her children had a swollen leg and foot which kept increasing in size. The child also became weaker and refused to eat. On visiting the hospital, doctors diagnosed the child with elephantiasis caused by blockage in the lymph vessels. The child also had signs of poor nutrition such as dry skin and weak hair.

#### **Task**

- (a) Explain how the blocked lymph vessels and poor nutrition affected the child's body functioning.
- (b) Suggest how the child's health condition can be managed at home and in a health facility.

### **ITEM 7**

Ali, a 14-year-old pupil in P.7 from Lira District, started feeling tired all the time. His teacher noticed he was slower than usual, had pale lips, and had lost interest in playing football. At home, Ali mostly eats posho with beans but rarely eats fruits or vegetables. A health worker who visited the school suspected that Ali could be anaemic and suffering from vitamin deficiencies. His parents were advised to take him for further check-up.

#### **Task**

- (a) Describe how Ali's feeding habits could have led to the symptoms he is showing.
- (b) Suggest a diet plan that Ali can follow to regain energy and improve his health.

**END**