

Candidates' Name:

Signature:

Random No.					Personal No.		

(Do not write your school / Center name or Number anywhere on this booklet)

553/1

BIOLOGY

Paper 1

July / Aug 2024

2 ½ HOURS



KAMTEC EXAMINATIONS BOARD

Uganda Certificate Of Education

BIOLOGY

Paper 1

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.

FOR EXAMINER'S USE ONLY			
SECTION	ITEM	SCORE(S)	EXAMINER'S SIGNATURE
A	1		
	2		
	3		
B	4		
	5		
	6		
	7		
TOTAL			

SECTION A

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

Item 1

At the start of the season, the ministry of Agriculture, under the Parish model supplied a new variety of tomato species seeds to people of Yumbe district. The variety was well known for its high productivity and resistance to disease. Mr. Kidega, one of the renown farmers in the area and a beneficiary of the program, prepared his garden, applied fertilisers and planted the seeds. After a month, Kidega observed that most of the tomato plants either drooped their leaves or shed them off during hot days. Some of the tomato plants had yellow leaves. He eventually realised a very poor yield at the end of the season.

**Task**

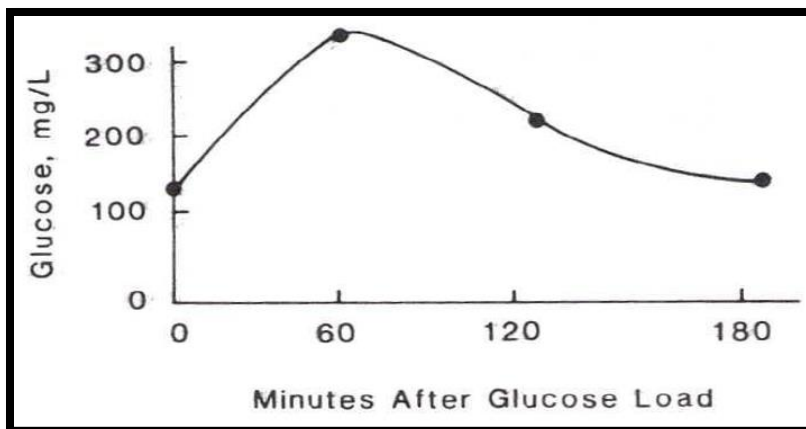
- (a) Identify the challenge faced by the plants in the garden.

(b) Which processes in the tomato plants were affected? Explain how the effect on the processes led to the poor yields observed.

(c) How can Mr. Kidega improve his yields of the tomatoes next season?

Item 2

John fell off a tree as he was climbing to get mangoes for his little sister. He was rushed to the hospital for basic treatment. However, since then, John has had a lot of complications. He passes out small volumes of concentrated urine, feels thirsty all the time and has a lot of pain in the lower abdomen. He was then taken to a doctor for medical checkup. The doctor, suspecting a certain condition gave him a glucose rich drink (glucose load) and monitored his blood glucose level as showed in the graph below;



Task

(a) Comment on the variation of glucose in John's blood with time

(b) Identify the organ(s) that could have been affected in John's body.

(c) How did the effect on the organ(s) identified in (b) above lead to John's health condition?

(d) Suggest possible solutions to John's condition

Item 3

Kipsang, a long-distance athlete, trains at a high altitude in the mountains and this has increased his performance with time. On day of the race, he had a heavy carbohydrate meal and then started to warm up in preparation for the race.

Kipsang competed favourably, but towards the end, he developed muscle cramps and was breathing profusely. He however endured the cramps until he won the race. After the race, his profuse breathing continued, while the muscle cramps progressively receded.

Task

(a) How does training in the high mountains increase Kipsang's performance?

(b) Explain how the body utilised the morning meal to enable him win the race.

(c) Analyse the challenges encountered by his body during the race and how it overcame them

SECTION B**PART I**

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

Item 4

John, a 10-year-old boy, had an accident as he was moving from school to home on a motor cycle. He had severe bleeding and lost a lot of blood which made him unconscious.

Following close examination, the doctor decided that he needed an immediate blood transfusion. John is of blood group **B** and present at the hospital are John's mother of blood group **A**, his elder sister of blood group **AB** and his younger brother of blood groups **O**.

***Task***

Work out the possibility of each of John's relatives to successfully transfuse blood to him, and suggest remedies that could save his life.

Item 5

A newly wedded young normal couple gave birth to a child with an abnormal condition. The child experiences recurrent episodes of pain, swollen joints, fatigue, and anemia. She is also weak, fragile and can barely do any work at home. When taken to the hospital, the doctor examined the child and concluded she had sickle cell anaemia. The man has blamed his wife for this misfortune and plans to divorce her for giving birth to such a child.

Task

Help the man understand how this child came about, and suggest measures the couple can employ to ensure they raise up their child together.

PART II

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

Item 6

Mabira forest, the largest natural forest in Uganda is a home to a variety of plants, birds, snakes, monkeys, fungi, algae and microscopic organisms like bacteria. Due to its great biodiversity, it attracts tourists from various parts of the country. However, in the recent years, people have cleared a large piece of the forest to plant sugarcane and also to burn charcoal.



Task

Explain the possible effects of these human activities on the forest ecosystem and suggest possible measures that can be taken to ensure sustainable use of the natural resource.

Item 7

Masendi market, is highly populated and busy market, located near a swamp in a forested area. In the past three weeks, the market has expanded into the swamp and many other stalls have been set up in the newly cleared areas. Within the market, rubbish and fruit remains are scattered all over the market and most vendors are not concerned. The water in the swamp is mainly used for both human consumption and livestock. There has however been reports from the VHT showing high cases of diarrhoea, cholera and malaria.



Task

- (a) Analyse the situation in the market and its surrounding and suggest environmental impacts of the human activities around Masendi market.
- (b) Help the vendors understand the cause of the problem and how to overcome it.

END