

**553/1
BIOLOGY
(Theory)
Paper 1**

2 Hours 30 Min

INSTRUCTIONS TO CANDIDATES:

- *This paper consists of two Items*
- *Respond to both items in the spaces provided*

FOR EXAMINER'S USE ONLY		
ITEM	SCORE	EXAMINER'S SIGNATURE
1		
2		
3		
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TOTAL		

Turn over

Question one:

As a result of a civil war for the independence of South Sudan, very many people were displaced from their homes, and these sought refuge in the neighboring countries including Uganda.

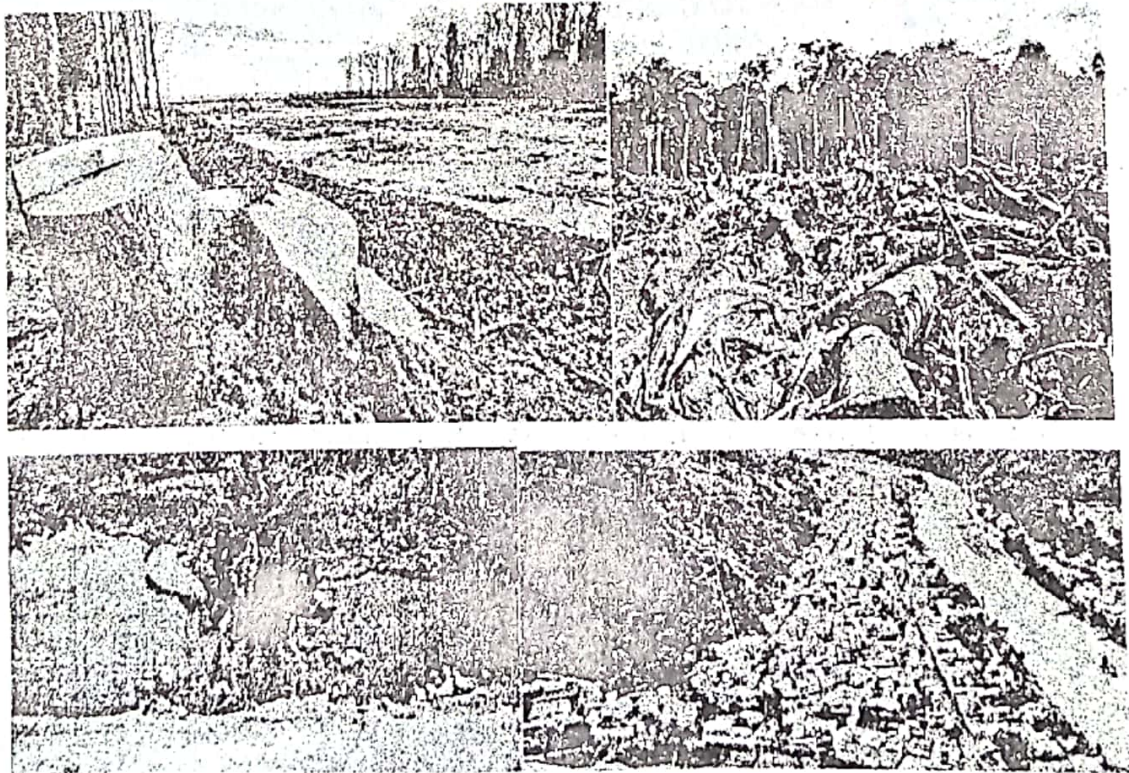
Akotto-kirema is a large village in the Northern Uganda boarder district, crossed by river Nile. The river banks of the village had been covered by an artificial Eucalyptus Forest plantation for years as a forest reserve.

Due to the influx of people running away from the civil unrest, the eucalyptus forest was progressively cut down as people established a illegal refugee camp.

A report by the ministry of Disaster preparedness indicated the following observations in the few years of the existence of the camp:

- The forest was cleared as people sought alternative sources of fuel, income and space
- During the prolonged heavy rainfall season, chunks of soil were eroded into the river, which flooded into the camp .
- There was an outbreak of dysentery during the rainy season
- Thick smoke in the atmosphere from the burning of plastic litter and wood for charcoal was a common scene. The ministry of health had warned of impending danger of respiratory diseases
- The number of people in the camp was bigger than what the area could support.

Support material



Task:

The ministry of disaster preparedness has hired you as a consultant scientist to analyse its report. Clearly highlight the problems in Akotto-kirema village and give scientific recommendations to the Government. (15 marks)

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Question Two:

Mr. Okello is a smart family man who loves living in a green environment. He built his family house on a hill in order to capture the gentle breeze and the sun rays of both sunrise and dawn. His bed room found at the East end of the house receives radiant sun rays whenever its windows are open. He has a number of potted plants in his large bed room which he shares with his wife and a set of twins.

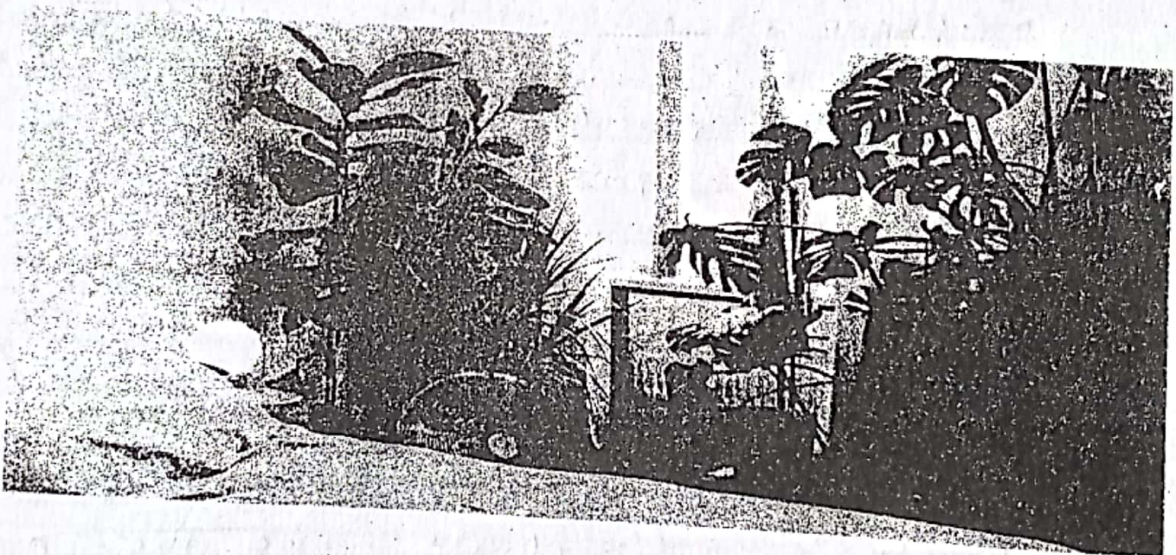
During the day, Mr. Okello opens his bed room window, and the radiant sunrays of the morning sunshine received by the potted plants in the room create fresh and well aerated serene conditions. He oftenly waters his plants as he enjoys the fresh atmosphere in the room.

During the night however, Mr. Okello has had strange observations in his bed room:

- They always suffocate whenever all windows are fully closed.
- The bedroom is warmer at night and deficient of any fresh air
- One day, the twins were rushed to the hospital in the night and were diagnosed of limited oxygen supply to the body.

The doctor's recommendation was that Mr. Okello removes all the potted plants from is bedroom. This did not go well with him, and so remained hesitant to do what the doctor had said.

Support material:



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Question Three

Ssegamwenge is a university student who neither smokes nor drinks alcohol, however he moves in company of serial smokers all his time at campus.

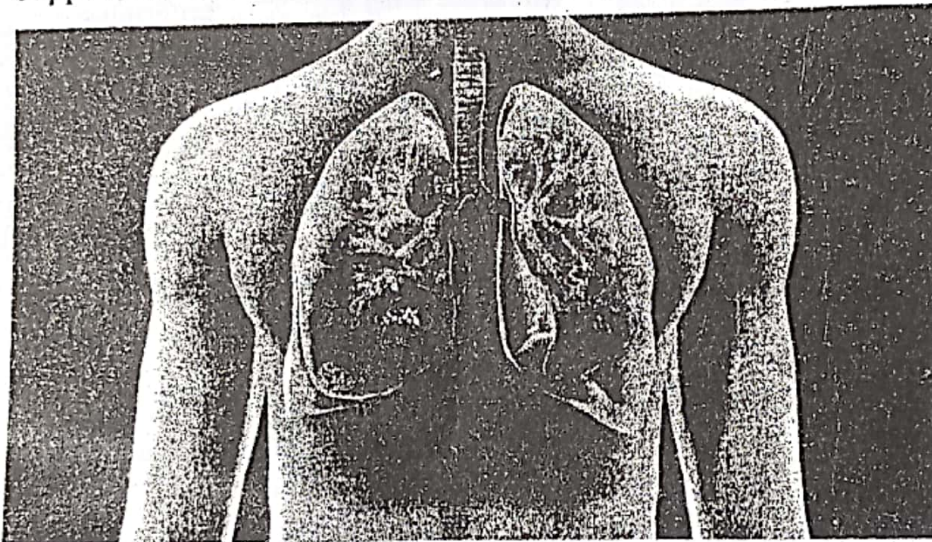
In his third year of university Education, ssegamwenge fell sick and had the following symptoms: persistent cough, chest pain and vomiting blood.

When his mother rushed him to the hospital for thorough medical examination, the Doctors report indicate the following:

- That ssegamwenge was suffering from lung cancer.
- That his red blood cells could no longer load oxygen efficiently, and that is why he had general body weakness
- That he was a smoker.

The mother refuted the medical report as she insisted that her son was not a smoker, and so she did not understand the Doctor's report.

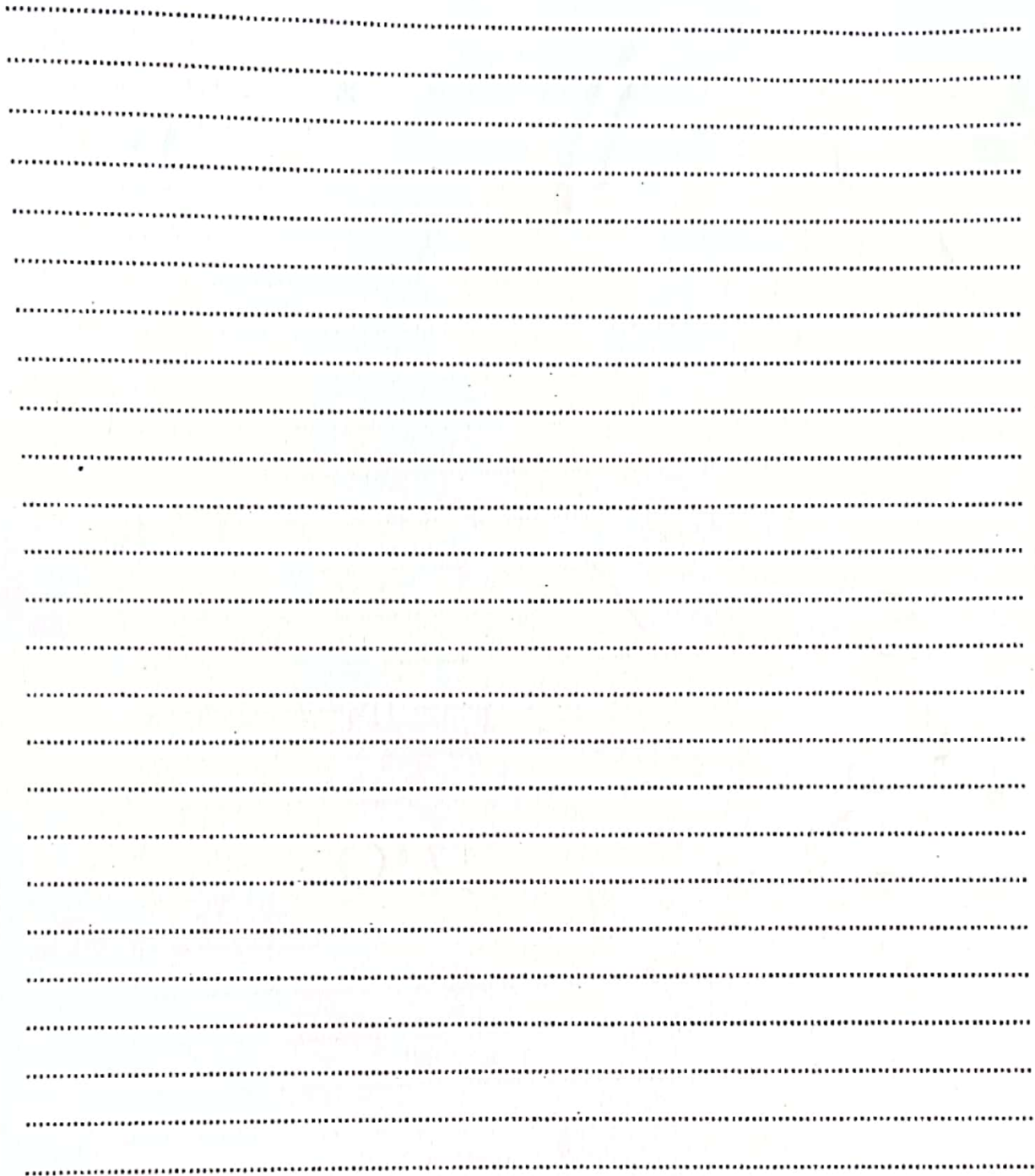
Support material



Task:

Explain to Ssegamwenge's mother how the son contracted the illness and help her understand the doctor's report. (15 marks)

A series of horizontal dotted lines provided for writing the answer.



Question Four:

Makerere-Kikoni is a slum area in Kampala district and has residents from two living economic standards. i.e; the rich and the poor

The slum has one community Health Centre III, which has a routine health camp every first Monday of the month to check on the health status of especially community children.

During one of the health camps, data was collected about a number of children who visited the health centre. Below is an extract of the data collected about two children assessed.

Child A	Child B
Body weight = 13kg	Body weight = 18kg
Body height = 0.916m	Body height = 0.72m
✓ Sores on the body	✓ Has ox-bow legs
✓ Muscle wasting	✓ High ventilation rate

Support material



Child A



Child B

Standard BMI chart

<18.5	Underweight
18.5 to 24.9	Normal/ideal weight
25 to 30	Overweight
30 to 35	Obese
>35	Gross obesity

Task:

Analyze the data for the Health workers and suggest nutritional remedies for the two children
(15 marks)

A series of horizontal dotted lines provided for writing the answer.

Question five

During the recently concluded Daily Monitor Farm clinic in Kizuza Mukono District, a number of farmers attended, including Jane, a road-side florist who operates along Kampala-Jinja road. Jane learnt so many good farming practices which she applied to her business of potted plants and the results were very promising:

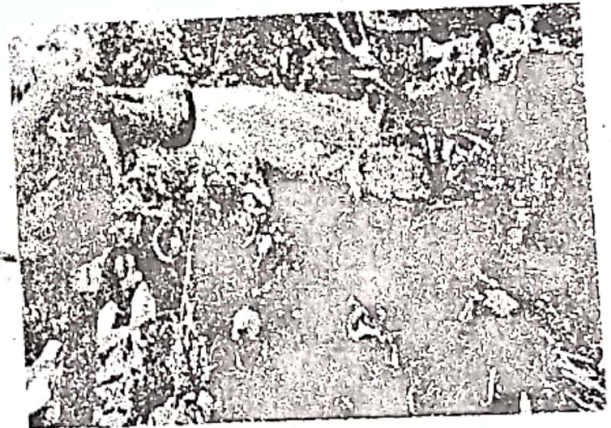
- She started watering her plants daily especially during the dry seasons
- She applied N.P.K fertilizers in appropriate ratios regularly and this gave her good results
- She started spraying her plants with especially organic pesticides as she had been taught in the workshop.
- She started being careful with the choice of the soils in which she plants her stem cuttings and at times, she would first boil the soil before making compost manure from it.

The results of these practices were very healthy plants which became very attractive to her buyers and so Jane's business expanded.

On the other hand, all her neighbors had stunted plants, infested with pests, had yellow leaves with poor root growth.

The neighbors were wondering about the secret behind Jane's plants.

Support material



Task:

How have Jane's practices helped boost her business and outcompete her neighbors?

(15 marks)

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END