Candidate's Name: .....

Signature: .....

Random No.						Personal No.		

(Do not write your School/Centre Name or Number anywhere on this Booklet.)

553/2

BIOLOGY

Paper 2

(Practical)

Oct./Nov. 2025

2½ hours

For Scorers' Use Only

Total Weighted Score		
Initials		

UGANDA NATIONAL EXAMINATIONS BOARD

Uganda Certificate of Education

INSTRUCTIONS TO CANDIDATES:

This paper consists of **two** *examination items. Respond to* **both** *items in the spaces provided.*

Drawings should be made in the spaces provided. Use a **sharp pencil** *for your drawings. Coloured pencils or crayons should* **not** *be used.*

No *additional sheets of writing paper are to be inserted in this booklet.*

Work on additional sheets of paper will **not** *be scored.*

For Scorers' Use Only

Item No.	Basis Code	Weighted Score	Scorers' Initials
1	A_1		
	H_1		
	V_1		
	AP_1		
	P_1		
	D_1		
	DP_1		
	C_1		
	IR_1		
2	I_2		
	S_2		
	D_2		
Total Weighted Score			

Turn Over

Item 1

A company treats biodegradable waste (garbage) into non-harmful substances. In the process, a liquid with a bad smell is first produced from the waste. The company then uses an enzyme to decompose the liquid thereby reducing the bad smell and a gas is produced but the process is slow. The company has been advised to create a suitable pH medium that can help the enzyme speed up the rate of decomposition.

Currently, there are three different solutions on the market that can create different pH media; **W**, **X** and **Y**. The company needs to choose one of the solutions that gives the most suitable pH medium for the enzyme.

The more the bubbles are produced, the faster the rate of decomposition of the liquid.

You are provided with solution **S** which contains the enzyme, liquid **T** from the garbage, and solutions **W**, **X** and **Y** of different pH media.

Task:

Design and carry out a scientific investigation to determine which of the solutions **W**, **X** or **Y** provides a suitable pH medium for the decomposition of liquid **T** by the enzyme and give appropriate recommendation to the company.

Your investigation should include the; aim, hypothesis, variables, materials, procedure, results, analysis and conclusion.

(a) Aim, hypothesis, variables and materials.

For Scorer's Use Only

Basis Code	A_1	H_1	V_1	AP_1
Score				

(b) Procedure of the investigation.

For Scorer's Use Only

Basis Code	P_1
Score	

(c) Results, analysis and conclusion.

For Scorer's Use Only

Basis Code	D_1	DP_1	C_1
Score			

(d) Explanation and recommendation to the company.

For Scorer's Use Only

Basis Code	IR_1
Score	

Item 2

In a community, farmers have been cultivating coffee on a large scale but their yields have been declining. They were advised to change their practices so that they can solve the problem.

Unlike other farmers, John adopted the advice by establishing a garden of flowers near his coffee plantation to attract arthropods. He also used old cardboards to reduce water loss from the soil. Overtime, John's coffee yields improved.
Meanwhile, other coffee farmers in the neighbouring village wondered why their yields continued to decline.

To explain this situation, specimens **J** and **K** were collected from John's coffee farm and used to illustrate the difference in the coffee yields.

Task:

(a) (i) With reason(s), identify the smallest taxonomic group to which both specimens **J** and **K** belong.

Taxonomic group

_____

Reason(s)

_____

_____

_____

_____

For Scorer's Use only

Basis Code	I_2
Score	

(ii) Describe how the structures on one of the specimens enabled it to increase the coffee yields in John's garden.

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For Scorer's Use only

Basis Code	S_2
Score	

(b) Using a drawing of specimen **J**, show the structures that enabled it to spread easily in John's coffee plantation.

For Scorer's Use only

Basis Code	D_2
Score	

END