EXAMINATION NO.: _____

THE MALAWI NATIONAL EXAMINATIONS BOARD

2024 MALAWI SCHOOL CERTIFICATE OF EDUCATION EXAMINATION

BIOLOGY

Subject Number: M022/II

Wednesday, 3 July

Time Allowed: 1h 30 min sessions
10:00 am onwards

PAPER II

(40 marks)

Practical

Instructions:

1. **This paper contains 5 printed pages. Please check.**
2. Write your **Examination Number** at the top of each page of this question paper.
3. This paper contains **two** sections, **A** and **B.** Section **A** has two descriptive questions and section **B** has **two** questions on experiment.
4. Answer **all** the **four** questions in the spaces provided in the question paper. The maximum number of marks for each answer is indicated against each question. Use a pencil for all drawings.
5. In the table provided on this page, **tick** against the question number you have answered.
6. At the end of the examination, hand in your question paper to the invigilator when time is called to stop writing.

Question Number	Tick if answered	Do not write in these columns	
1			
2			
3			
4			

Section A (20 marks)

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

1. A Science teacher brought a quadrat, a marker and a string to a form four class. Outline the procedure that could be followed when estimating a population of black jack in a play ground using the materials.

(10 marks)

Continued/...

2. Describe an experiment that could be carried out to show the effect of time of the day on memorising a list of words. Your answer should include procedure, expected results and conclusion.

(10 marks)

Continued/…

Section B (20 marks)

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

3. You are provided with one red bean, one white bean and one red and white (mixed) bean:

a. Identify any **two** variations shown by the specimens.

_____

_____

_____

(2 marks)

b. Which of the variations in **(a)** is continuous?

_____

(1 mark)

c. Give a reason for the answer in **(b).**

_____

_____

(1 mark)

d. Work out a genetic cross to show how colour of the red and white (mixed) bean was obtained from the red bean and the white bean. Use **R** for pure breeds red beans alleles and **W** for white bean alleles.

(5 marks)

e. State the relationship of alleles in the white and red (mixed) bean.

_____

(1 mark)

Continued/...

4. You are provided with the following: an irish potato tuber, a white plain paper, a knife/scarpel, a 30 cm ruler, Solution **P** and Solution **Q**.

Using a scarpel/knife:

- Peel the irish potato
- Cut three strips: 3cm long, 1cm wide and 1cm high.
- Put one strip in solution **P**, one in solution **Q** and the remaining one on the white plain paper.
- Let it stay for 10 minutes

a. After 10 minutes, gently bend each strip and record your observation in the table below.

Treatment	Observation
Strip in solution **P**	
Strip in solution **Q**	
Strip on plain paper	

(3 marks)

b. Explain the results obtained in solution **P**.

_____

_____

_____

(3 marks)

c. Explain **one** way in which the results obtained in solution **Q** is important to plant growth.

_____

_____

_____

(3 marks)

d. State a reason for placing one strip of irish potato on a white plain paper.

_____

_____

(1 mark)

END OF QUESTION PAPER

NB: This paper contains 5 printed pages.