



EXAMINATION NO.: _____

THE MALAWI NATIONAL EXAMINATIONS BOARD

2023 MALAWI SCHOOL CERTIFICATE OF EDUCATION EXAMINATION

BIOLOGY

Subject Number: M022/I

Tuesday, 4 July

Time Allowed: 2 hours

8:00 – 10:00 am

PAPER I

Theory

(100 marks)

Instructions:

1. This paper contains 12 printed pages. Please check.
2. Before you begin, write your **Examination Number** at the top of each page of the question paper.
3. This paper has **two** sections, **A** and **B**. Section **A**, has **ten** questions and Section **B** has **three** questions.
4. Answer **all** the **13** questions in the spaces provided. The maximum number of marks for each answer is indicated against each question.
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 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			
5			
6			
7			
8			
9			
10			
11			
12			
13			

Section A (70 marks)

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

1. a. State any **two** functions of tissue fluid.

(2 marks)

- b. Explain any **one** way which helps lymph to flow in a human body.

(2 marks)

- c. Explain any **two** functions of the lymphatic system.

(4 marks)

- d. Describe any **two** problems associated with biotechnology.

(4 marks)

Continued/...

2. a. **Figure 1** is a diagram of a mitochondrion.

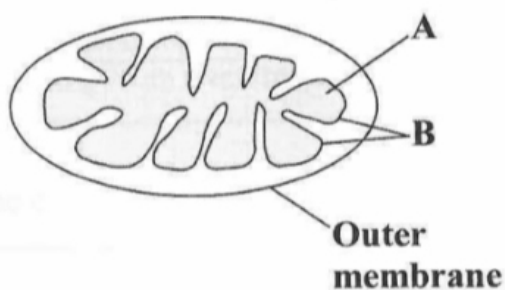


Figure 1

- (i) Identify the part labelled **A**.

_____ (1 mark)

- (ii) Explain the function of the part labelled **B**.

_____ (2 marks)

- b. Mention any **two** sex linked traits in human beings.

_____ (2 marks)

Continued/...

3. a. Mention any **two** limitations of quadrant method in estimating plant population.

(2 marks)

- b. Describe any **two** ways in which energy flows in an aquatic ecosystem.

(4 marks)

- c. Describe **one** cause of variations in organisms.

(2 marks)

Continued/...



4. a. Mention any **two** pigments found in a leaf.

(2 marks)

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- b. A form three student developed high fever, wheezing and chest pains after attending to a meeting in an overcrowded hall.

- (i) Name the disease that the student suffered from.

(1 mark)

- (ii) Name the causative agent of the disease named in **b (i)**.

(1 mark)

- (iii) Give any **two** ways of controlling the disease.

(2 marks)

- c. Describe the effect of low level of Anti Diuretic Hormone to the amount of urine produced in the human body.

(2 marks)

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Continued/...



5. a. Figure 2 is a diagram of a chloroplast.

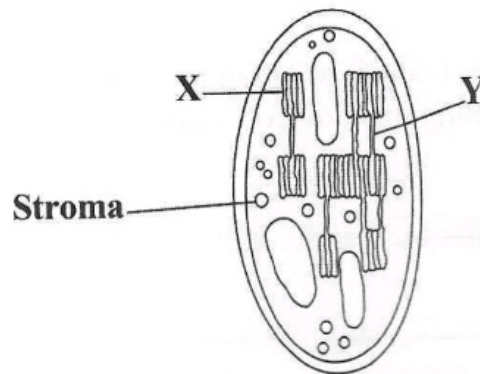


Figure 2

- (i) Mention the parts labeled X and Y.

X: _____ (1 mark)

Y: _____ (1 mark)

- (ii) State the function of the stroma in the structure.

_____ (1 mark)

- b. Explain any **two** ways in which photosynthesis is important.

_____ (4 marks)

6. a. Give any **two** differences between reptiles and amphibians.

Reptiles	Amphibians

(2 marks)

- b. Describe any **one** adaptation of mammals to locomotion.

(2 marks)

- c. **Table 1** below shows traits of identical twins **A** and **B** that were separated after birth.

Table 1

Trait	A	B
Height	1.2	1.7
Body mass	4.1	9.9
Head length	2.9	2.2
Intelligence	3.1	6.0
Head width	2.6	2.9

- (i) Identify each of the following:

1. Trait with biggest difference.

(1 mark)

2. Trait with smallest difference.

(1 mark)

- (ii) What type of variation is displayed in the **Table**?

(1 mark)

Continued/...

6. c. (Continued)

(iii) Give a reason for the answer in c (ii).

(2 marks)

7. a. Mention **one** organ in fish which is used for each of the following in locomotion:

(i) pitching: _____ (1 mark)

(ii) sinking: _____ (1 mark)

b. Explain any **two** ways in which diffusion is facilitated in the dialysis machine.

(4 marks)

8. A man went into the field to fetch firewood. Suddenly he saw a snake. He immediately jumped and ran away.

a. From the situation given above, identify the following:

(i) stimulus: _____ (1 mark)

(ii) response: _____ (1 mark)

b. Which characteristic of living things was displayed by the man?

(1 mark)

Continued/...

8. (Continued)

- c. Mention **two** effector organs that were involved in the man's response to the sight of the snake.

(2 marks)

9. a. Give any **one** reason why blood in the arteries move at a high pressure.

(2 marks)

- b. Give the advantage of arteries having each of the following properties:

- (i) thick muscular walls

(1 mark)

- (ii) narrow lumen

(1 mark)

- c. Give any **one** similarity between arteries and capillaries.

(1 mark)

10. a. State any **two** ways in which the physical component of an ecosystem affects diversity of organisms.

(2 marks)

- b. How does a venus flytrap protect itself from predators? Give **three** points.

(3 mark)

Continued/...



Section B (30 marks)

Answer **all** the **three** questions in this section. Your answers should be in an essay form.

11. Explain any **five** ways in which first line defence works.

(10 marks)

(10 marks)

Continued/...

12. Describe any **five** adaptations of human male reproductive system to its function.

(10 marks)

Continued/...

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NB: This paper contains 12 printed pages.

