EXAMINATION NO.: _____

THE MALAWI NATIONAL EXAMINATIONS BOARD

2024 MALAWI SCHOOL CERTIFICATE OF EDUCATION EXAMINATION

BIOLOGY

Subject Number: M022/I

Wednesday, 10 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. Mention any **one** excretory organ responsible for the removal of nitrogenous wastes in the human body.

_____

_____

_____

(1 mark)

b. Mention any **two** practices that enhance proper functioning of the kidney.

_____

_____

_____

_____

(2 marks)

c. State any **two** examples of discontinuous variations in human beings.

_____

_____

_____

_____

(2 marks)

d. Describe any **one** adaptation of a leaf for photosynthesis.

_____

_____

_____

_____

(2 marks)

2. a. Mention any **two** characteristics of reptiles.

_____

_____

_____

(2 marks)

b. **Figure 1** is a diagram showing a plant response to a stimulus.

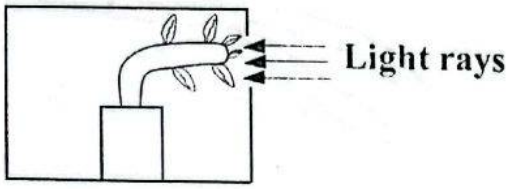

Figure 1

(i) What type of response is illustrated in **Figure 1**?

_____

(1 mark)

(ii) Explain **one** way in which the response shown in the figure is important.

_____

_____

(2 marks)

(iii) Describe the mechanism of the response shown in the figure.

_____

_____

_____

_____

_____

_____

(4 marks)

3. a. Mention any **two** impacts of climate change on an ecosystem.

_____

_____

_____

(2 marks)

b. **Figure 2** is a diagram showing the structure of a chromosome.

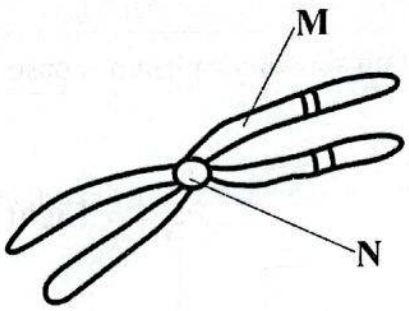

Figure 2

(i) Name the part labelled **M.**

_____

(1 mark)

(ii) State the function of the part labelled **N.**

_____

_____

_____

(1 mark)

(iii) At what stage of mitosis is the structure of the chromosome being observed?

_____

(1 mark)

c. Explain any **one** application of genetic engineering.

_____

_____

_____

_____

_____

(2 marks)

4. **Figure 3** is a diagram showing a human foetus in a womb.

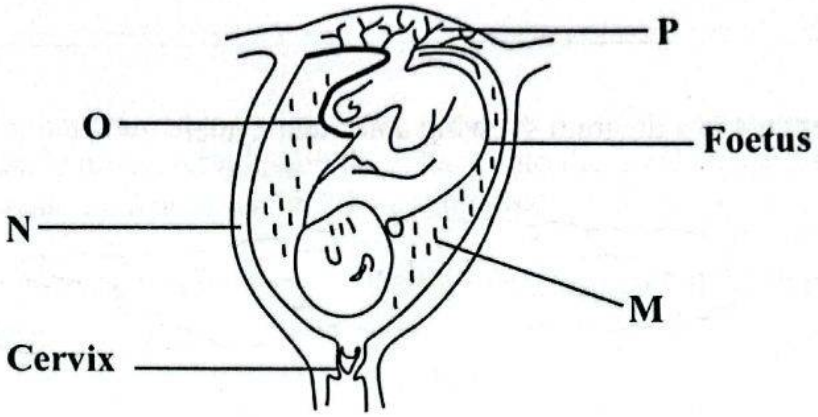

Figure 3

a. Name the parts labelled **N** and **O**.

N: _____ **(1 mark)**

O: _____ **(1 mark)**

b. State any **two** functions of the part labelled **M**.

_____

_____

_____

(2 marks)

c. Explain any **one** adaptation of part labelled **P** for its function.

_____

_____

_____

_____

(2 marks)

d. Describe the role of part labelled **N** during birth.

_____

_____

(2 marks)

5. a. State the **two** effects of auxins on plant growth.

_____

_____

(2 marks)

b. **Figure 4** is a diagram showing a nutrient cycle.

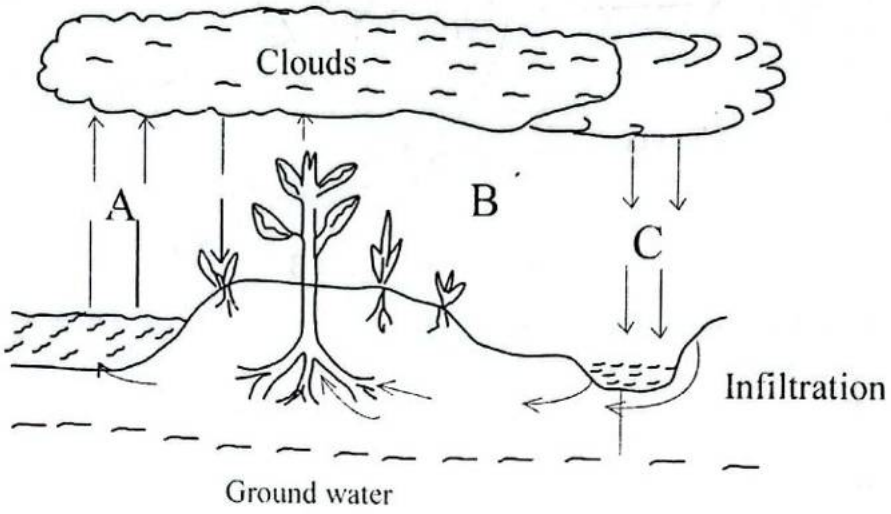

Figure 4

(i) Name the processes labeled **A** and **C**.

A: _____ **(1 mark)**

C: _____ **(1 mark)**

(ii) Explain any **one** way in which process labelled B is important to the ecosystem.

_____

_____

_____

_____

(2 marks)

6. a. State any **two** components of the lymphatic system.

_____

_____

(2 marks)

b. A fish farmer wanted to estimate the population of fish in a pond, she caught 120 fish, marked them and released them back into the pond. After 24 hours, she caught again 80 fish of which 20 were marked;

(i) Name the method used by the farmer to estimate the fish population in the pond.

_____

(1 mark)

(ii) Why did the farmer wait for 24 hours before catching the 80 fish?

_____

_____

(1 mark)

(iii) Calculate the estimated population of the fish in the pond.

(3 marks)

7. a. Mention any **two** viral diseases which could be controlled by vaccines.

_____

_____

(2 marks)

b. **Figure 5** is a diagram showing a plant.

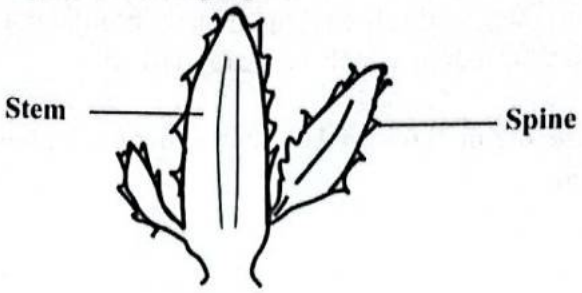

Figure 5

(i) Name the group to which the plant belongs according to its habitat.

_____

(1 mark)

(ii) State **two** functions of the spines.

_____

_____

(2 marks)

(iii) Explain **one** way in which the absence of leaves in the plant is important.

_____

_____

(2 marks)

8. a. State any **two** factors to be considered before organ transplanting.

_____

_____

(2 marks)

b. Describe **one** role of any **two** sex hormones in the menstrual cycle.

_____

_____

_____

_____

(4 marks)

Continued/...

9. a. State any **two** effects of cancerous cells.

_____

_____

(2 marks)

b. Describe the down stroke movement in birds.

_____

_____

_____

_____

_____

(5 marks)

10. a. Mention any **two** diseases of the kidney.

_____

_____

(2 marks)

b. **Figure 6** is a diagram showing an experimental set up to investigate the action of protease on egg white.

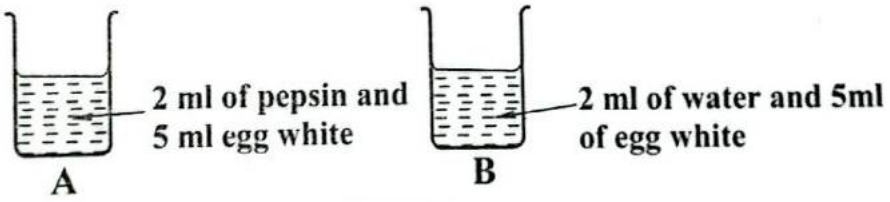

Figure 6

(i) Describe the results of the experiment.

_____

_____

_____

(2 marks)

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

_____

_____

(2 marks)

Section B (30 marks)

Answer **all** the **three** questions in this section in the spaces provided under each question. Your answers should be in an essay form.

11. Describe any **five** factors that influence breathing rate in human beings.

(10 marks)

12. A couple would like to stay without a child for three years. Describe any **five** methods they could use to prevent pregnancy.

(10 marks)

Continued/…

13. Describe any **five** abnormal conditions of the nervous system.

(10 marks)

END OF QUESTION PAPER

NB: This paper contains 12 printed pages.