



EXAMINATION NO.: _____
THE MALAWI NATIONAL EXAMINATIONS BOARD
2019 MALAWI SCHOOL CERTIFICATE OF EDUCATION EXAMINATION

BIOLOGY

(100 marks)

Subject Number: M022/I

Tuesday, 25 June

Time Allowed: 2 hours
8:00 – 10:00 am

PAPER I

Instructions

1. This paper contains **11** printed pages. Please check.
2. Before you begin, **fill** in your **Examination Number** at the top of the question paper and on all other sheets.
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 **ten** questions in this section.

1. a. **Figure 1** is a diagram showing a bacterium. Use it to answer the questions that follow.

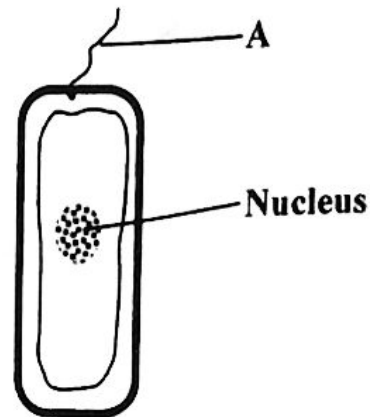


Figure 1

- (i) Name the part labelled A.

_____ (1 mark)

- (ii) Describe how the bacterium moves.

_____ (2 marks)

- b. Explain any **three** adaptations of birds for locomotion.

_____ (6 marks)

Continued/...

2.

- a. **Figure 2** is a diagram showing a transverse section of a stem. Use it to answer the questions that follow.

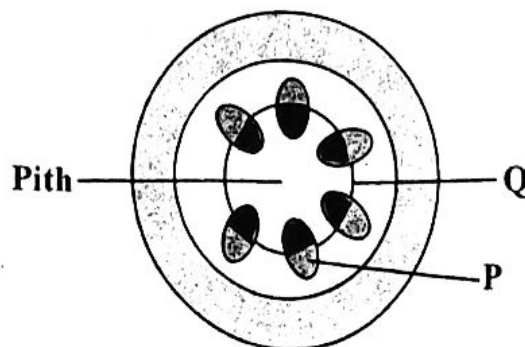


Figure 2

- (i) Name the part labelled **P**.

_____ (1 mark)

- (ii) Give any **one** function of part labelled **Q**.

_____ (1 mark)

- b. Explain any **three** factors that affect the rate of diffusion in plants.

_____ (6 marks)

3. a. Explain the importance of a control variable in a scientific investigation.

_____ (2 marks)

Continued/...

3. (Continued)

- b. Give any **three** reasons for taking accurate measurements when conducting investigations in Biology.

(3 marks)

4. a. Name any **two** respiratory diseases.

(2 marks)

- b. Explain any **two** adaptations of the alveolus for gas exchange.

(4 marks)

5. a. Give any **two** structural differences between "a sperm" and "an ovum".

(2 marks)

5. (Continued)

- b. State **two** functions of testes.

(2 marks)

- c. State any **two** causes of maternal death.

(2 marks)

6. a. **Figure 3** is a diagram showing a human embryo in the uterus. Use it to answer the questions that follow.

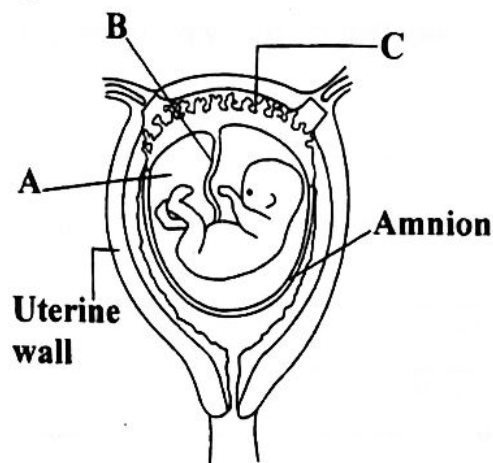


Figure 3

- (i) Name the parts labelled **B** and **C**.

B : _____

C : _____

(2 marks)

- (ii) State any **two** functions of the part labelled **A**.

(2 marks)

Continued/

6. (Continued)

- b. Mention the **two** permanent methods of birth control.

(2 marks)

7. a. Define each of the following terms:

(i) "Excretion" _____

(ii) "Homeostasis" _____

(2 marks)

- b. Name any **two** excretory products from the kidney.

(2 marks)

- c. Give any **two** similarities between a dialysis machine and the kidneys.

(2 marks)

8. a. What type of immunity does a child acquire through recovering from a disease?

(1 mark)

- b. Why is a person with anaemia **not** allowed to donate blood?

(2 marks)

Continued/...

8. (Continued)

- c. Explain how vaccination works.

(2 marks)

9. a. Give any **two** functions of bones in a human body.

(2 marks)

- b. Name the type of muscles to which the biceps muscles belong.

(1 mark)

- c. State any **two** differences between muscles of the heart and triceps muscles.

(2 marks)

10. a. (i) Explain how albinism is caused.

(2 marks)

- (ii) Give any **two** negative biological effects of albinism in humans.

(2 marks)

Continued/...

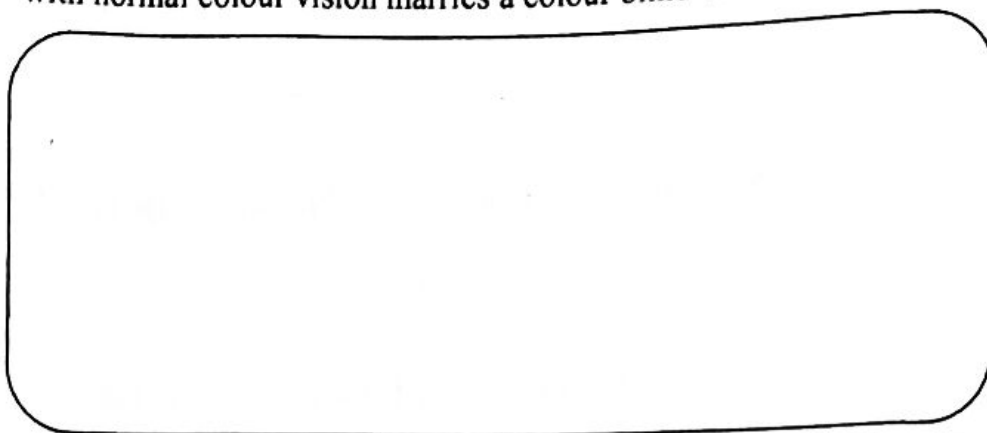
10. (Continued)

- b. Colour blindness is one of the sex-linked characters in humans. Allele for normal colour vision is dominant over allele for colour blindness. Use **R** for dominant allele and **r** for recessive allele.

- (i) Write the genotype for a male with normal colour vision.

(1 mark)

- (ii) Use a punnet square to show the genotype of the offspring when a man with normal colour vision marries a colour blind woman.



(5 marks)

- (iii) Why is a female with heterozygous condition of sex-linked character called a carrier?

(2 marks)

- c. State any two uses of bacteria in biotechnology.

(2 marks)

Continued/...

Continued/...

This image shows a single page of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There is no handwriting or other markings on the paper.

Continued/...

-
- This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

This paper contains 11 printed pages.