



EXAMINATION NO.: _____
THE MALAWI NATIONAL EXAMINATIONS BOARD
2012 MALAWI SCHOOL CERTIFICATE OF EDUCATION

BIOLOGY

Subject Number: M022/I

Tuesday, 3 July

Time Allowed: 2 h 30 mins
8:30 – 11:00 am

PAPER I **(100 marks)**

Theory

1. This paper contains 12 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 contains sections **A, B** and **C**. Answer **all** questions in all the sections. Some can be answered quickly, but others require considerable thought and may take longer.
4. Write your answers on the question paper 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. You should 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			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			

© 2012 MANEB

Turn over



Section A (20 marks)

Answer **all** questions in this section.

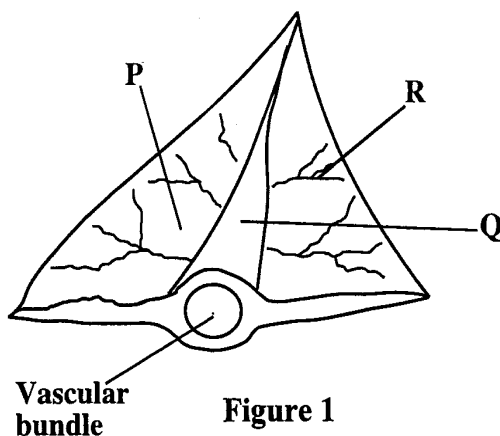
1. a. State any **two** ways in which vectors transmit diseases.

(2 marks)

- b. Mention any **two** signs of athlete's foot.

(2 marks)

2. **Figure 1** shows part of a leaf. Use it to answer the questions that follow.



- a. Name the part marked **Q**.

(1 mark)

- b. Explain the functions of **P** and **R** in relation to photosynthesis.

(4 marks)

Continued/...

3. **Figure 2** shows a stage during meiosis. Use it to answer questions that follow.

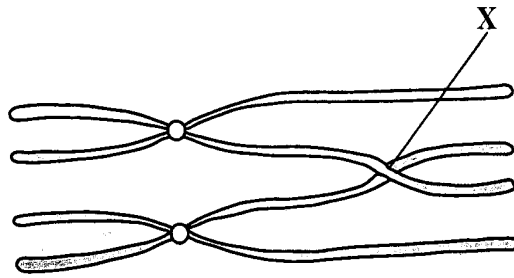


Figure 2

- a. Name the process taking place at part X.

 (1 mark)

- b. Name any **one** organ in the human body in which process X takes place.

 (1 mark)

- c. Explain the importance of the process taking place at X.

 (2 marks)

4. **Figure 3** shows a plant tissue obtained from a stem. Use it to answer the questions that follow.

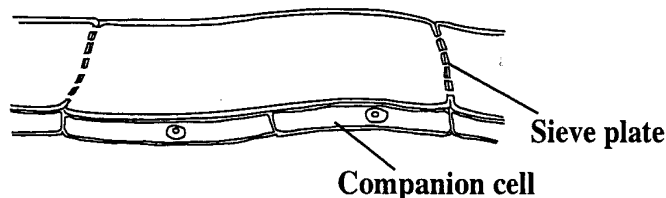


Figure 3

- a. (i) Identify the tissue.

 (1 mark)

Continued/...

4. (Continued)

- (ii) Give **two** reasons to support your answer in **a(i)**.

(2 marks)

- b. Explain **two** adaptations of the tissue to its function.

(4 marks)

Section B (60 marks)

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

5. A man with blood group **A** was married to a woman with blood group **B**. Their first born son was of blood group **O** while their second born son was of blood group **AB**.

- a. Give the genotypes of the two parents.

(2 marks)

- b. Explain how the genotype of the second born son came about.

(3 marks)

6. When a grey cock was mated with a grey hen, grey and white chicks were produced.

- a. Using **G** for grey colour and **g** for white colour draw a generic diagram to determine the genotype of the offspring.

(3 marks)

Continued/....



6. (Continued)

- b. Give the genotypic ratio of the chicks.

(2 marks)

- c. If the parents produced 12 chicks, how many were white? Show your working.

(2 marks)

7. Figure 4 shows one of the examples of natural selection in action. Use it to answer questions that follow.

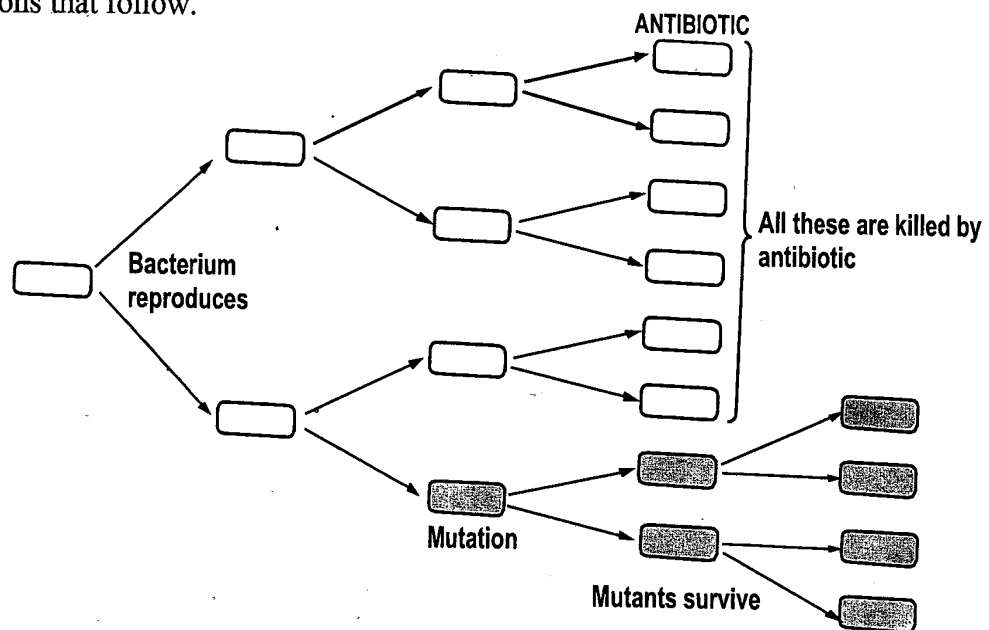


Figure 4

- a. (i) Name the example of natural selection shown.

(1 mark)

Continued/..

7. a. (Continued)

- (ii) Describe what led to the survival of some of the bacteria while the others got killed.

(2 marks)

- b. What will happen to the antibiotic after sometime?

(1 mark)

8. Figure 5 shows one of the nutrient cycles in nature. Use it to answer the questions that follow.

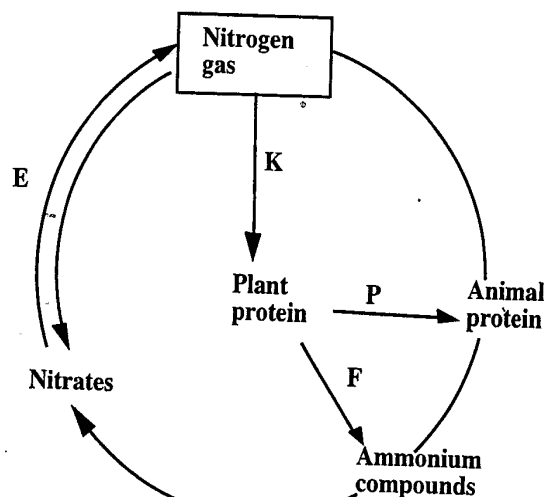


Figure 5

- a. Name the processes taking place at F, Z and P.

F:

P:

Z:

(3 marks)

- b. Explain how the process at K takes place.

(3 marks)

Continued/...

8. (Continued)

- c. Under what conditions does the process at E take place?

(1 mark)

9. Figure 6 is a diagram of male reproductive system. Use it to answer questions that follow.

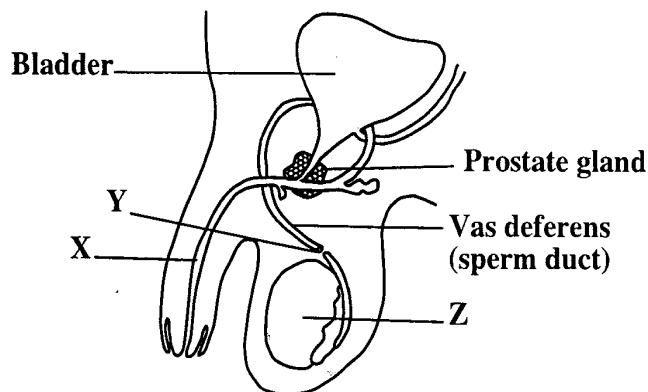


Figure 6

- a. Name the parts marked X and Z.

X _____ Z _____ (2 marks)

- b. Mention the contraceptive method shown at Y.

_____ (1 mark)

- c. Mention any
- two**
- advantages of using this contraceptive method.

 _____ (2 marks)

10. a. Mention any
- two**
- effects of smoking on human health.

 _____ (2 marks)

- b. State any
- two**
- effects of exercise on breathing.

 _____ (2 marks)

Continued/...

10. (Continued)

- c. Mention any **two** adaptations of alveoli to their function.

(2 marks)

11. a. (i) Name the **main** nitrogenous waste excreted by kidneys.

(1 mark)

- (ii) Describe how the nitrogenous waste mentioned in 11a(i) is formed.

(3 marks)

- b. Name **two** substances found in blood plasma that are **not** found in the urine of a healthy person.

(2 marks)

12. **Figure 7** is a diagram of the human heart. Use it to answer questions that follow.

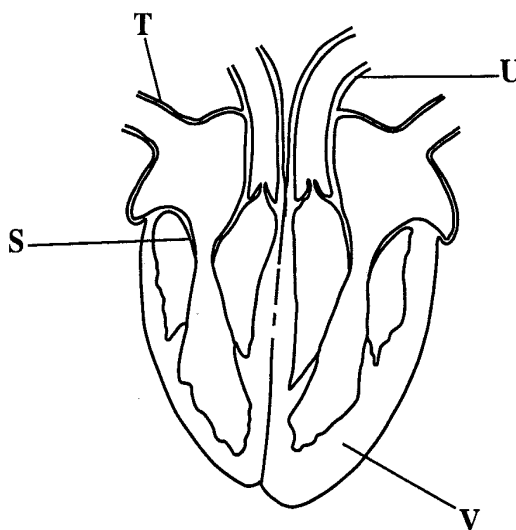


Figure 7

- a. Name the part marked S.

(1 mark)

Continued/...

12. (Continued)

- b. Give **two** differences between the blood flowing through vessels T and U.

(i) _____

(ii) _____

(2 marks)

- c. Explain how part V helps to create systolic pressure.

(3 marks)

13. a. State any **two** adaptations of a villus for food absorption.

(2 marks)

- b. If the liver failed to produce bile, what two effects could this have on digestion?

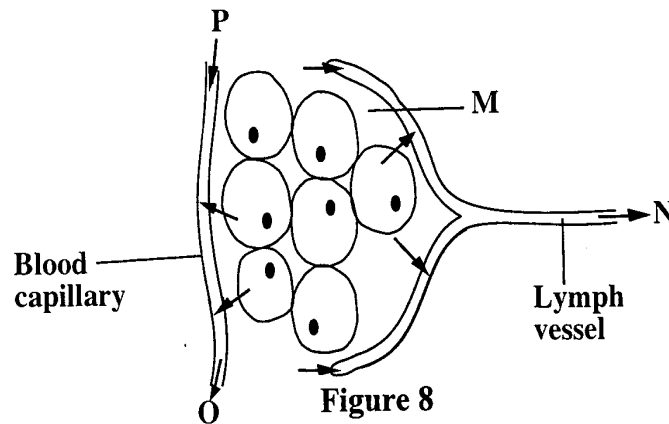
(2 marks)

- c. Explain why the level of insulin increases in the blood soon after a meal of carbohydrates.

(2 marks)

Continued/...

14. **Figure 8** shows capillary bed. Use it to answer questions that follow.



- a. (i) Name the fluid found in M.

_____ (1 mark)

- (ii) Name any **two** substances found in M that are used by the body.

_____ (2 marks)

- b. Name **two** adaptations for each of the following to their functions:

- (i) blood capillaries

_____ (2 marks)

- (ii) lymph vessels

_____ (2 marks)

- c. Which letter represents the arterial end of the capillary bed?

_____ (1 mark)

Continued/...

Answer **all** questions in this section.

This image shows a single sheet of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page. There are approximately 20 lines visible. The paper appears to be a standard notebook page, possibly from a spiral-bound notebook, as there's a slight shadow on the left edge suggesting binding. The paper is otherwise blank, with no handwriting or other markings.

Continued/...

