

MALAWI SCHOOL CERTIFICATE OF EDUCATION

BIOLOGY

PAPER I

MOCK 2

Time: 2 hrs

(100 marks)

Instructions

1. This paper contains 8 printed pages. Please check.
2. Answer all questions in section A and answer the **three** questions in section B in the spaces provided in an essay form.
3. Scientific calculators may be used.
4. All working must be clearly shown.
5. Write your full name at the top of your question paper in the spaces provided.
6. In the table provided on this page, tick against the question number you have answered.

Question Number	Tick if Answered	Do not write In these Columns	
1			
2			
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SECTION A (70 marks)

1. Chikondi and Thandie as students of Michiru Views Girls Secondary School mixed **six** table spoons of salt in 1 litre of water in beaker **A** and the same **six** table spoons of salt in 30ml of water in beaker **B**.

a. Define osmosis

(1mark)

b. which mixture

(i). Had high osmotic potential

(1 mark)

(ii). Had low osmotic potential

(1 mark)

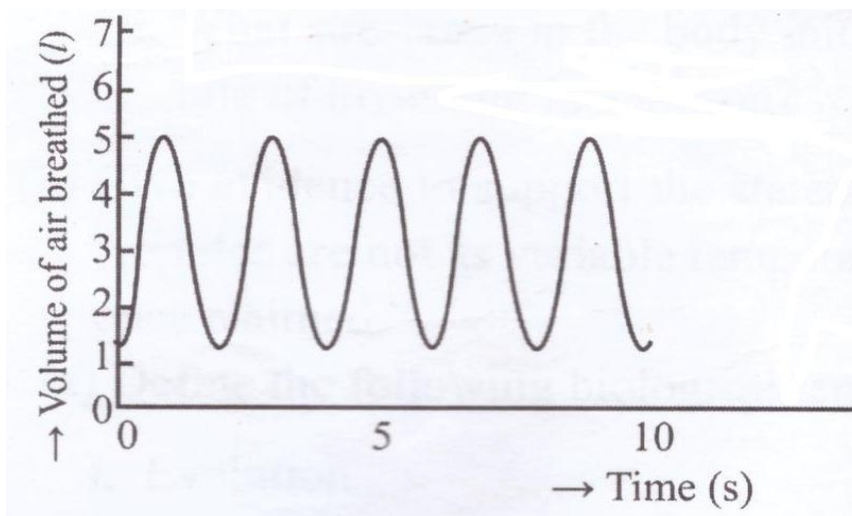
c. In what **two** ways is diffusion similar to osmosis?

(2 marks)

d. Explain how translocation occurs in phloem.

(3marks)

2. **Figure 1** is a graph showing changes in the volume of air breathed by a person soon after exercise. Use it to answer the questions that follow.



a.(i) Calculate the number of breaths the person takes per minute. Show your working

(3 marks)

(ii) calculate the residual air?

(1 mark)

b. What is the lung capacity of this person?

_____ (1 mark)

c. Describe any **two** abnormal conditions associated with the respiratory system

_____ (4marks)

3. a. The diagram below shows a structure of a neurone. Use it to answer the questions that follow.



i. Identify the type of neurone shown in the diagram. Give a reason for your answer.

_____ (2marks)

ii. Mention any **two** ways in which the neurone is adapted for faster transmission of impulses

_____ (2marks)

b. Fill the gaps in the table bellow

Endocrine glands	Hormone produced	Target organ	Effect
Thyroid gland		Whole body	Stimulates growth and development
Pituitary gland	Antidiuretic hormone	Kidney	
	Luteinizing hormone	Ovary	Stimulates ovulation

(3marks)

4. **Figure 3** is a diagram showing the internal structure the heart.

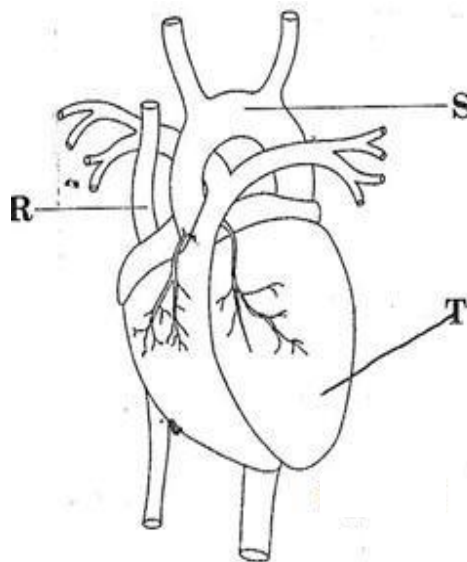


Figure 3

a. Name the parts labelled S and T

S _____

T _____

(2 marks)

b. Explain how the following structural concepts of the heart assist in its function.

i. The left ventricle is more muscular than the right ventricle walls

_____ (1 mark)

ii. The heart has semilunar valves

_____ (1 mark)

5. a. Describe the process of photosynthesis .

(4marks)

b. Mention any **two** components of an ecosystem.

(2marks)

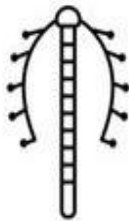
c. Describe how a pyramid of biomass is constructed

(3marks)

d. Give **one** disadvantage of capture-recapture method of sampling organisms.

(1mark)

6. The diagram below shows some of the contraceptive methods. Use it to answer the questions that follow.

**A****B**

- a. Identify the contraceptive methods represented by **A** and **B**.

A _____ (1mark)

B _____ (1mark)

- b. Describe how contraceptive method **A** works

(1marks)

- c. What is the role of the following hormones in the menstrual cycle?

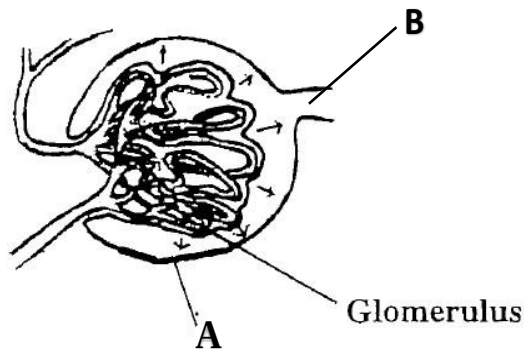
i. Progesterone

(1mark)

ii. Follicle Stimulating Hormone

(1mark)

7. a. The diagram below shows a part of the nephron.

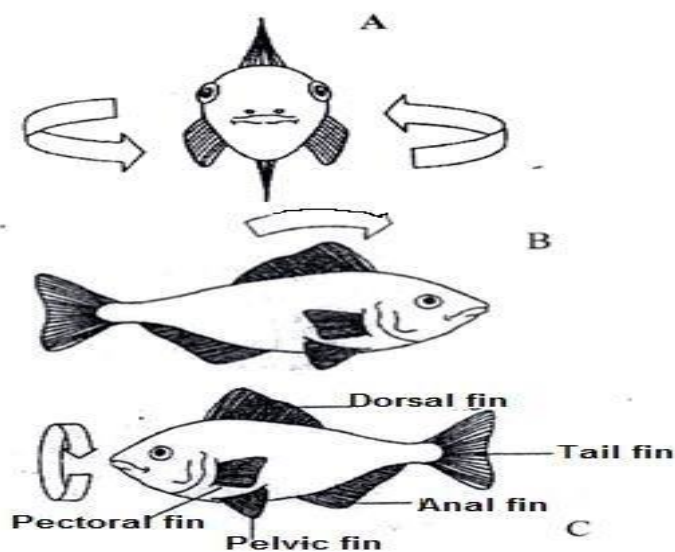


- i. Name the part labelled A. _____ (1mark)
- ii. Mention the fluid represented by letter B. _____ (1mark)
- iii. State any **two** factors that enable the process represented by arrows to take place. _____ (2marks)

b. Explain **one** reason why the dialysis machine cannot replace the kidney

_____ (1mark)

8. **Figure 6** is a diagram showing three types of locomotion in a fish. Use the diagram to answer the questions that follow.



a. Name the type of locomotion shown by A, B, C

A. _____ (1 mark)

B. _____ (1 mark)

C. _____ (1 mark)

b. List **one** fin that causes the locomotion in diagram:

i. A _____ (1 mark)

ii. B _____ (1 mark)

9. a. explain how vaccination against polio works

_____ (3marks)

b. State any **two** factors that are considered before blood transfusion

_____ (2marks)

c. State any **two** ethical implications on the use of biotechnology

_____ (2marks)

d. Give **two** disorders that can be treated using biotechnology

_____ (2marks)

10.

a. Define incubation period of a disease.

_____ (1mark)

b. Describe **two** ways in which diseases spread

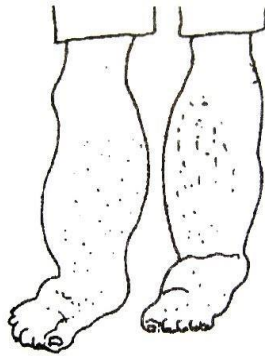
_____ (2marks)

c. Mention any **two** ways of eliminating mosquitos

_____ (2marks)

d. The diagram below shows the leg of a person affected by a disease.





- i. Identify the disease shown in the diagram above.
_____ (1mark)
- ii. Explain how infection results into the condition in the leg.

_____ (1mark)
- iii. State any **one** way of preventing the disease.
_____ (1mark)

SECTION B (30marks)

Essay questions

Answer **all** the questions in this section in an essay form.

11. Explain **five** factors that affect primary productivity in an ecosystem.

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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 has a slight shadow on its right side, suggesting it's resting on a surface.

(10marks)

12. Describe the process of birth in human beings.

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(10marks



13. Describe **five** causes of variations in organisms of the same species.

[illegible]

(10marks)

END OF QUESTION PAPER

