EXAMINATIONS COUNCIL OF ZAMBIA

Examination for School Certificate Ordinary Level

Biology
Paper 2 Theory

Additional Information:
Answer Booklet

Time 1 hour 45 minutes

Instructions to Candidates
Write your name, centre number and candidate number in the spaces at the top of this page and on the Answer Booklet used.
There are ten questions in this paper.

Section A
Answer all questions.
Write your answers in the spaces provided on the question paper.

Section B
Answer any three questions.
Write your answers in the Answer Booklet provided.
At the end of the examination:
1. fasten the Answer Booklet used securely to the question paper,
2. enter the numbers of the Section B questions you have answered in the grid on the bottom right side corner.

Information for candidates
The number of marks is given in brackets [ ] at the end of each question or part question.
You are advised to spend no longer than one hour on Section A and no longer than 45 minutes on Section B.

Cell phones are not allowed in the examination room.

©ECZ/SC/2016/V1

This question paper consists of 7 printed pages
Section A: Short answer questions [44 marks]
Answer all the questions in the spaces provided on the question paper.

1. **Figure 1.1** shows a light microscope.

![Figure 1.1](image)

(a) (i) Identify the parts labelled A and B.

A ........................................................................................................... [2]

B ........................................................................................................... [2]

(ii) Using letter X, label on **figure 1.1**, one part where magnification takes place? [1]

(b) Outline the correct procedure to follow in order to use a microscope to view a specimen.

.................................................................................................................. [3]

(c) Describe how magnification is determined when using a microscope. [2]

..................................................................................................................

Total 8 marks
2.1. shows part of the alimentary canal, and its associated parts.

**Figure 2.1**

(a) (i) In which labelled structure in Figure 2.1, are bile salts produced?

.................................................................................................................. [1]

(ii) Explain the role of bile salts in digestion.

.................................................................................................................. [2]

(b) (i) In which labelled structure in Figure 2.1, are proteins first digested?

.................................................................................................................. [1]

(ii) Explain how protein digestion takes place in the structure identified in (b) (i) above.

.................................................................................................................. [3]

(c) Name two common ailments of structure C.

1 .................................................................................................................. [2]

2 .................................................................................................................. [2]

Total 9 marks

[Turnover]
3. **Figure 3.1** shows a section through the heart.

![Heart Diagram]

**Figure 3.1**

(a) (i) From **Figure 3.1**, identify the two blood vessels labelled G and I.

G ................................................................. 

I ................................................................. [2]

(ii) Which of the labelled blood vessels carry oxygenated blood back to the heart?

................................................................. [1]

(iii) Identify valve K and state its function.

**Valve K:** ................................................................. 

**Function:** ................................................................. [2]

(b) Describe the movement of blood from the time it enters the heart at J until it exits at I.

................................................................. [2]

(c) Some poor diets can increase the risk of a heart attack.

Suggest two other factors apart from diet that could increase the risk of a heart attack.

................................................................. [2]

**Total 9 marks**
4.1. below shows a root system of a leguminous plant.

Figure 4.1

(a)  
(i) Identify structure L in Figure 4.1 above.

L .................................................................................. [1]

(ii) State the micro-organism found in structure L.

.................................................................................. [1]

(iii) Explain the role of the micro-organism named in (ii) above in the nitrogen cycle.

.................................................................................. [2]

(b) Explain the role this plant in Figure 4.1 plays in the

(i) Carbon cycle.

.................................................................................. [3]

(ii) Water cycle.

.................................................................................. [2]

Total 9 marks

[Turnover]
5 Blood group inheritance in humans is controlled by three alleles, $I^A$, $I^B$ and $I^o$.

(a) Using appropriate genetic symbols, draw a genetic diagram to explain the possible blood groups of children whose parents are both heterozygous for their blood groups, the father being blood group A and the mother blood group B.

(b) Using a named example, explain

(i) Continuous variation.

Explanation: .................................................................

Example: ........................................................................

(ii) Discontinuous variation.

Explanation: .................................................................

Example: ........................................................................

Total 9 marks
Section B: Essay questions  [36 marks]

Answer any three questions from this section. All answers must be in complete sentences and paragraphs.

6 (a) Describe the following:
   (i) common causes of blindness. [6]
   (ii) common methods of preventing blindness.

   (b) Describe the effects of abuse of a named drug on the nervous system. [6]

   Total 12 marks

7 (a) Describe the processes of fertilization and implantation in humans. [6]

   (b) Describe ways of maintaining a healthy pregnancy and safe childbirth. [6]

   Total 12 marks

8 (a) What role is played by the following structures of the skin in controlling the temperature of the body during over cooling:
   (i) Erector muscle [6]
   (ii) Blood vessels

   (b) Explain the metabolic functions of the liver. [6]

   Total 12 marks

9 (a) Describe the following deficiency diseases in plants.
   (i) Chlorosis [4]
   (ii) Leaf flecking

   (b) Discuss the functions of the nutrients phosphorus, nitrogen and magnesium in plant growth. [8]

   Total 12 marks

10 (a) Discuss the importance of the following responses exhibited by plants:
   (i) Phototropism [8]
   (ii) Geotropism
   (iii) Hydrotropism

   (b) State and explain taxic responses exhibited by invertebrates. [4]

   Total 12 marks