EXAMINATIONS COUNCIL OF ZAMBIA

Biology
PAPER 2
Tuesday 6 OCTOBER 2015

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.

FOR EXAMINER'S USE

<table>
<thead>
<tr>
<th>Section A</th>
<th>Section B</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
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Total

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This question paper consists of 7 printed pages.
Section A [44 marks]

Answer all the questions in the spaces provided on the question paper.

1. Figure 1.1 and Figure 1.2 show the structure of specialised cells in plants.

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

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

(ii) Identify the parts labelled C and D.

C ......................................................................................................................
D ...................................................................................................................... [2]

(b) (i) Which figure shows a closed stoma?

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

(ii) Explain how the opening of a stoma is brought about.

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

[Total: 8]

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Figure 2.1 shows a section through a human tooth.

![Diagram of a tooth with layers labeled F, G, H, and I.]

**Figure 2.1**

(a) (i) State the names of the parts labelled F and G.

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

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

(ii) Explain the functions of the parts labelled H and I in Figure 2.1.

H .................................................................

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

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

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

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

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(b) (i) Explain how tooth decay is brought about.

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

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

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

(ii) Suggest two ways of preventing tooth decay.

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

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

[Total: 9]

[Turn over]
3. **Figure 3.1** shows a cassava plant with root tubers.

![Figure 3.1](image)

**Figure 3.1**

(a) (i) Which common food nutrient is stored in the root tuber? 

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

(ii) State where this food in the root tubers was manufactured? 

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

(iii) Explain how this food manufactured in (a) (ii) above found itself in storage form in the root tubers.

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

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

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

(b) (i) State the nutrient in the soil which is necessary for photosynthesis.

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

(ii) Suggest how this nutrient is taken up from the soil to the leaves in the plant in **Figure 3.1**.

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

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

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

[Total: 9]
Figure 4.1 shows a food web in a given ecosystem.

Figure 4.1

(a)  
(i) Identify any primary consumer.  

(ii) Construct a food chain using three organisms from Figure 4.1.  

(iii) Using the food chain in (a) (ii) construct a pyramid of energy.

(b) Distinguish between a food chain and a food web.
(c) Explain why organisms at the end of a food chain have the least amount of energy.

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

[Total: 9]

5 Pure breeding dwarf garden pea plants were crossed with pure-breading tall garden pea plants. The resulting offsprings were all tall.

(a) (i) What is meant by pure breeding?

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

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

(b) Using your own symbols, state the genotypes of the parents.

Pure breeding dwarf garden pea plant = ........................................

Pure breeding tall garden pea plant = ........................................ [2]

(c) Differentiate between homozygous and heterozygous.

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

[Total: 9]
Section B [36 marks]

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

6  (a) Describe anaerobic respiration in yeast. [4]
    (b) Explain the use of yeast in brewing and baking. [5]
    (c) Compare and contrast anaerobic respiration in man and yeast. [3]
    [Total: 12]

7  (a) Describe the following methods of artificial vegetative propagation.
    (i) grafting
    (ii) budding [6]
    (b) Describe the artificial methods of birth control in humans. [6]
    [Total: 12]

8  (a) Explain the functions of the following parts in the human ear.
    (i) Eustachian tube
    (ii) Cochlea [5]
    (b) Distinguish between the sensory neurone and the motor neurone. [3]
    (c) Describe the pupil reflex action in humans. [4]
    [Total: 12]

9  (a) Explain the following terms:
    (i) Pollination
    (ii) Fertilisation [3]
    (b) Discuss fruit and seed dispersal. [9]
    [Total: 12]

10 (a) What is meant by excretion? [2]
    (b) Explain how the following substances are excreted from the body.
        (i) Carbon dioxide
        (ii) Urea [10]
    [Total: 12]
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