EXAMINATIONS COUNCIL OF ZAMBIA

Examination for School Certificate Ordinary Level

Biology

Paper 2 Theory

Tuesday 31 OCTOBER 2017

Additional Materials:
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 at 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
Section A
Section B

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Total

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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 1.0 shows some specialised cells, P, Q and R.

![Figure 1.0](image)

(a) Name each of the cells above.

P: .................................................................................................................. [1]
Q: .................................................................................................................. [1]
R: .................................................................................................................. [1]

(b) (i) State the functions of cells P and Q.

Function of cell P: .......................................................................................... [1]

Function of cell Q: .......................................................................................... [1]

(ii) Explain the adaptations for cells P and Q to their function.

Adaptation of cell P: .......................................................................................... [1]

Adaptation of cell Q: .......................................................................................... [1]

(c) Where in the leaf is cell R located?  

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

[Total: 8]
2. **Figure 2.0** shows a graph showing the effect of temperature on an enzyme catalysed reaction.

![Graph showing enzyme activity vs temperature](image)

**Figure 2.0**

(a) (i) What is an enzyme?

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

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

(ii) What is the optimum temperature of the enzyme reaction shown in the graph in **figure 2.0**?

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

(b) (i) At what temperature in **figure 2.0** is the enzyme completely denatured?

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

(ii) Give a reason for your answer in (b) (i) above.

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

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

(c) (i) Explain why it is important to measure the body temperature when a person is sick.

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

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

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

(ii) Propose **two** ways the body temperature of a sick person can be brought down to normal.

1. ..................................................................................................................

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

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

   [Total: 9]

[Turn over]
3. **Figure 3.0** shows the life cycle of a mosquito.

![Life cycle of a mosquito diagram]

(a) (i) Identify **two** stages in **figure 3.0** which are most suitable for eradicating malaria.

Stage: ........................................................................... [2]

Stage: ........................................................................... [2]

(ii) For each stage identified in (a) (i) above, state how malaria may be eradicated.

Stage: ........................................................................... [2]

Stage: ........................................................................... [2]

(iii) Suggest **two** ways in which malaria can be controlled in the community.

**Way 1:** ........................................................................... [1]

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

**Way 2:** ........................................................................... [1]

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

(b) What term is given to the mosquito based on its role in the transmission of malaria pathogen?

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

(c) (i) Define **pathogen**

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

(ii) Name the malaria causing pathogen.

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

[Total: 9]
Figure 4.0 shows the longitudinal section of a stem.

![Figure 4.0](image)

(a) (i) Which letters in figure 4.0 correspond to cambium, xylem and phloem?

- **Cambium**
- **Xylem**
- **Phloem**

(ii) Explain the functions of S and T in the plant.

**Functions of S:**

- [4]

**Functions of T:**

- [4]

(b) (i) Which letter corresponds to the structure which needs companion cells to function properly?

- [1]

(ii) Which letter in figure 4.0 corresponds to a structure in which substances can either move up or down?

- [1]

[Turn over]
Mrs Mumba delivered a baby girl in a certain hospital. Mrs Mumba has blood group O and the father to the girl has blood group AB. Mrs Mumba sues the hospital for giving her a wrong baby whose blood group was O.

(a) Explain using a genetic diagram why Mrs Mumba would win or lose the case.

(b) What could have been the correct genotype of the actual father?
Section B  Essay questions [36 marks]

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

6  (a)  Identify causes of infertility in human beings.  [6]
(b)  Describe how a healthy pregnancy could be maintained.  [4]
(c)  Describe safe child birth.  [2]

[Total: 12]

7  (a)  Explain the functions of the following nerve cells.
(i)  Sensory neurone
(ii)  Motor neurone
(iii) Relay neurone  [6]
(b)  Describe, giving examples in each case,
(i)  spinal reflex action,
(ii)  conditioned reflex action.  [6]

[Total: 12]

8  (a)  Describe the antagonistic action of muscles in the iris.  [4]
(b)  Compare and contrast exoskeleton and endoskeleton.  [6]
(c)  Describe one joint disorder.  [2]

[Total: 12]

9  (a)  Define the term biodiversity.  [2]
(b)  State the importance of biodiversity of organisms in an area.  [4]
(c)  Describe the economic reasons for maintaining biodiversity.  [6]

[Total: 12]

10 (a)  Explain the term population.  [4]
(b)  Discuss factors that cause changes in population size.  [8]

[Total: 12]

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