EXAMINATIONS COUNCIL OF ZAMBIA

Joint Examination for the School Certificate and General Certificate of Education Ordinary Level

BIOLOGY

PAPER 2  Theory

Friday  2 NOVEMBER 2012

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 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>
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<th>Section A</th>
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This question paper consists of 7 printed pages.
Figure 1.0 is a graph showing changes in volume of air during breathing in the lungs of a person.

(a) (i) Which letter shows the process of inspiration taking place?

(b) Explain why there is an increase in air volume during stage Q.

(c) Describe the changes which will take place in the thorax during inspiration in order to facilitate the increase in volume during stage Q.
2 (a) The table below shows the blood groups in human beings.

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<th>B</th>
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(i) Which **two** blood groups exist in two different forms?

Blood group ................................ and blood group ........................................... [2]

(ii) Which blood group can be donated to any person?

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

(iii) Which blood group can receive any other group of blood?

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

(b) Outline the five steps involved in blood clotting.

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

2. ...........................................................................................................................

3. ...........................................................................................................................

4. ...........................................................................................................................

5. ........................................................................................................................... [5]

[Total 9]
Figure 3.0 shows some fruits from dicot plants.

(a) (i) State the type of dispersal each fruit undergoes.

Fruit P

Fruit Q [2]

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

Fruit P

Fruit Q [2]

(b) (i) Which fruit disperses seeds over a short distance?

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

(ii) Which dispersal will involve seeds and not the fruit?

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

(c) Give three differences between Fruit Q and a tomato.

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

2. .............................................................

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

[Total 9]
4 The figure below shows a pyramid of biomass.

(a) (i) Identify trophic levels B and C.
B ......................................................................................................................... [2]
C ......................................................................................................................... [2]
(ii) State the names given to organisms that feed at trophic levels B and C.
B .........................................................................................................................
C ......................................................................................................................... [2]
(iii) Explain why level C is much smaller than the other levels.
.......................................................................................................................... [2]

(b) Describe the flow of energy in the pyramid.
..........................................................................................................................
..........................................................................................................................
..........................................................................................................................
..........................................................................................................................
.......................................................................................................................... [3]

[Total 9]
5 Figure 5.1 and Figure 5.2 show the cross section through two different portions of the human alimentary canal.

![Figure 5.1](image1) ![Figure 5.2](image2)

(a) (i) From which part of the alimentary canal were these cross sections taken?

**Figure 5.1** ...........................................................................................................

**Figure 5.2** ...........................................................................................................

(ii) Give reasons for your answers in (a) (i) above.

Reason 1: ................................................................................................................ [4]

Reason 2: ................................................................................................................ [4]

(b) Explain the role played by B in the alimentary canal.

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

(c) Name two juices passing through tube C.

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

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

[Total 9]
Section B [36 marks]
Answer any three questions.

All answers should be in sentence form in paragraphs.

6 (a) Explain the process of transpiration. [4]
(b) Describe three environmental factors which affect transpiration. [6]
(c) Relate the significance of transpiration to plants and the environment. [2]

[Total: 12]

7 (a) Using the auxin theory, explain the effects of light coming from one direction on the growth of shoots. [6]
(b) Describe the term taxic responses with named examples. [6]

[Total: 12]

8 (a) Compare and contrast nutrition in a guava plant and Rhizopus fungus. [4]
(b) Discuss the importance of saprophytic nutrition to the environment. [4]
(c) Describe the digestion of food in the mouth. [4]

[Total: 12]

9 (a) Describe the special dietary needs of a pregnant woman. [6]
(b) Discuss artificial methods of birth control. [6]

[Total: 12]

10 (a) With the aid of a labelled diagram, describe the carbon cycle. [6]
(b) Discuss the effects of deforestation on the carbon cycle. [6]

[Total: 12]
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