EXAMINATIONS COUNCIL OF ZAMBIA

Examination for School Certificate Ordinary Level

Biology
Paper 2 Theory

Wednesday 26 OCTOBER 2016

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.

FOR EXAMINER’S USE

Section A

Section B

Total

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 an animal cell as seen under an electron microscope.

![Cell Diagram](image)

**Figure 1.1**

(a) Identify the labelled parts F and G.

Part F .............................................................

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

(b) Explain the functions of the parts labelled H and I.

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

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

I .............................................................

...................................................................... [4]

(c) Suggest two cell parts which would be present in **Figure 1.1** if it was a plant cell.

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

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

**Total 8 marks**

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Figure 2.1 shows the effect of pH on the rate of enzyme catalysed reactions K and M.

![Graph showing rate of reaction against pH concentration]

**Figure 2.1**

(a) What term is given to pH at J and L?

(b) Explain why the rate of reactions K and M goes down after point J and L respectively.

(c) Name the regions of the alimentary canal where reactions K and M take place?

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

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

(d) (i) Suggest one enzyme which can catalyse reaction M.

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

(ii) State one food nutrient which can be catalysed in reaction K.

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

(e) State two factors other than pH which affect enzyme activity.

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

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

Total 9 marks

Biology/5090/2/2016 [Turnover]
Figure 3.1 shows a cross-section through a stem of a plant which had been previously dipped in a red dye for 6 hours.

Figure 3.1

(a) (i) Identify the parts labelled N, P and Q.

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

P ..........................................................................................................................

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

(ii) Which labelled part in Figure 3.1 would be stained red?

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

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

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

(b) (i) Suggest three factors that would increase the rate of movement of the dye in the stem when it is dipped in the red dye.

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

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

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

(ii) Name the process that will cause the movement of the red dye in the stem.

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

Total 9 marks

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4. **Figure 4.1.** shows a certain type of flower.

![Image of Figure 4.1](image.png)

(a) Identify the parts labelled **S**, **T** and **U**.

- **S**
- **T**
- **U** [3]

(b) (i) Identify the type of pollination that occurs in the flower in **Figure 4.1**.

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

(ii) Give **two** features from **Figure 4.1** which support your answer in (b)(i) above.

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

(c) (i) State **one** other type of pollination other than the one mentioned in (b)(i) above.

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

(ii) Give **two** characteristics of the flower where the type of pollination mentioned in (c)(i) above occurs.

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

Total 9 marks
5  **Figure 5.1.** below shows pedigree diagrams for two families A and B, outlining inheritance of a sex-linked disease called haemophilia.

![Pedigree Diagrams](image)

**Figure 5.1**

(a)  (i)  From **Figure 5.1**, which family has a parent who is a carrier for haemophilia?  

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

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

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

(b)  (i)  Using the symbols \(X^h\) and \(X^b\), state the genotypes for offspring H and J, if J is a carrier for haemophilia.  

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

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

(ii)  Using a genetic diagram, show whether the offspring would be haemophilic or normal when H and J are crossed.

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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) Explain gaseous exchange in green plants during:
   (i) day time.  [1]
   (ii) night time.
(b) Using **named** organisms, explain the industrial application of respiration. [4]
(c) Describe how gum disease is brought about. [4]

**Total 12 marks**

7  (a) (i) Describe the structure and functions of endocrine glands. [3]
   (ii) Explain the difference between the adrenal gland and the salivary gland. [3]
(b) Explain the function of the following hormones in the body:
   (i) Insulin [3]
   (ii) Antiduretic hormone (ADH) [3]

**Total 12 marks**

8  (a) Explain how HIV can be transmitted from one person to another. [6]
(b) (i) Explain the causes of stigma to people living with HIV and AIDS. [4]
   (ii) Describe ways of reducing stigma. [2]

**Total 12 marks**

9  (a) State the parts of a synovial joint and explain their functions. [6]
(b) Explain why a bone is considered a living tissue. [3]
(c) Explain the action of antagonistic muscles of the eye when one moves from a dark room into bright light. [3]

**Total 12 marks**

10 (a) Describe factors that make soil fertile. [4]
(b) Explain the causes of loss of soil fertility. [4]
(c) Explain methods of improving and retaining soil fertility. [4]

**Total 12 marks**
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