

GB

Centre Number	Examination Number

49169617

EXAMINATIONS COUNCIL OF ZAMBIA

Examination for School Certificate Ordinary Level



5090/2

Biology Paper 2 Theory

Tuesday

7 NOVEMBER 2023

Additional Materials:
Answer Booklet

Time: 1 hour 45 minutes

Marks: 80

Instructions to Candidates

- Write the **centre number** and your **examination number** on **every page** of this question paper and on the separate **Answer Booklet** provided.
- There are **two** sections in this paper, **Section A** and **B**.

(i) Section A

There are **five** questions in this section. Answer **all**.
Write your answers in the spaces provided on the question paper.

(ii) Section B

There are **five** questions in this section. Answer any **three** questions.
Write your answers in the separate Answer Booklet provided.

- At the end of the examination:
 - fasten the Answer Booklet securely to the question paper.
 - enter the numbers of the **Section B** questions you have answered in the grid provided.

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 40 minutes on **Section A**.
- Cell phones are **not allowed** in the examination room.

For Examiner's Use

For Candidate's Use	Mark Obtained	Examiner's Initials
Section A		
1		
2		
3		
4		
5		
Section B		
Total		

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Section A: Short answer questions [44 MARKS]

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

- 1 **Figure 1** shows changes which take place when a plant cell is placed in a solution of known concentration from Stage I up to stage III.

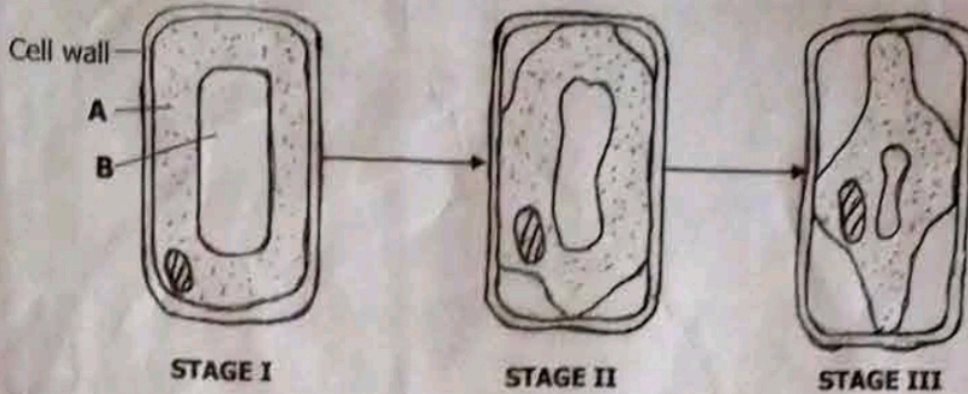


Figure 1

- (a) Identify the parts of the cells labelled **A** and **B**.

A [1]

B [1]

- (b) (i) Using the changes shown in **Figure 1**, explain what could have been the concentration of the solution in which the cell was placed compared to the cell sap.

..... [1]

- (ii) What term is given to the process that led to the changes shown in **Figure 1** from stage I to III?

..... [1]

- (c) What would be the overall effect of this process on the plant?

..... [1]

- (d) Which of the three stages of the cell in **Figure 1** could be classified as turgid state?

..... [1]

- (e) Name **two** other processes which can make substances to move into and out of the cell.

1 [1]

2 [1]

[Total: 8 marks]

2 **Figure 2** shows processes of the fate of glucose produced during photosynthesis. The letters **C** to **I** represent these processes.

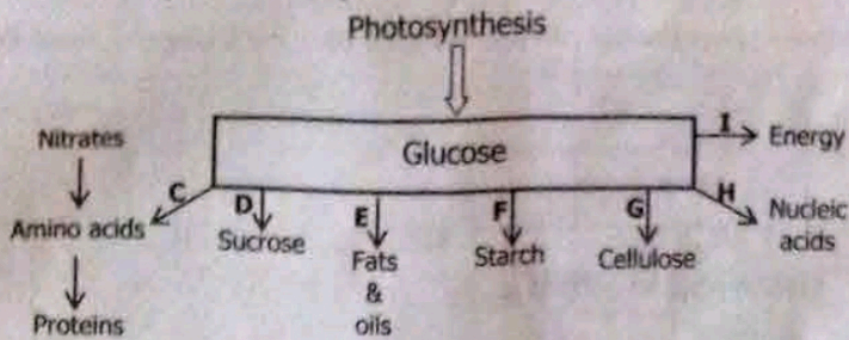


Figure 2

(a) Define the process represented by the letter **I**.

.....
 [2]

(b) Identify one process in **Figure 2** which represents;

(i) a catabolic process.

..... [1]

(ii) an anabolic process.

..... [1]

(c) If this fate of glucose was in the human body,

(i) identify **two** processes from **Figure 2** which would take place.

1 [1]

2 [1]

(ii) state the form in which the glucose would be stored.

..... [1]

(d) Name **two** industrial applications of process **I**.

1 [1]

2 [1]

[Total: 9 marks]

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3 The table shows two blood groups, **AB** and **O**, and their properties.

(a) (i) Complete the table by filling in the spaces provided.

Blood group	Antigens present	Antibodies present	Donates to	Receives from
AB	AB	AB, A, O, B
O	None	AB, A, B, O	O

[3]

(ii) Explain what an antigen is.

.....

..... [1]

(b) Explain why a person with blood group **AB** can receive blood from any donor.

.....

..... [2]

(c) Determine the effect of blood from a donor with blood group **AB** being transfused into a recipient of blood group **O**.

.....

.....

..... [1]

(d) Explain the importance of screening blood for the purpose of transfusion.

.....

..... [2]

[Total: 9 marks]

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4 **Figure 3** shows an example of an ecosystem.

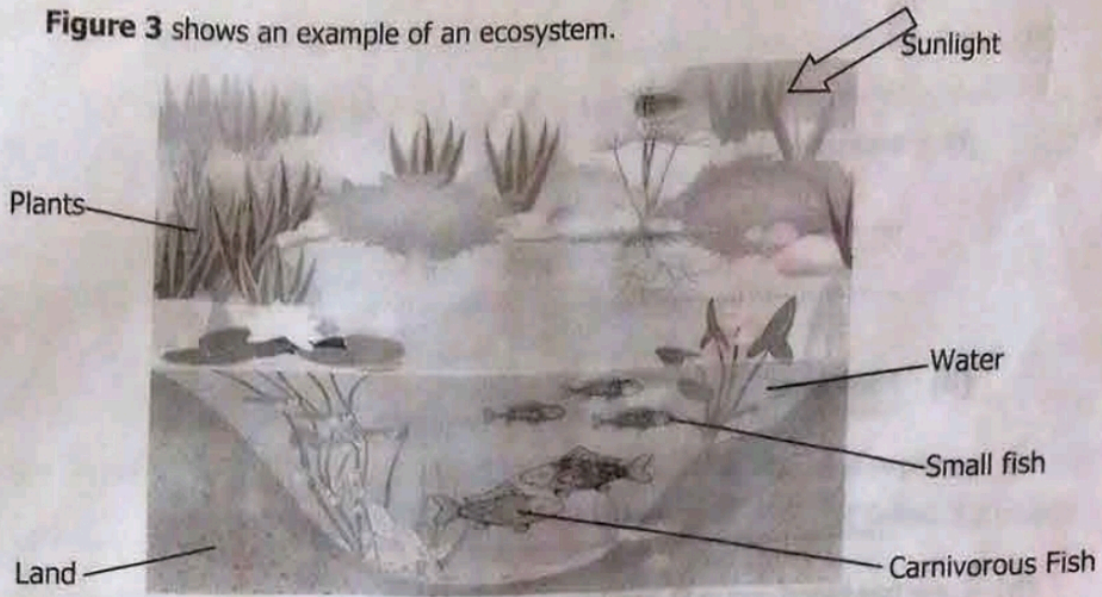


Figure 3

(a) Identify **two** non-living parts of the ecosystem in **Figure 3**.

- 1 [1]
- 2 [1]

(b) From the features of the ecosystem in **Figure 3**, name the type of ecosystem.

..... [1]

(c) Explain the role played by the following in the ecosystem in **Figure 3**;

- (i) Small fish, [2]
- (ii) Carnivorous fish. [2]

(d) How does the sunlight in **Figure 3** affect the distribution of plants in the ecosystem?

..... [2]

[Total: 9 marks]

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5 (a) Define the following terms used in genetics;

(i) Recessive allele,

.....
 [2]

(ii) Phenotype.

.....
 [2]

(b) Jane has blood group **O** and has a child of blood group **B**. She accuses John of blood group **AB** to be the father of her child.

With the help of a genetic diagram, determine the possible offspring to conclude whether or not John could be the father.

Handwritten calculations in red ink:

$$\begin{array}{r} 20 \\ 13 \\ \hline 33 \end{array}$$

$$\begin{array}{r} 17 \\ 11 \\ \hline 28 \end{array}$$

$$\begin{array}{r} 23 \\ 33 \\ \hline 56 \end{array}$$

$$\begin{array}{r} 32 \\ 9 \\ \hline 41 \end{array}$$

$$\begin{array}{r} 23 \\ 23 \\ \hline 46 \end{array}$$

$$\begin{array}{r} 20 \\ 20 \\ \hline 40 \end{array}$$

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[5]

[Total: 9 marks]

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Section B: Essay questions [36 MARKS]

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

- 1 (a) Explain the role of the kidney in the following; [6]
 (i) Excretion, [4]
 (ii) Osmoregulation. [2]
[Total: 12 marks]
- 2 (a) Explain **one** disorder associated with the kidney and its remedies. [4]
 (b) Discuss the causes of infertility in human beings. [6]
 (c) Explain ways of managing sexual pressure with a partner. [2]
[Total: 12 marks]
- 3 (a) Relate the life cycle of a mosquito to methods of malaria control at each stage. [6]
 (b) Explain the causative agents and symptoms of each of the following diseases; [6]
 (i) Bilharzia, [6]
 (ii) Cholera. [6]
[Total: 12 marks]
- 4 (a) Describe the structure of the human ear and explain the functions of the major parts of the ear. [8]
 (b) Explain the causes and methods of preventing deafness. [4]
[Total: 12 marks]
- 5 (a) Identify the parts of the synovial joint and explain their functions. [8]
 (b) Using relevant examples, compare the ball and socket and hinge joints. [4]
[Total: 12 marks]

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