Candidate Name	Centre Number	Candidate Number

ZIMBABWE SCHOOL EXAMINATIONS COUNCIL

General Certificate of Education Ordinary Level

BIOLOGY

PAPER 2

4025/2

2 hours

JUNE 2024 SESSION

Additional materials:
Electronic calculator
Pencil (type HB recommended)
Answer booklet

INSTRUCTIONS TO CANDIDATES

Write your name, centre number and candidate number in the spaces at the top of this page.

At the end of the examination, fasten the answer booklet securely to the question paper.

INFORMATION FOR CANDIDATES

The intended number of marks is given in brackets [ ] at the end of each question or part question.

This question paper consists of **two** compulsory sections, **A** and **B**.

FOR EXAMINER'S USE	
Section A	
Section B	
TOTAL	

This question paper consists of 13 printed pages and 3 blank pages.

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Section A

*Answer **all** questions in this section.*

Write your answers in the spaces provided on the question paper.

1. **Fig. 1.1** shows three adjacent water molecules.

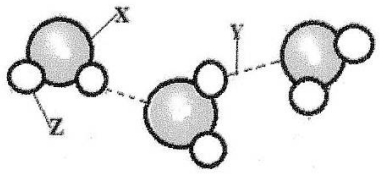


Fig. 1.1

(a) **(i)** Identify

element **X**,

.....

bond **Y**,

.....

[2]

(ii) Name the bond that is formed between element **X** and element **Z**.

.....

[1]

(iii) Explain the importance of bond **Y**.

.....

.....

[1]

(iv) Relate the chemical structure of water to its use as a solvent.

.....

.....

.....

.....

[2]

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(b) State **two** functions of nucleic acids.

.....

.....

[2]

(c) Distinguish between glycogen and glucose.

.....

.....

.....

.....

[2]
[Total: 10]

2. **(a)** Describe the features of a runner plant.

.....

.....

.....

.....

[2]

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(b) Describe how a new plant develops from a runner plant.

[4]

(c) Explain the importance of geotropism in plant growth.

[4]

[Total: 10]

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3. **(a)** **(i)** Define a *pathogen*

.....

.....

[1]

(ii) Explain how **each** of the skin, tears and ear wax prevent pathogens from entering the body:

skin .....

tears .....

ear wax .....

[3]

(b) **(i)** Name the **two** types of white blood cells.

1. .....

2. .....

[2]

(ii) Describe the engulfing action by white blood cells.

.....

.....

.....

.....

.....

[4]

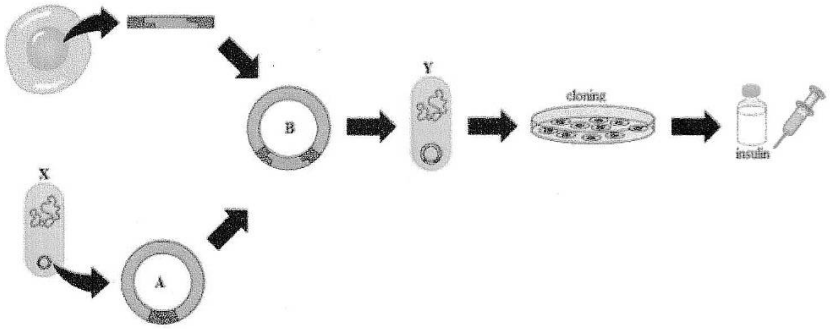
[Total: 10]

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4. **Fig. 4.1** illustrates the production of insulin by recombinant DNA technology.



[*adapted from: https://ib.bioninja.com*]

Fig. 4.1

(a) **(i)** Define the term *recombinant DNA*.

.....

.....

.....

[1]

(ii) Identify

A,

.....

B.

.....

[2]

(iii) State the name given to cell **Y** after **B** is put into it.

.....

[1]

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(iv) Explain the cloning of cell **Y**.

.....

.....

.....

.....

[2]

(b) Explain the advantages of using microorganisms in production of insulin.

.....

.....

.....

.....

.....

.....

.....

.....

[4]

[Total: 10]

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5. **(a)** Define the term *co-dominance*.

.....

.....

.....

.....

[2]

(b) State any **two** diseases caused by a gene mutation.

.....

.....

[2]

(c) Name any **two** factors that increase the rate of mutation.

.....

.....

.....

.....

[2]

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(d) A man heterozygous for blood group **B** and a woman of blood group **AB** had a child.

Using a genetic diagram, show the probability of the child having blood group **O**.

[4]

[Total: 10]

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6. **(a)** Define the term *ecosystem*.

.....

.....

.....

..... [1]

(b) List any **three** physical components of an ecosystem.

1. .....

2. .....

3. ..... [3]

(c) State any **two** effects of exceeding the carrying capacity of an ecosystem.

.....

.....

.....

..... [2]

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(d) **Table 6.1** shows incomplete information comparing clay soils and sandy soil.

Complete **Table 6.1** by filling in the missing information.

Table 6.1

property	sandy soil	clay soil
size of particles	relatively large course	relatively small fine
air content		
drainage		

[4]

[Total: 10]

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Section B

*Answer any **four** questions from this section.*

Write your answers on the answer booklet provided.

7. **(a)** List any **six** contents of a first aid kit. [6]

(b) Suggest the importance of first aid in a school. [4]

8. **(a)** Describe the lock and key hypothesis of enzyme action. [6]

(b) Explain the use of enzymes in biological washing powders. [4]

9. **(a)** Describe any **three** environmental factors that affect the rate of transpiration. [6]

(b) Explain how plant wilting occurs. [4]

10. **(a)** Describe the effects of adrenaline on any **three** of its target organs. [6]

(b) Explain how diabetes mellitus can be controlled. [4]

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11. **(a)** State any **two** sources of river pollution. [2]

(b) **Table 11.1** shows information about body structure of organisms found in four kingdoms of classification.

The body structure is not correctly matched to the kingdom in each case.

Copy **Table 11.1** and match each body structure to the correct kingdom.

Table 11.1

Kingdom	body structure
Animalia	sometimes joined together, simple, single celled eukaryotes.
Protista	complex multicellular eukaryotes without cell walls.
Monera	multicellular eukaryotes with cell walls that contain chitin.
Fungi	simple, single celled prokaryotes.

[4]

(c) Explain the effects of climate change on biodiversity. [4]

12. **(a)** Outline **six** ways of improving community hygiene. [6]

(b) Explain the importance of contact tracing in the control of Tuberculosis. [4]

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