

# ZIMBABWE SCHOOL EXAMINATIONS COUNCIL

**General Certificate of Education Ordinary Level** 

### **BIOLOGY**

4025/2

PAPER 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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[2]

## 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.

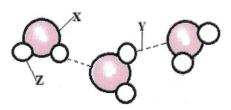


		Fig. 1.1	
(a)	(i)	Identify	
		element X,	
		bond Y,	测定应量 化混合物 计自由 化分离
			[2]
	(ii)	Name the bond that is formed between element $\mathbf{X}$ and element $\mathbf{Z}$ .	
			[1]
	(iii)	Explain the importance of bond Y.	
			************
			[1]
	(iv)	Relate the chemical structure of water to its use as a solvent.	
			X C H Z F H H T X U + + 1
			***********

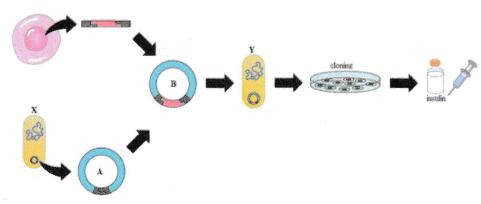
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	(b)	State two functions of nucleic acids			
			***************************************		
				[2]	
	(c)	Distinguish between glycogen and gl	lucose.		
				***************************************	
				,	
				[2] [Total: 10]	
2.	(a)	Describe the features of a runner pl	ant.		
		) LINGTON DE LA CONTROL DE LA		***************************************	
				[2]	
				1	

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			1
(b)	Describe how a new plant develops	from a runner plant.	
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		***************************************	[4]
(c)			
		***************************************	***************************************
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			5			Fo Exam Us
•	(a)	(i)	Define a pathogen			
				**************************************	***************************************	
				*************************		
					[1]	
		(ii)	Explain how <b>each</b> of the skin, tears entering the body:	and ear wax pro	event pathogens from	
			skin			
			tears	*****************************	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	•
			ear wax	************************************		
			***************************************	*******************************	[3]	
	(b)	(i)	Name the <b>two</b> types of white blood	cells.		
			1.			
			2.			
					[2]	***
		(ii)	Describe the engulfing action by wh	hite blood cells.		
			**************************************			
			***************************************	4.00.22428428428422222222222222222222222		
				**********************		. 10
			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	27127879818865542548282934272104930	[4]	
					[Total: 10]	

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



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

Fig. 4.1

(a)	<b>(i)</b>	Define the term recombinant DNA.	
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			Г11
	(ii)	Identify	L^.J
	()	<b>A</b> ,	
		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.	
			0 M 4 B
			1411
		[2	2]
(b)	Exp	plain the advantages of using microorganisms in production of insulin.	
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	****		
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	******	[Total:	[4]

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5.	(a)	Define the term co-dom	iinance.		·
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	(b)	State any <b>two</b> diseases c	raused by a ge	na mutotion	
		the day two discusors t	aused by a ge	ne mutanon.	
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	(c)	Name any two factors th	nat increase the	e rate of mutation.	
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Candidate Name	Centre Number	Candidate Number

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(d) A man heterozygous for blood group  ${\bf B}$  and a woman of blood group  ${\bf AB}$  had a child.

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

[4] [Total: 10]

Candi	idate Name	Centre Numbe	r Candidate Number
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6.	(a)	Define the term ecosystem.	
			[1]
		List any <b>three</b> physical components of an ecosyste	
	<b>(b)</b>	1.	
		2.	
		3.	[3]
	(c)	State any <b>two</b> effects of exceeding the carrying car	
			[2]

Candidate Name	Centre Number	Candidate Number

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

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 <b>three</b> 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 <b>three</b> of its target organs.	[6]
=1.	(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
	sometimes joined together,
Animalia	simple, single celled
	eukaryotes.
Protista	complex multicellular
Tiousia	eukaryotes without cell walls.
Monera	multicellular eukaryotes with
Wionera	cell walls that contain chitin.
Fungi	simple, single celled
r ungi	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]