



Coimisiún na Scrúduithe Stáit
State Examinations Commission

Leaving Certificate Examination 2026

Biology

Sections A and B and Answerbook

Higher Level

Tuesday 9 June Afternoon 2:00 - 5:00

400 marks

Examination Number

----------------------	----------------------	----------------------	----------------------	----------------------	----------------------

Date of Birth

		/			/		
----------------------	----------------------	---	----------------------	----------------------	---	----------------------	----------------------

For example, 3rd February
2005 is entered as 03 02 05

Centre Stamp

Instructions

Write your Examination Number and your Date of Birth in the boxes on the front cover.

Write your answers to all parts of the examination into this answerbook. This answerbook will be scanned and your work will be presented to an examiner on screen. Anything that you write outside of the answer areas may not be seen by the examiner.

Write your answers in blue or black pen. You may use pencil for sketches, graphs and diagrams only.

There are three sections in this examination. Questions for Section **C** are supplied separately but your answers must be written in this answerbook.

It is recommended that you spend not more than 30 minutes on Section **A** and 30 minutes on Section **B**, leaving 120 minutes for Section **C**.

Section **A** Answer any **five** questions from this section.
Each question carries 20 marks.

Section **B** Answer any **two** questions from this section.
Each question carries 30 marks.

Section **C** Answer any **four** questions from this section.
Each question carries 60 marks.

Section A
Answer any five questions.
Write your answers in the spaces provided.

1. Answer any **five** of the following parts (a) to (f):

(a) State **two** reasons why organisms require food.

1.
2.

(b) Name the chemical elements that are present in **all** lipids.

--

(c) Name the basic unit of a lipid.

--

(d) State **one** metabolic role of lipids in cells.

--

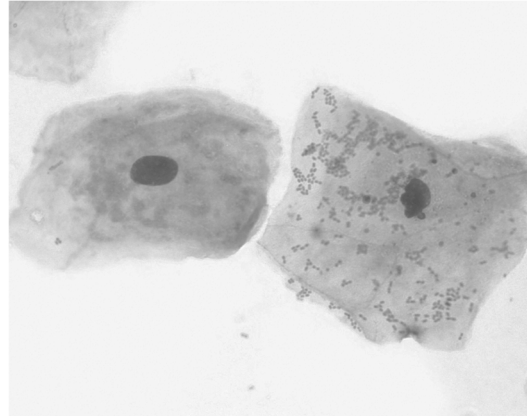
(e) Identify **one** vitamin that is soluble in lipids.

--

(f) State **one** deficiency disorder of the vitamin identified in part (e) **or** of any other **named** vitamin.

2. Human cheek cells are shown in the image below.

--



- (a) In the box above, name a structure visible in the image that shows that the cheek cells are eukaryotic **and** draw an arrow from the box to this named structure.

- (b) What term describes cells that are **not** eukaryotic?

--

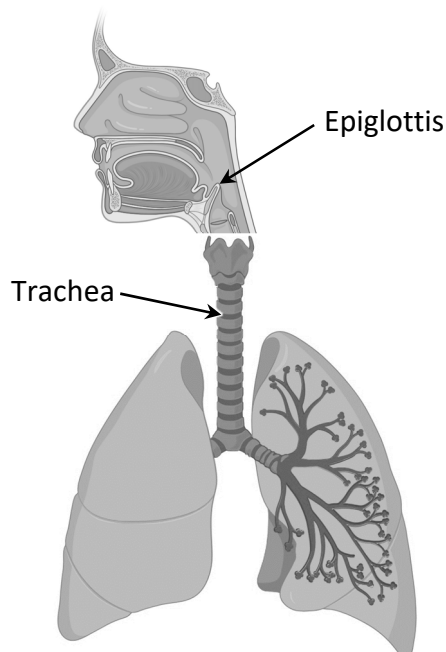
- (c) Human cells are used in tissue culture.
Explain the term *tissue culture*.

- (d) State **two** conditions necessary for successful tissue culture.

- (e) State **two** applications (or uses) of tissue culture.

1.
2.

3. The diagram shows parts of the human breathing system.



- (a) Name the body cavity in which the breathing system is located.

- (b) State the function of the epiglottis.

- (c) The trachea has rings of cartilage in its wall.
What is the function of these rings of cartilage?

- (d) On the diagram above,

- (i) Sketch **and** label the diaphragm muscle in its correct location.
(ii) Draw an arrow to show the direction of movement of the diaphragm during inhalation.

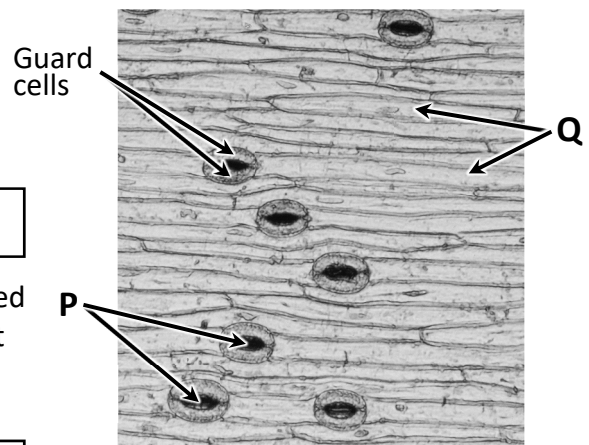
- (e) Name **one** other muscle involved in inhalation.

- (f) The ribs are not shown on the diagram.
Briefly describe what happens to the rib cage during inhalation.

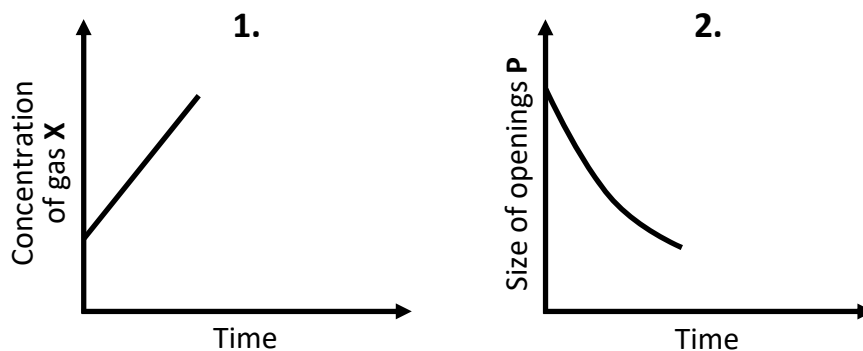
4. The image shows the undersurface of a leaf as viewed using a light microscope.

- (a) Name the openings **P** which allow gas exchange to occur.

- (b) The size of these openings can be controlled by the level of water in the guard cells, but also directly by a gas **X**. Identify gas **X**.



The graphs (1. and 2.) below show the relationship between the concentration of gas **X** in the leaf and the size of the openings **P** over the **same** period of time.



- (c) State the relationship between the concentration of gas **X** and the size of openings **P**.

- (d) On graph 2., continue the curve to show what would happen to the size of openings **P** if the concentration of gas **X** in the leaf reduced.

- (e) (i) The label **Q** in the image above shows the location of other cells on the undersurface of the leaf. To which tissue type do these cells belong?

- (ii) Other than gas exchange, state **one** function of the tissue type you named at (e) (i) above.

- (f) Name the openings in the stems of plants that are also involved in gas exchange.

5. Answer the following questions in relation to protein synthesis.

- (a) The first stage in protein synthesis involves copying the DNA code to make messenger RNA (mRNA). What name is used to describe this stage?

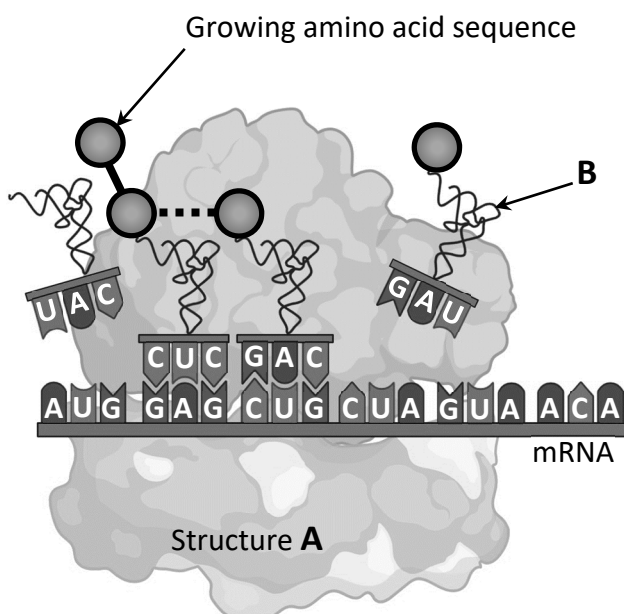
- (b) Where in the cell does the stage you named above occur?

The diagram below shows the second stage of protein synthesis involving mRNA.

- (c) Name structure **A**, where this stage occurs in the cell.

- (d) The part labelled **B** is another type of RNA. Name this type of RNA.

- (e) Part **B** attaches to the mRNA at matching three-base sequences (such as **G A G** or **C U G**). What name is given to these three-base sequences of mRNA?

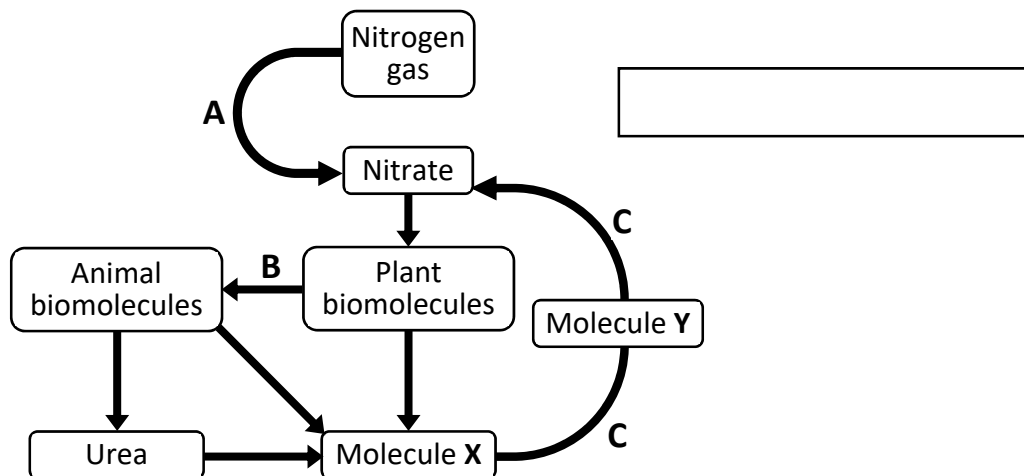


- (f) Part of the mRNA sequence above is: **CUA GUA ACA**. Write the corresponding sequence of the gene (**DNA**) for this mRNA sequence.

- (g) What happens to the fully translated amino acid sequence to allow for the formation of a functional protein?

6. Answer the following questions in relation to the nitrogen cycle.

- (a) The diagram below shows the nitrogen cycle.
One important process has been omitted.
Complete the cycle by drawing an arrow **on the diagram** and writing the name of the missing process in the box provided.



- (b) Write down the names of processes **A**, **B** and **C** that are indicated on the diagram.

A:
B:
C:

- (c) (i) Outline **one** way in which process **A** occurs.

- (ii) Suggest an advantage to plants of process **A**.

- (d) Name molecules **X** and **Y**.

X:
Y:

7. For **each** of the following structures, identify its precise location **and** its main function.

(a) Retina

Precise location:
Main function:

(b) Sino-atrial node

Precise location:
Main function:

(c) Gall bladder

Precise location:
Main function:

(d) Adrenal gland

Precise location:
Main function:

(e) Cerebellum

Precise location:
Main function:

Section B

Answer any two questions.

Write your answers in the spaces provided.

Part (a) carries 6 marks and part (b) carries 24 marks in each question in this section.

8. (a) In relation to scientific investigations, distinguish between the terms, *qualitative* and *quantitative* by writing a brief sentence on **each**.

- (b) You carried out various investigations during your practical studies.

- (i) Outline a qualitative test for a reducing sugar.

- (ii) Describe how you prepared a sample of stained plant cells to view using a light microscope.

- (iii) When isolating DNA from plant tissue, state a reason for using the following:
1. Washing up liquid or detergent 2. Ice cold ethanol

Washing up liquid or detergent:
Ice cold ethanol:

9. (a) (i) What is an enzyme?

--

(ii) What happens to an enzyme when it becomes denatured?

--

(b) During your practical studies, you investigated the effect of pH on the rate of enzyme activity. Describe how you carried out this investigation. Include the results and one safety precaution. You may include a labelled diagram if you wish.

--

10. (a) (i) In Biology, what is meant by the term *geotropism*?

--

(ii) State **one** location in plants where growth regulators are produced.

--

(b) During your practical studies, you investigated the effect of IAA (indole acetic acid) growth regulator on plant tissue.

(i) Describe how you set up this investigation. Include one safety precaution. You may include a labelled diagram if you wish.

--

(ii) State **one** result of your investigation.

Answerbook for Section C

Instructions

Questions for Section C are supplied separately.

Start each question on a new page. Write the question number in the box at the top of each page. Use the left-hand column to label each part, as shown below.

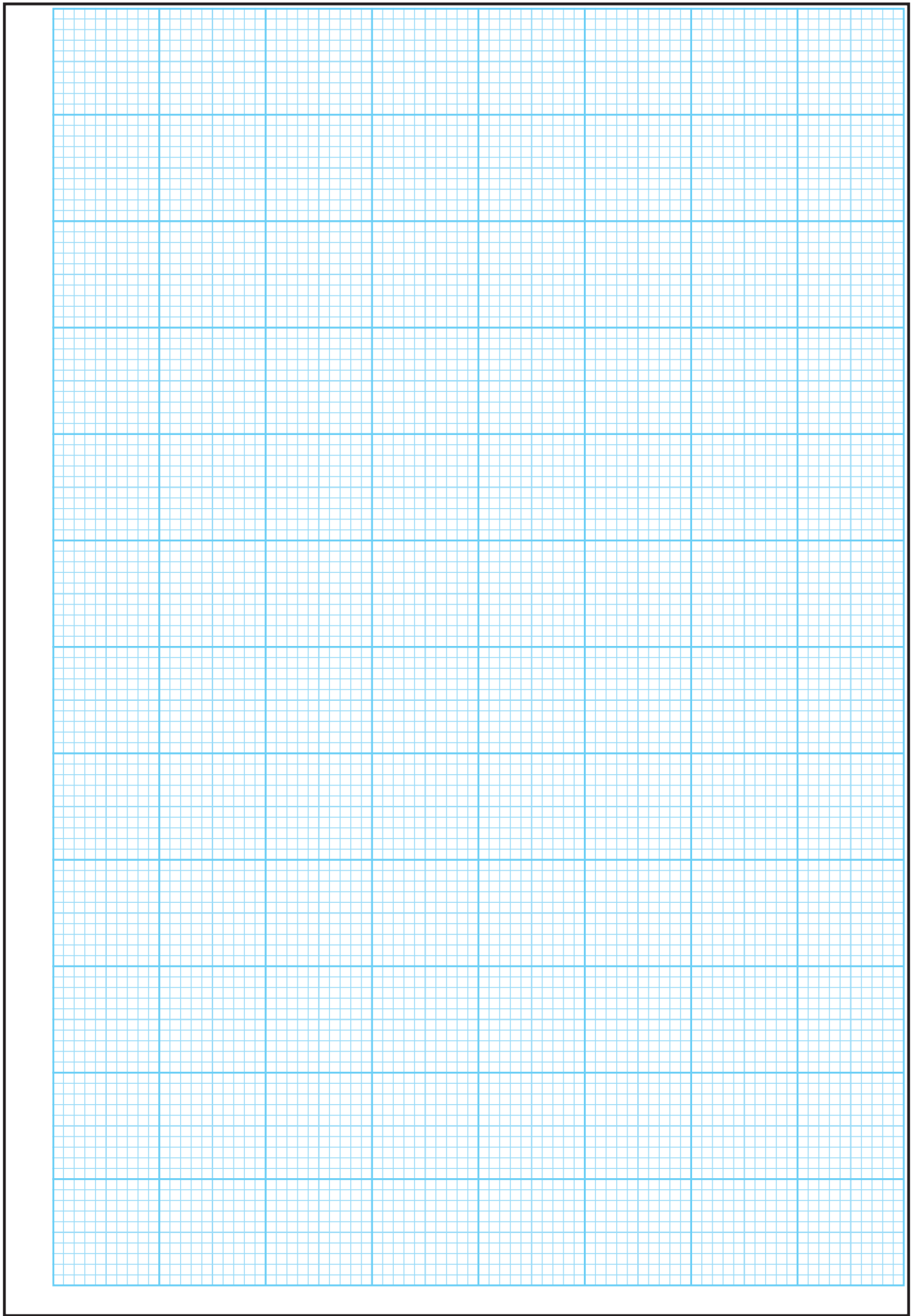
Question		Start each question on a new page
Part	14	
(a)		
(b)(i)		
(b)(ii)		

There are two pages of graph paper on the next two pages of this answerbook.

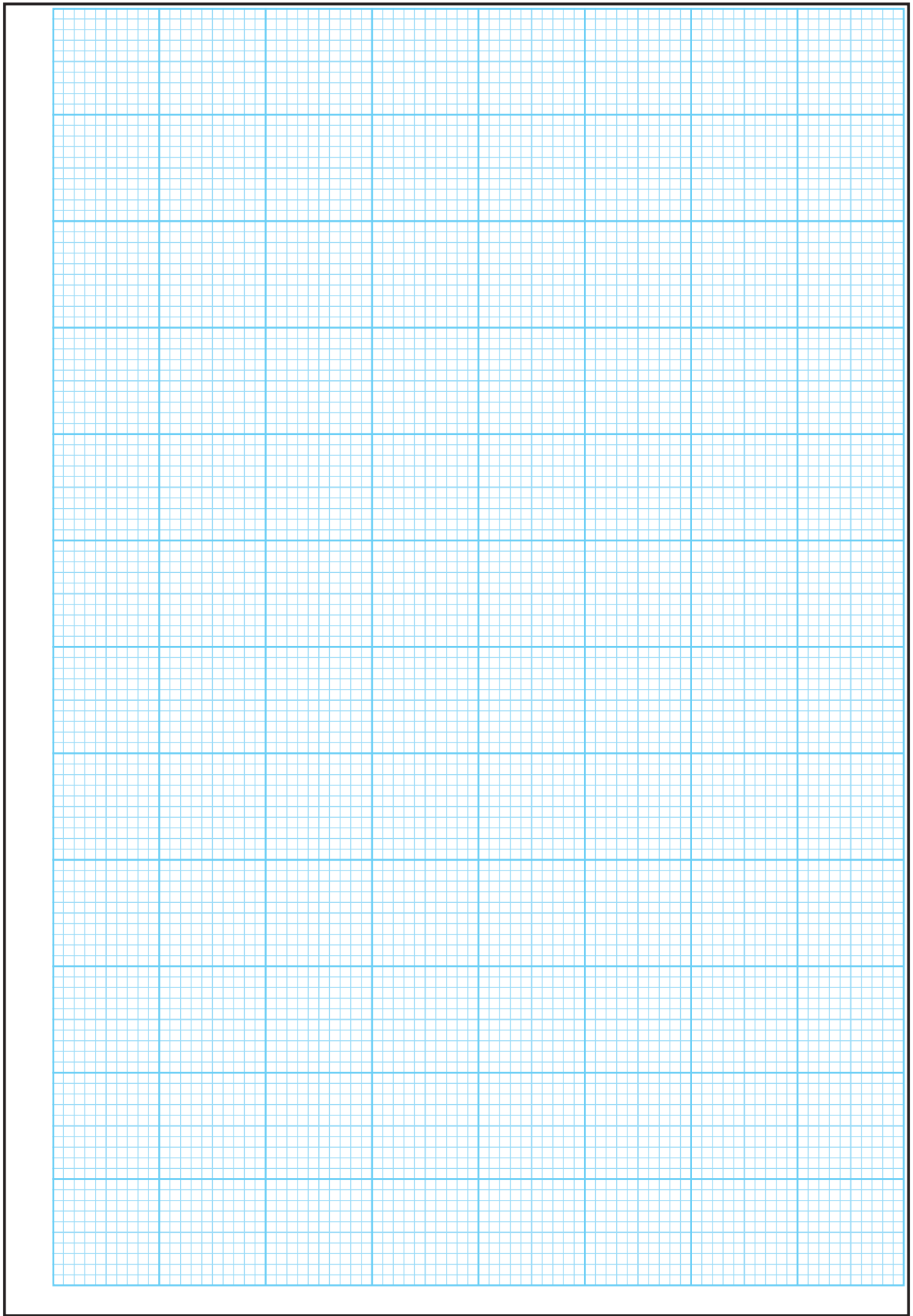
On pages with graph paper, the box for the question number is at the bottom of the page.

You do not need to use all of the pages in this answerbook. If you run out of space in this answerbook, you may ask the superintendent for more paper or graph paper.

Write your answers in blue or black pen. You may use pencil for sketches, graphs and diagrams only.



Question



Question

Part

[illegible]

Part

[illegible]

--	--

Part

[illegible]

Part

[illegible]

--	--

Part

[illegible]

Part

[illegible]

A diagram showing a rectangle divided into two equal squares by a vertical line. The rectangle is labeled with 'a' on the top and bottom edges and 'b' on the left and right edges.

Part

[illegible]

--	--

Part

[illegible]

Part

[illegible]

--	--

Part

[illegible]

Part

[illegible]

--	--

Part

[illegible]

--	--

Part

[illegible]

--	--

Part

[illegible]

--	--

Part

[illegible]

Part

[illegible]

Part

[illegible]

Part

[illegible]

--	--

Part

[illegible]

--	--

Part

[illegible]

Part

[illegible]

--	--

Part

[illegible]

Part

[illegible]

Acknowledgments:

Images/diagrams/graphs:

Image on page 4:	alamy.com
Diagram on page 5:	biorender.com
Image on page 6:	alamy.com
Graphs on page 6:	State Examinations Commission
Diagram on page 7:	biorender.com
Diagram on page 8:	State Examinations Commission

Material may have been adapted, for the purpose of assessment, without the authors' prior consent.

Do not write on this page

Copyright notice

This examination paper may contain text or images for which the State Examinations Commission is not the copyright owner, and which may have been adapted, for the purpose of assessment, without the authors' prior consent. This examination paper has been prepared in accordance with section 53(5) of the Copyright and Related Rights Act, 2000. Any subsequent use for a purpose other than the intended purpose is not authorised. The Commission does not accept liability for any infringement of third-party rights arising from unauthorised distribution or use of this examination paper.

Leaving Certificate – Higher Level

Biology Sections A and B and Answerbook

Tuesday 9 June

Afternoon 2:00 - 5:00