2022.M43C

2022L025G1EC

Coimisiún na Scrúduithe Stáit
State Examinations Commission

# Leaving Certificate Examination

# Biology

## Sections A and B and Answerbook

## Ordinary Level

## 3 hours

290 marks

**Examination Number**

**Day and Month of Birth**

For example, 3rd February is entered as 0302

**Centre Stamp**

# Instructions

Write your Examination Number and your Day and Month 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 a pencil for sketches, graphs and diagrams only.

There are three sections to 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 **four** questions from this section.<br>Each question carries 20 marks. |
| Section **B** | Answer any **one** question from this section.<br>Each question carries 30 marks. |
| Section **C** | Answer any **three** questions from this section.<br>Each question carries 60 marks. |

# Section A

**Answer any four questions.**
**Write your answers in the spaces provided.**

**1.** Use your knowledge of nutrition to answer the following questions.

(a) Proteins always contain C, H, O and **one** other element. Name this element.

(b) Give **one** example of a water-soluble vitamin.

(c) Give **one** function of carbohydrates in living organisms.

(d) Name a good source of protein in the human diet.

(e) Name **one** product of fat digestion.

**2.** The diagram shows a typical plant cell.

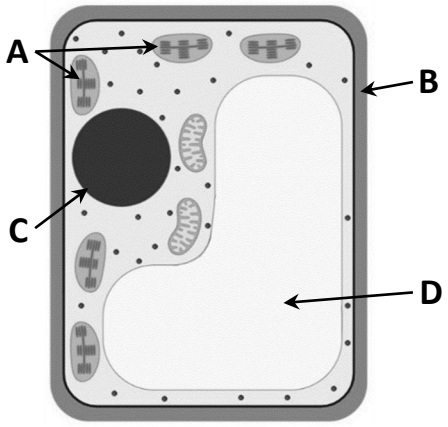
(a) Complete the following using the letters **A**, **B**, **C**, **D** from the diagram.

(i) Site of sugar production

(ii) Location of cellulose

(iii) Storage of water and salts

(iv) Location of chromosomes




(b) Give **two** features of this cell which are not present in an animal cell.

1.

2.

(c) Give **one** function of the structure labelled **B**.

**3.** Complete the following sentences:

(a) Phototropism is the growth response of a plant to …….

(b) An example of a synovial joint is …….

(c) The endocrine gland that secretes insulin is called the …….

(d) Gas exchange between a leaf and the atmosphere takes place through the …….

(e) The semi-circular canals are located in the …….

**4.** A simple food chain can be represented by: **A ⟶ B ⟶ C**

(a) (i) Name an ecosystem you have studied.

Give **one** example of an organism for **A**, **B** and **C**.

(ii) A:

(iii) B:

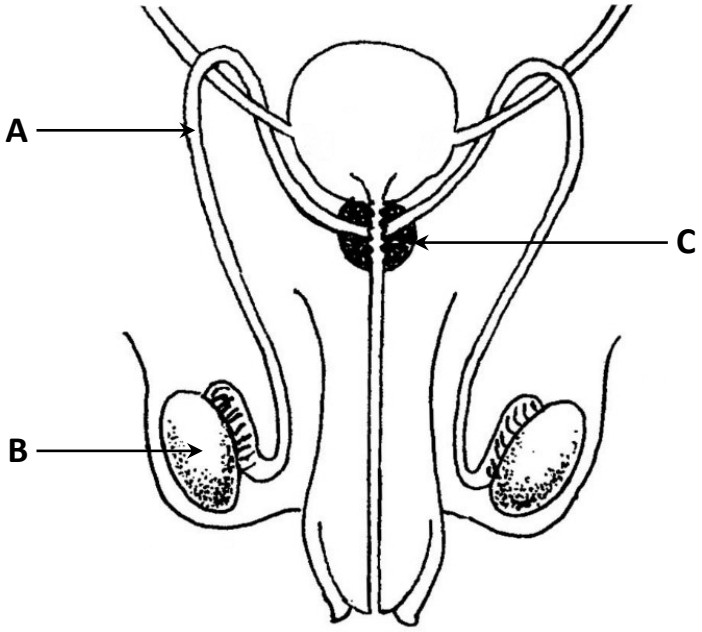
(iv) C:

(b) Which of the organisms **A**, **B**, **C** is a primary consumer?

(c) Which of the organisms **A**, **B**, **C** is a producer?

(d) State **one** role of producers in an ecosystem.

**5.** The diagram shows the human male reproductive system.




(a) Complete the following using the letters **A**, **B**, **C** from the diagram.

(i) Site of sperm production ☐

(ii) Site of secretion of seminal fluid ☐

(iii) Transport of semen ☐

(b) What is meant by the term *secondary sexual characteristics*?

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(c) State **two** secondary sexual characteristics of the human male.

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(d) State **one** cause of male infertility.

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**6.** State whether each of the following statements is true or false by putting a (✓) in the appropriate box in **each** case.

| | | True | False |
|---|---|---|---|
| *Example:* | | | |
| *Living things are made of cells.* | | ☑ | ☐ |
| (a) | Cell membranes are fully permeable. | ☐ | ☐ |
| (b) | A tissue is a group of cells with a shared function. | ☐ | ☐ |
| (c) | An enzyme converts its substrate to one or more products. | ☐ | ☐ |
| (d) | A plant cell that has lost water is said to be turgid. | ☐ | ☐ |
| (e) | Aerobic respiration does not require oxygen. | ☐ | ☐ |
| (f) | Fermentation is anaerobic respiration. | ☐ | ☐ |
| (g) | Genetic screening is used to identify a mutated gene. | ☐ | ☐ |

**7.** Choose **each** structure from the following list and place it in Column B to match a function in Column A. The first one has been completed as an example.

**~~Larynx~~** **Diaphragm** **Pulmonary artery** **Alveoli** **Rings of cartilage** **Bronchus**

| Column A | Column B |
|---|---|
| **Produces sound** | **Larynx** |
| (a) Prevent collapse of the trachea | |
| (b) Gas exchange | |
| (c) Contracts to increase chest volume | |
| (d) Carries blood to the lungs | |
| (e) Carries air into each lung | |

## Section B

**Answer any one question.**
**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) Explain each of the following terms used in ecology.

(i) Ecosystem

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(ii) Habitat

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(b) (i) State **two** features used to identify a **named** animal in the ecosystem you have studied.

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| Named animal: |
| Feature 1: |
| |
| Feature 2: |
| |

(ii) Name **one** piece of apparatus that could be used to collect the animal named at part (b) (i) above.

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(iii) Describe how you would use the piece of apparatus named at part (b) (ii) above.

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(iv) Describe how you would estimate the population of the animal named at part (b) (i) above.

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**9.** (a) (i) What is the chemical nature of an enzyme: lipid **or** protein **or** carbohydrate?

(ii) What shape are enzymes: folded **or** fibrous?

(b) Answer the following questions on an investigation you carried out to show the effect of temperature on the rate of enzyme activity.

(i) Name the enzyme you used in this investigation.

(ii) How did you vary the temperature?

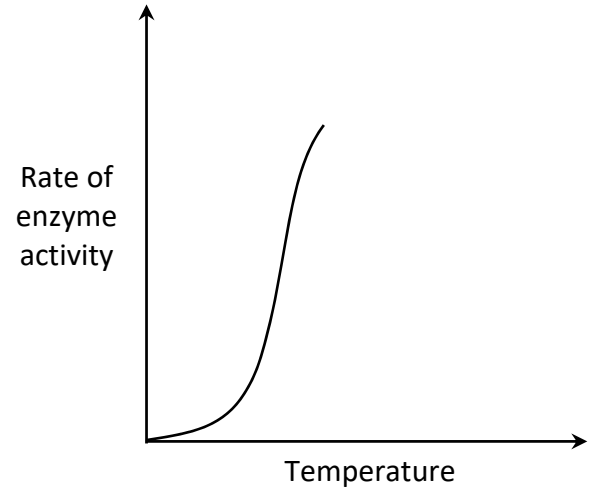
(iii) Name **one** factor you kept constant.

(iv) How did you keep this factor constant?

(v) How did you measure the rate of enzyme activity?

(vi) Describe **one** safety measure you took in this investigation.

(vii) Complete the graph to show how the rate of activity of the enzyme you used would continue to change at higher temperatures.



**10.** (a) Leaf yeasts can reproduce on the surface of leaves.

(i) To which kingdom do yeasts belong?

(ii) Name the method by which yeast cells reproduce.

(b) Answer the following questions on an investigation that you carried out into the growth of leaf yeast.

(i) Name the plant from which you obtained the leaves.

(ii) Describe how you collected the leaf from the plant.

(iii) Draw a labelled diagram, in the space below, of the setup you used.

(iv) The equipment that you used was sterile. What does sterile mean here?

(v) Describe how you safely disposed of the unwanted material at the end of the investigation.

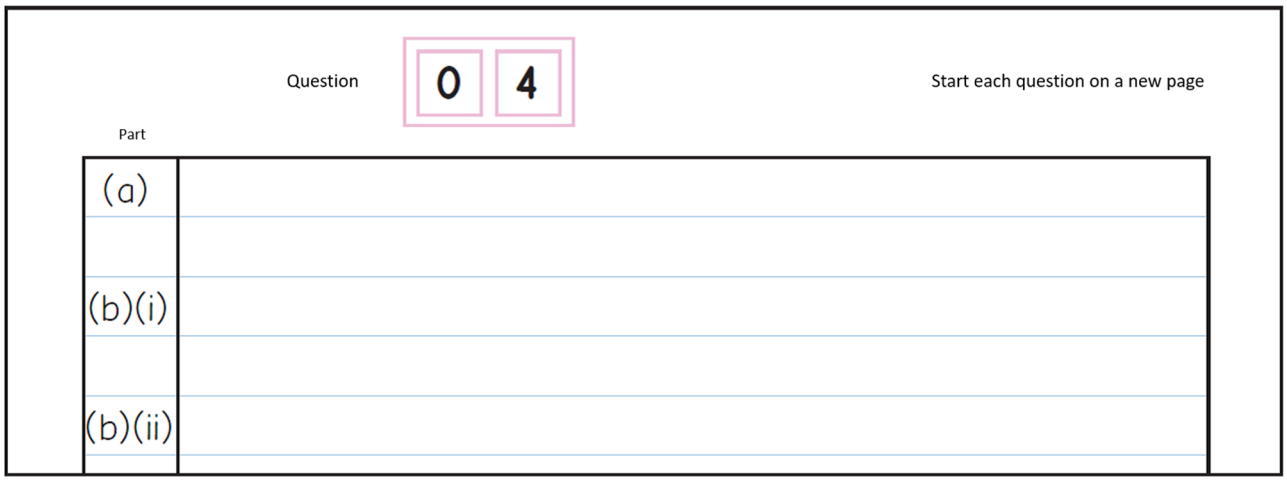
(vi) Describe the results that you obtained in both the experiment **and** the control.

# Answerbook for Section C

## Instructions

Questions for Section **C** are supplied separately.

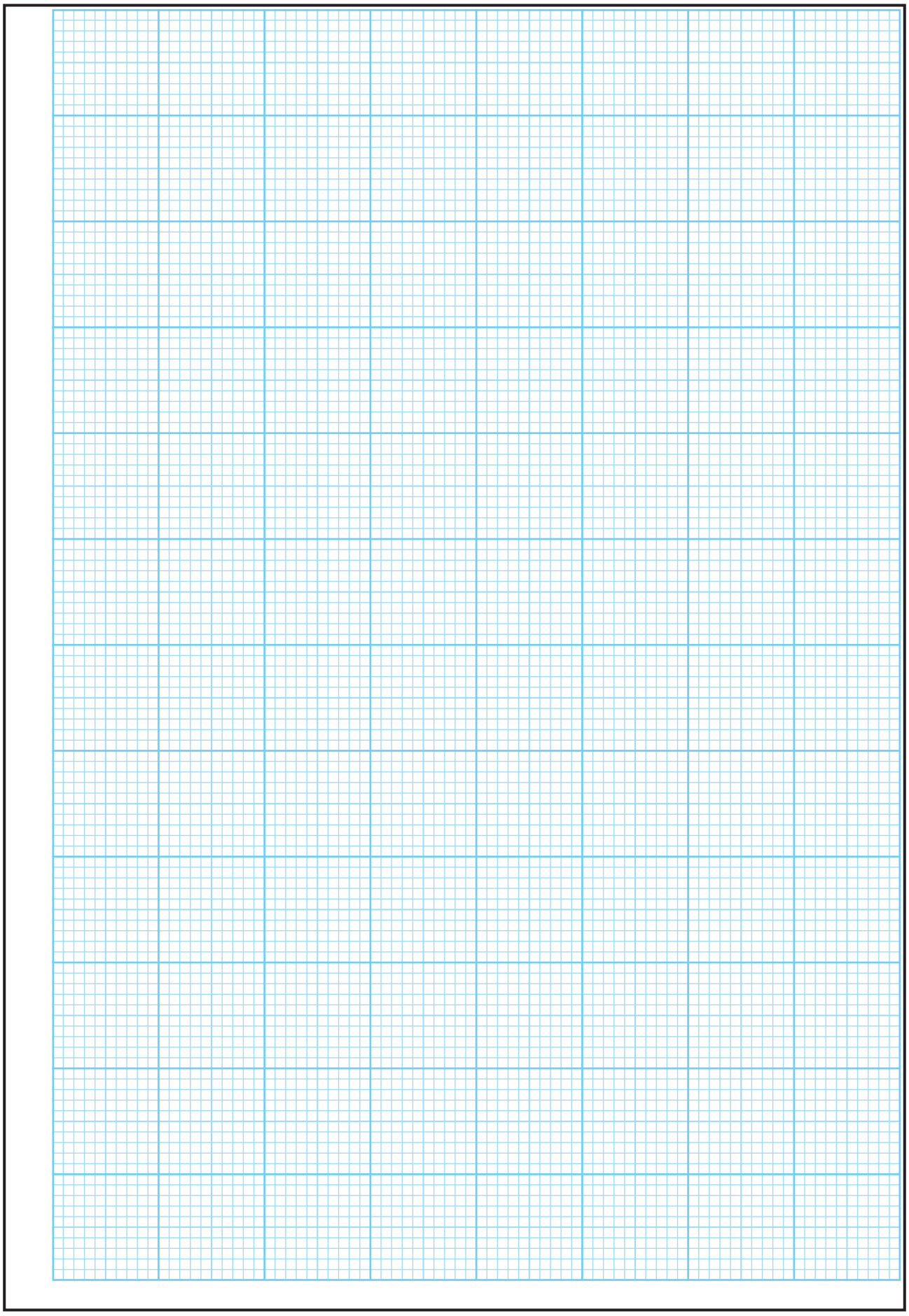
Start each question on a new page. Write the question number in the box at the top of each page. Use the left-hand column to label each part, as shown below.




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 a pencil for sketches, graphs and diagrams only.



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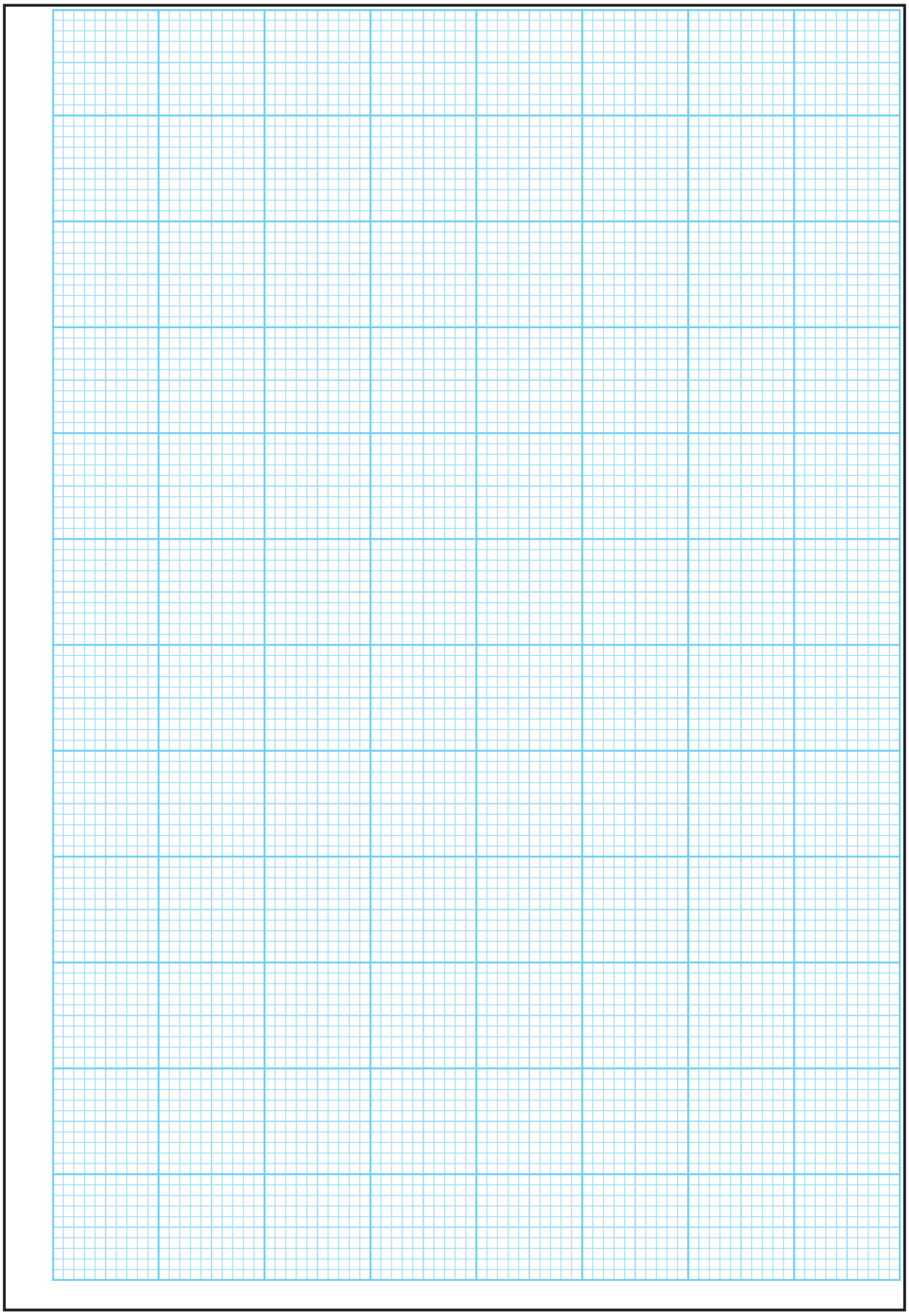

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Leaving Certificate – Ordinary Level

# Biology Sections A and B and Answerbook

3 hours