2025.M44K
(deferred examination)

2025L025A1EK

Coimisiún na Scrúduithe Stáit
State Examinations Commission

Leaving Certificate Examination 2025

Biology

Sections A and B and Answerbook

Higher Level

3 hours

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) Name the **three** chemical elements **always** found in lipids.

(b) Name the basic unit that makes up lipids.

(c) Give **one** structural role of lipids in living organisms.

(d) Give **one** metabolic role of lipids in living organisms.

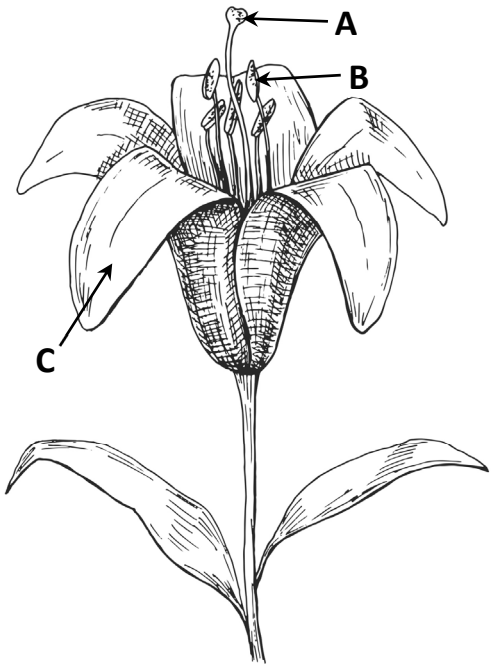
(e) Name any **one** mineral required by animals **and** give its function.

(f) Name any **one** mineral required by plants **and** give its function.

2. The diagram shows the structure of a typical animal-pollinated flower.

(a) Name the parts labelled **A**, **B and C and** give **one** function for **each**.

A:
Function of A:
B:
Function of B:
C:
Function of C:

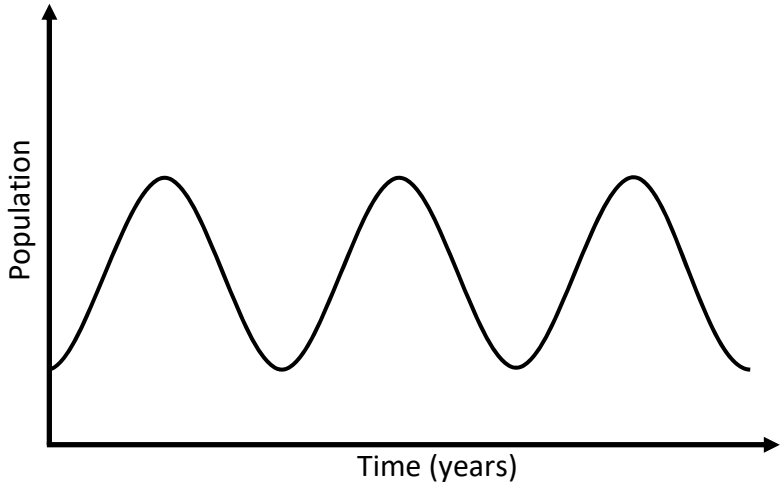


(b) Explain the term *pollination*.

(c) Flowers can also be wind-pollinated.
Give **two** structural differences between an animal-pollinated flower **and** a wind-pollinated flower.

1.
2.

3. The barn owl has recently been 'red-listed' (present on the endangered list) on the *Birds of Conservation Concern in Ireland* website.
The graph shows the changes in the population of the barn owl over a number of years.
Barn owls hunt and feed on field mice.



(a) **(i)** Suggest **two** reasons why the barn owl has been 'red-listed'.

1.
2.

(ii) What type of ecological relationship exists between the barn owl and the field mouse?

(b) **On the graph above**, draw a dashed line representing how the population of the field mouse would change over time.

(c) Why do you think continual monitoring of the barn owl population, or of the environment in general, is important?

(d) Barn owls **only** feed on other animals.
What term describes animals that obtain their food from only other animals?

4. Sickle cell anaemia is an inherited blood condition that affects red blood cell function.
It is a recessive condition caused by a mutation.

(a) Explain the underlined terms.

Recessive:
Mutation:

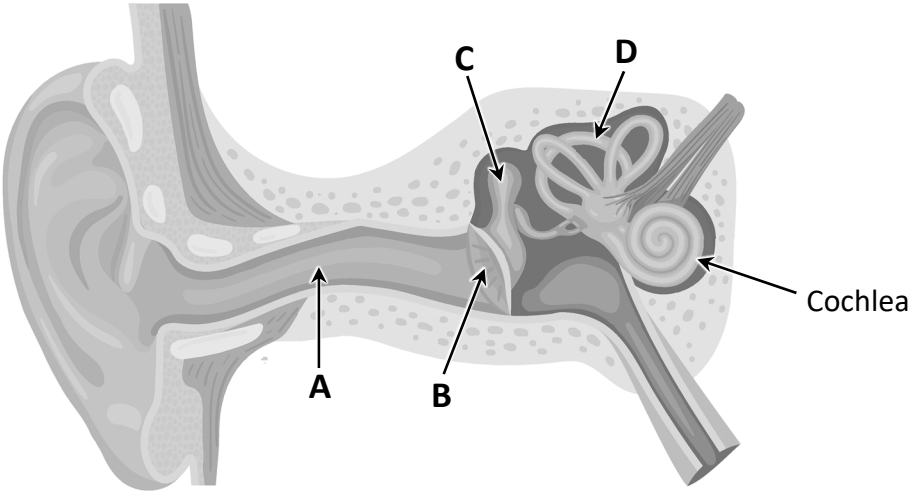
(b) **(i)** State **two** types of mutation.

1.
2.

(ii) Give **one** agent responsible for increased mutation rates.

(c) Two parents, both heterozygous for sickle cell anaemia, have a child.
There is a 25% chance that the child will have the condition.
Using suitable letters in a Punnett square, or otherwise, show how this percentage is calculated.

5. The diagram shows the internal structure of the human ear.



(a) Identify the parts labelled **A**, **B** and **C**.

A:
B:
C:

(b) **(i)** One function of the ear is hearing. The part labelled **D** is involved in another function. Name this other function.

(ii) Name the part labelled **D**.

(c) The cochlea functions in converting sounds waves to electrical impulses.

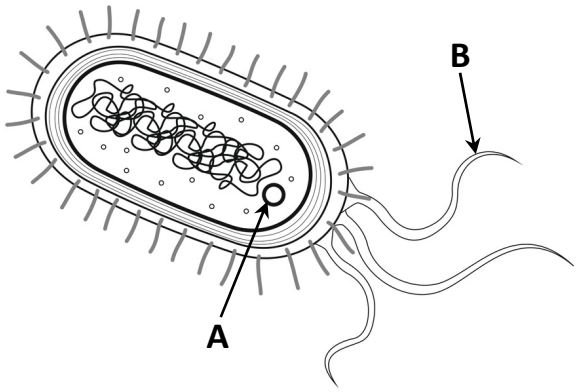
(i) What corresponding part of the human eye also generates electrical impulses?

(ii) To which major organ are these electrical impulses sent?

(d) Name **one** condition that affects either the eye **or** the ear **and** give the treatment for that condition.

Condition:
Treatment:

6. Answer the following questions in relation to bacteria.



(a) The diagram is of a rod-shaped bacterium.

(i) Name parts **A and B**.

A:
B:

(ii) To which kingdom of living organisms do bacteria belong?

(b) Name the **two other** shapes of bacterial cells.

1.
2.

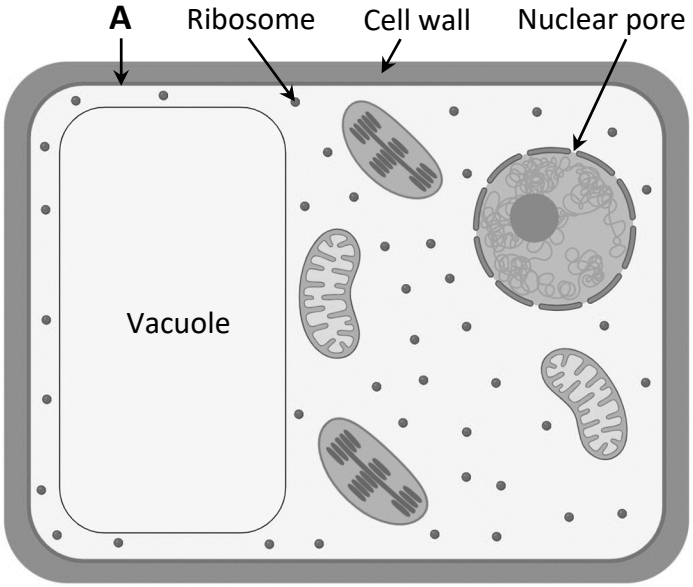
(c) Bacterial cells reproduce asexually.

(i) Name the type of asexual reproduction that occurs in bacteria.

(ii) Name the structure formed that allows many species of bacteria to survive in unfavourable environments.

(iii) Some bacteria are harmful.
Give **one** example of a harmful bacterium.

7. The diagram shows the ultrastructure of a plant cell.



(a) Using the letter '**X**' and **two** arrows, indicate clearly on the diagram above **two** locations where DNA is found.

(b) Name the part labelled **A and** give **one** function of this part.

A:
Function:

(c) Is the cell above a prokaryotic cell **or** a eukaryotic cell? Justify your answer.

(d) Give the function of the nuclear pore.

(e) The plant cell shown in the diagram is turgid.
Briefly describe how plant cells can remain turgid.

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)** **(i)** What is a control in a biological experiment?

(ii) Why are replicates important in a biological experiment?

(b) Answer the following questions based on investigations you carried out.

(i) Name **one** abiotic factor you studied **and** briefly describe how you measured it.

(ii) Describe a qualitative test for a **named** reducing sugar.

(iii) **1.** In relation to the isolation of DNA from a plant tissue, explain why you used each of the following: detergent (washing up liquid) **and** cold ethanol.

Detergent (washing up liquid):
Cold ethanol:

2. Describe the appearance of the isolated DNA.

9. **(a)** Distinguish between photosynthesis **and** respiration in terms of whether they are *anabolic* **or** *catabolic*.

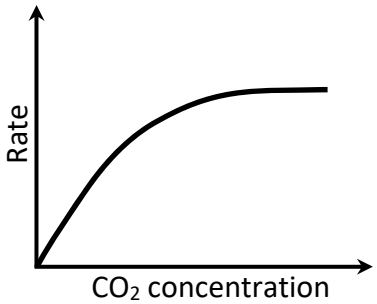
(b) In your studies you carried out an investigation into the effect of either carbon dioxide concentration **or** light intensity on the rate of photosynthesis.

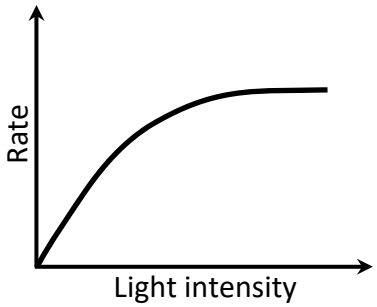
(i) Describe how you **set up** the apparatus. You may use a labelled diagram if you wish.

Describe:

Labelled diagram:

(ii) A student studied the effect of **both** carbon dioxide concentration **and** light intensity on the rate of photosynthesis and the results are shown below.





Choosing **either** graph, describe the results.

10. **(a)** Distinguish between the terms *systole* **and** *diastole*.

(b) Describe, in detail, how you carried out the dissection, display and identification of an ox's **or** sheep's heart. Include a labelled diagram of the internal structures of the dissected heart **and** a safety precaution you took.

Describe:

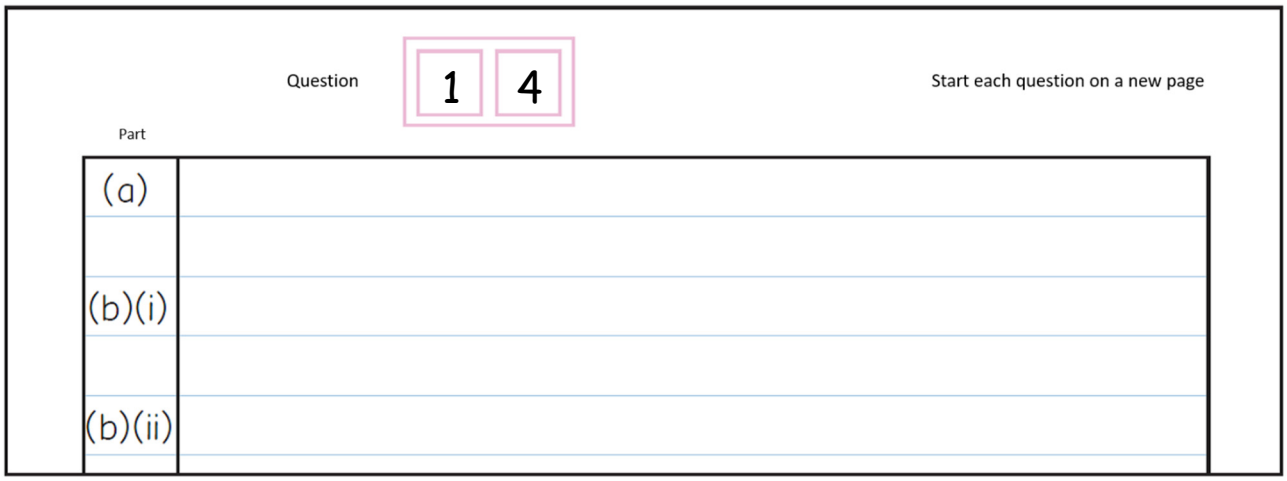
Labelled diagram:

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.

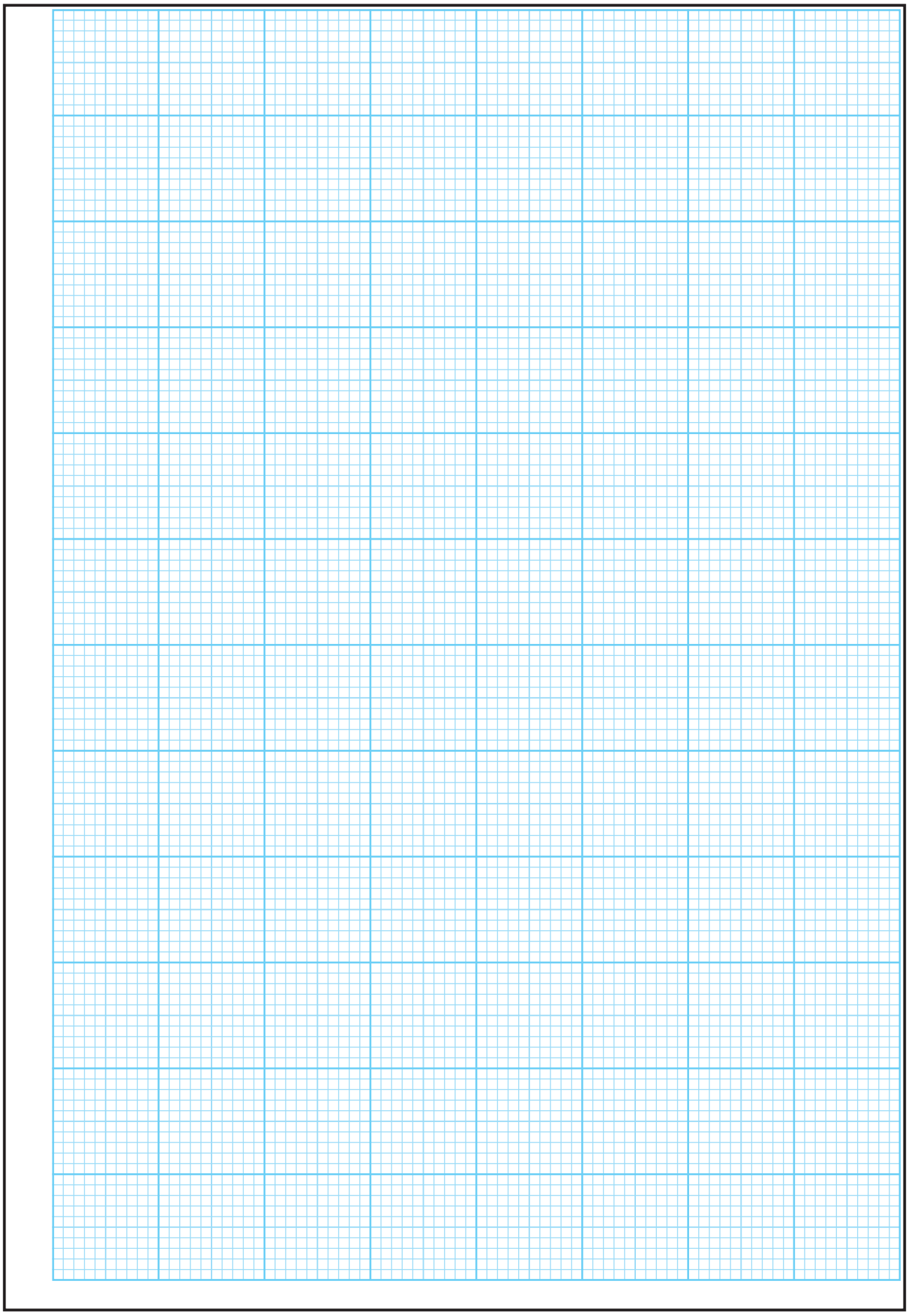


There are two pages of graph paper on the next two pages of this answerbook. On pages with graph paper, the box for the question number is at the bottom of the page.

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 pencil for sketches, graphs and diagrams only.

Question



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Leaving Certificate – Higher Level

Biology Sections A and B and Answerbook

3 hours