2025.M43

2025L025G1EL

Coimisiún na Scrúduithe Stáit
State Examinations Commission

Leaving Certificate Examination 2025

Biology

Sections A and B and Answerbook

Ordinary Level

Tuesday 10 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 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 **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. Carbohydrates, proteins, lipids and vitamins are all biomolecules.

(a) Which **one** of the following biomolecules is the main source of energy in the body? Tick (✓) the correct box.

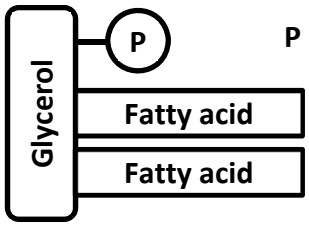
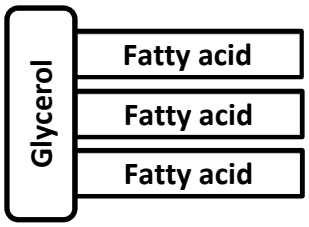
Carbohydrate ☐

Protein ☐

(b) Using the chemical symbols for hydrogen (**H**), carbon (**C**) and oxygen (**O**), complete the general formula for carbohydrates.

$$\square_x\left(\square_2\square\right)_y$$

(c) Which **one** of the following structures represents a **triglyceride**? Tick (✓) the correct box.

Structure	Tick (✓)
	
	

(d) Name a water-soluble vitamin.

(e) Name a fat-soluble vitamin.

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

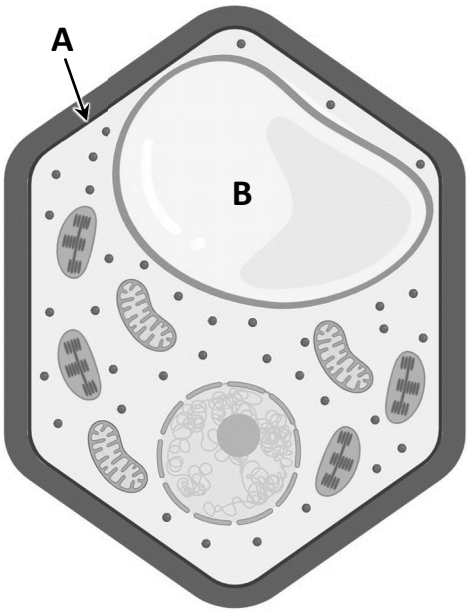
~~Abiotic~~ **Habitat** **Conservation** **Biosphere** **Ecosystem** **Pollution**

Column A		Column B
	Non-living factors in an ecosystem.	*Abiotic*
(a)	Parts of the Earth where life exists.	
(b)	Area where organisms interact with each other and their environment.	
(c)	Management of the environment.	
(d)	Place where an organism lives.	
(e)	Harmful addition to the environment.	

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

Example:	True	False
Turgor is the pressure of the cell contents against the cell wall.	☑	☐
(a) Safety is an important principle of experimentation.	☐	☐
(b) Fauna refers to plants.	☐	☐
(c) Osmosis is a special type of diffusion.	☐	☐
(d) Salt and sugar are used in food preservation.	☐	☐
(e) Endocrine glands have ducts.	☐	☐
(f) The meninges are the protective covering around the heart.	☐	☐
(g) Lenticels are present on plant stems.	☐	☐

4. Cells are the basic unit of life.
The diagram shows a cell.



(a) **(i)** Is this a plant cell **or** an animal cell?
Tick (✓) the correct box.

Plant cell ☐

Animal cell ☐

(ii) Give **two** reasons for your answer in part (i) above.

1.
2.

(b) The parts labelled **A** and **B** are cell components. Write the letter **A** or **B** beside the correct cell component in **each** case in the table below.

Cell component	Letter
Vacuole	
Cell membrane	

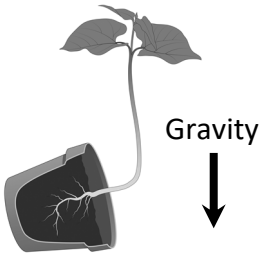
(c) Cell components **A** and **B** have specific functions.
Write the letter **A** or **B** beside the correct function in **each** case in the table below.

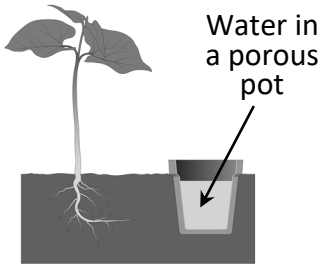
Function	Letter
Controls what enters and leaves the cell	
Storage	

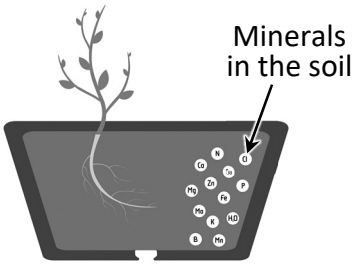
5. Plants respond to their environment using tropisms. The following list names four tropisms.

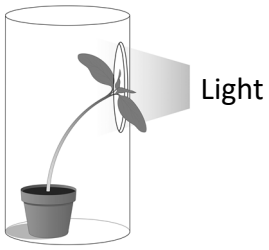
Geotropism **Phototropism** **Hydrotropism** **Chemotropism**

(a) Using the correct term from the list above, match **each** tropism with the diagrams below.









(b) Why are tropisms important for plants?

(c) Auxin is a growth regulator in plants.
Which **one** of the following tissues is the **main** way auxin is transported through a plant? Tick (✓) the correct box.

Dermal tissue ☐

Vascular tissue ☐

Ground tissue ☐

(d) Give **one** way in which plant growth regulators are used commercially.

6. The nervous and endocrine systems in humans allow us to react to our environment.

(a) Fill in the blanks in the box below, using the words from the following list:

impulses **bloodstream** **neurons** **hormones**

The endocrine system carries messages by means of chemicals called

_____ which are transported in the _____.

The nervous system sends _____ along cells called

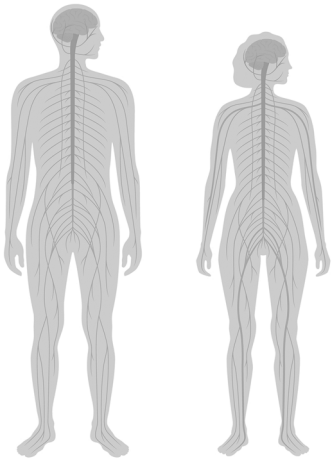
_____.

(b) Using a word from the following list, complete the sentence below.

distal **central** **portal**

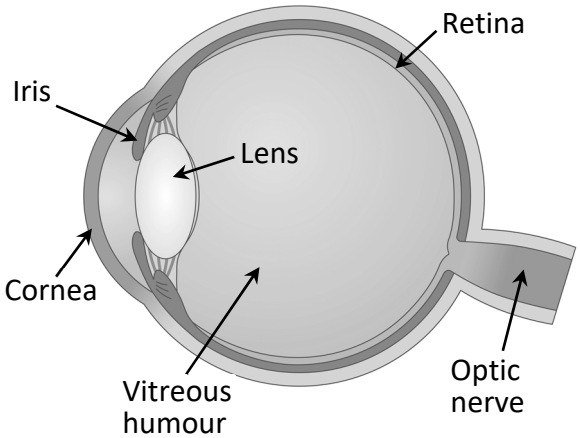
The human nervous system is divided into two main parts: the peripheral nervous system and the

_____ nervous system.



(c) The eye is one of the sense organs of the human nervous system.

Using information provided on the diagram of the human eye, name the part of the eye that has each of the following functions:

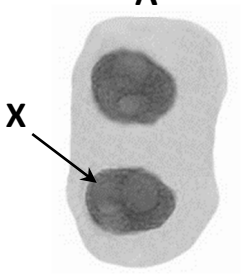


(i) Controls the amount of light entering the eye.

(ii) Contains receptors that detect light.

7. The images below show and describe the stages of mitosis in a cell.
These stages are not in the correct order.

A



The cell is beginning to divide in two

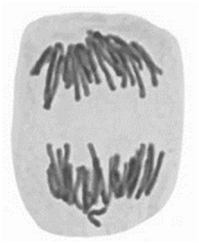
B

Chromosomes line up on the equator of the cell

C

Chromosomes become visible in the cell

D



Chromosomes are being pulled to the poles of the cell

(a) Write the letters **A**, **B**, **C**, **D** in the **correct order** to represent the sequence of events that occurs during mitosis.

(b) Name the organelle labelled **X** in image **A**.

(c) Name the structures that hold and separate the chromosomes during mitosis.

(d) Meiosis is the other type of cell division.
Give **one** difference between meiosis **and** mitosis.

(e) What term is used to describe a group of disorders caused by uncontrolled cell division?

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)** Name an element **always** present in proteins that is **not** present in lipids.

(ii) Which of the following is the smallest unit of a carbohydrate?
Tick (✓) the correct box.

Polysaccharide ☐ Monosaccharide ☐

(b) In the course of your studies you carried out food tests.
Briefly describe how you tested for the presence of the following biomolecules:

(i) Starch

(ii) A reducing sugar

(iii) Protein

(iv) Lipid

9. **(a)** **(i)** Which biomolecule makes up enzymes? Tick (✓) the correct box.

Carbohydrate ☐ Protein ☐

(ii) Name a factor, other than pH, that affects enzyme activity.

(b) Answer the following questions based on an experiment you carried out to investigate the effect of **pH** on the **rate of activity** of an enzyme.

(i) Name the enzyme you used.

(ii) Name the substrate of the enzyme you named above in part (b) (i).

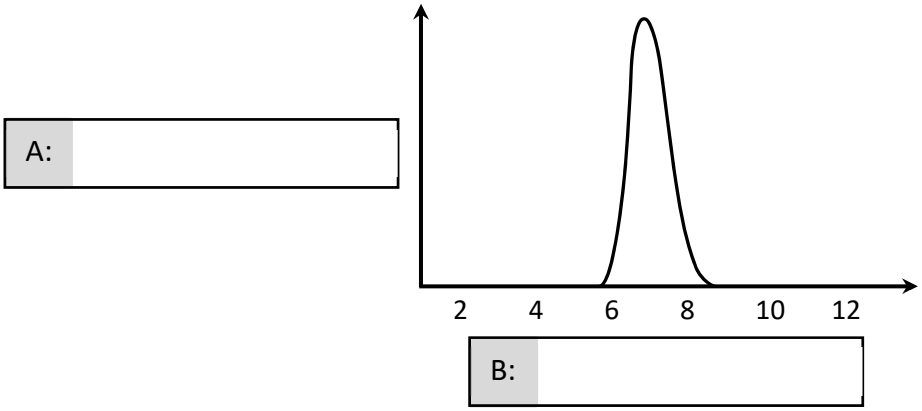
(iii) How did you vary the pH?

(iv) Name a factor that you kept constant during the activity.

(v) How did you keep the factor you named above in part (b) (iv) constant?

(vi) Briefly describe a safety precaution you took during this activity.

(vii) A graph similar to the one shown below was plotted from the results of this investigation. Using the terms **pH** and **Rate** label axes **A** and **B**.



10. **(a)** Germination is the growth of the plant embryo in a seed after a period of inactivity.

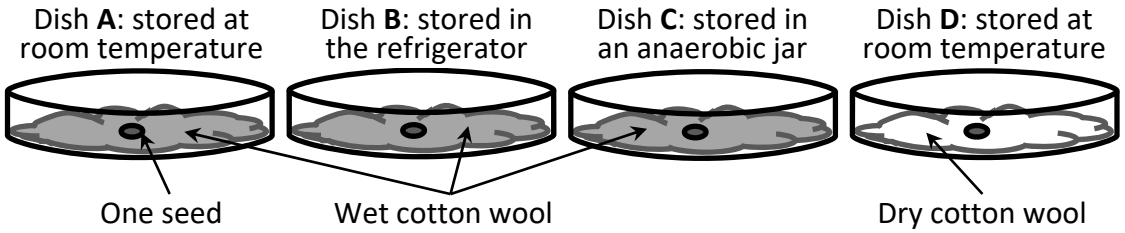
(i) Which term below describes the period of inactivity?
Tick (✓) the correct box.

Fertilisation ☐ Dormancy ☐

(ii) Which location in the seed contains stored food?
Tick (✓) the correct box.

Testa ☐ Cotyledon ☐

(b) A student drew the following diagram to show how they carried out an activity to investigate the factors that affect germination.



(i) Name a suitable seed that can be used in this activity.

(ii) Which dish (**A**, **B**, **C** or **D**) represents the control? Justify your answer.

Dish:
Justify:

(iii) Dish **C** was placed in an anaerobic jar. What gas does this remove from the air?

(iv) Which factor affecting germination is being investigated in dish **B**?

(v) There is unlikely to be germination in dishes **B** and **C**. Identify **one other** dish where germination is unlikely to happen. Justify your answer.

Dish:
Justify:

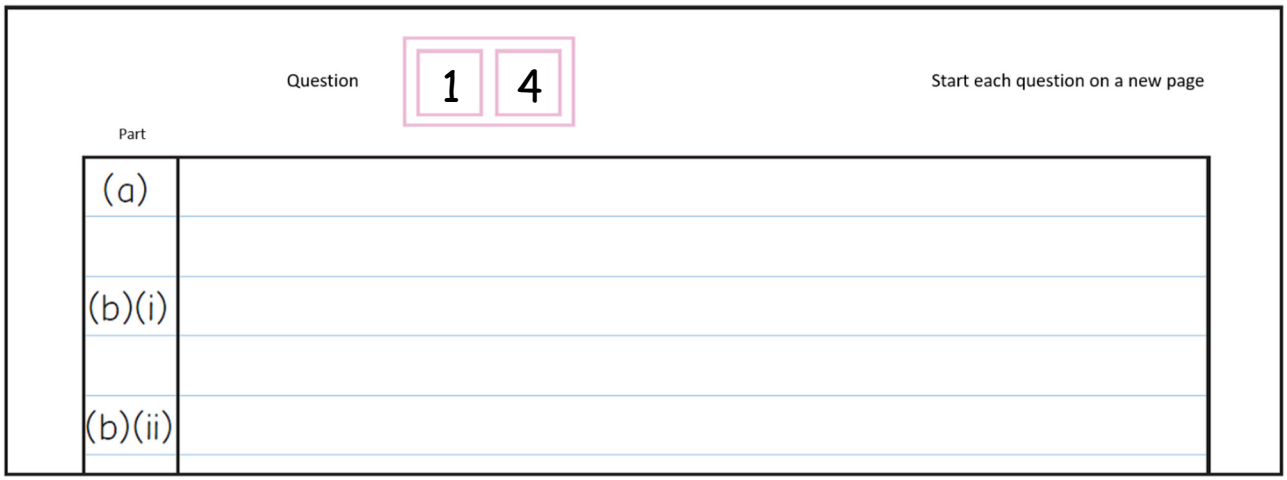
(vi) How could you make the activity described above more reliable or fair?

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

Question

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Biology Sections A and B and Answerbook

Tuesday 10 June

Afternoon 2:00 - 5:00