2020.M43

2020L025G1EL

Coimisiún na Scrúduithe Stáit
State Examinations Commission

Leaving Certificate Examination 2020

Biology

Sections A and B and Answerbook

Ordinary Level

Three hours

400 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 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. A student eats a meal containing fish and potatoes.
Use your knowledge of nutrition to answer the following questions about this meal.

(a) State a reason why the body needs food.

(b) Name the main source of protein in this meal.

(c) Name the main source of carbohydrate in this meal.

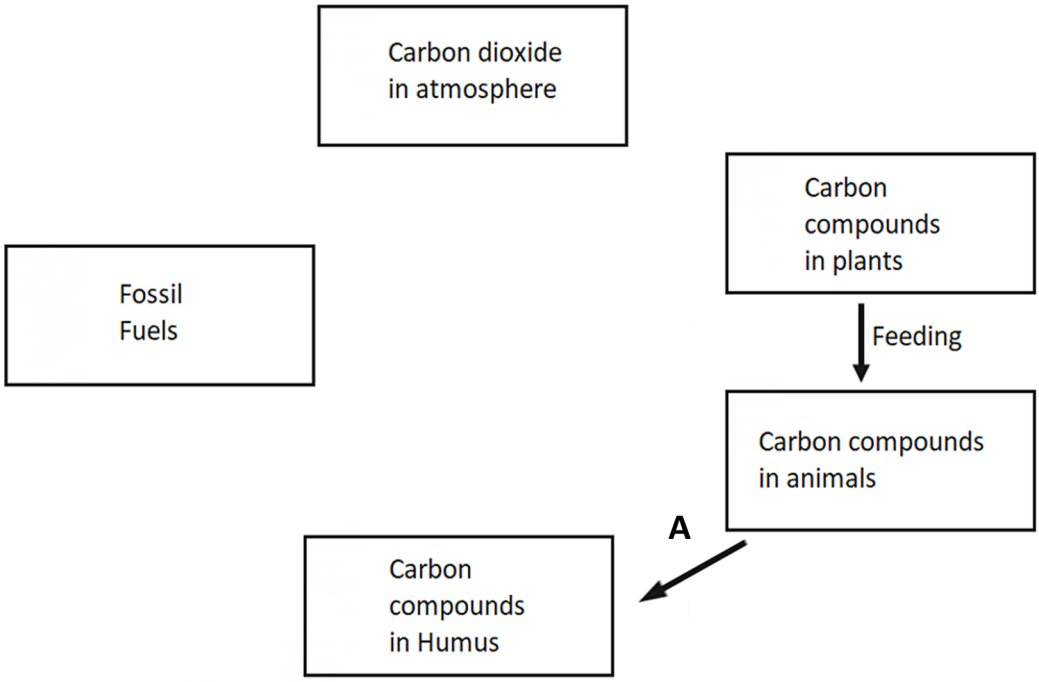
(d) Name the **three** chemical elements found in all carbohydrates.

(e) Suggest **one** function of fibre if it was added to this meal.

2. Indicate whether the following statements are true (T) or false (F) by drawing a circle around T or F in each case.

	Example: Members of the plant kingdom are autotrophic.	**T**	**F**
(a)	Amoeba is in the kingdom Protista.	T	F
(b)	Fungi have cell walls.	T	F
(c)	Members of Monera have no nuclei.	T	F
(d)	All members of the animal kingdom are saprophytes.	T	F
(e)	Members of the plant kingdom have cellulose cell walls.	T	F
(f)	All fungi are parasites.	T	F
(g)	Viruses are not members of any kingdom.	T	F

3. The diagram shows part of the carbon cycle with **several arrows missing from the diagram**. Answer the questions that follow by inserting arrows on the diagram as appropriate.



(a) Draw **one** arrow labelled R on the diagram to represent respiration.

(b) Draw **one** arrow labelled P on the diagram to represent photosynthesis.

(c) Draw **one** arrow labelled B on the diagram to represent burning.

(d) Name a carbon compound plants use to store food.

(e) Name the process shown by arrow A.

(f) Name a group of organisms which carry out the process labelled A.

(g) Suggest **one** way of reducing high levels of carbon dioxide in the atmosphere.

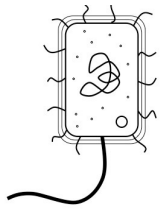
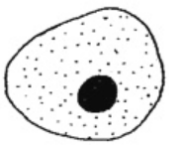
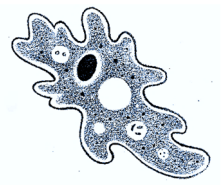
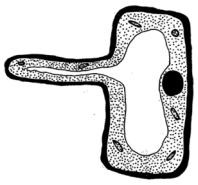
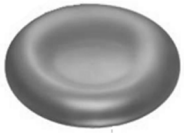
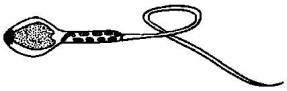
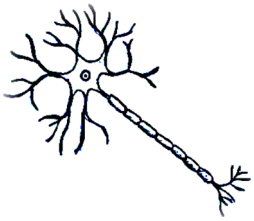
4. Choose **each** term from the following list and place it in Column B to match a description in Column A. The first one has been completed as an example.

Substrate **Waterbath** **~~Protein~~** **Reusable** **Amylase** **Product**

Column A	Column B
Enzymes are made of this	**Protein**
(a) An advantage of immobilised enzymes	
(b) How you would keep the temperature constant	
(c) The material an enzyme works on	
(d) This is formed at the end of an enzyme reaction	
(e) Converts starch into maltose	

5. A selection of different cells is shown below. Select the cell name from the following list and insert it into the appropriate box underneath each image. The first one has been completed as an example.

~~Bacteria cell~~	**Root hair**	**Amoeba**	**Cheek cell**	**Xylem vessel**	**Sperm cell**	**Red blood cell**	**Neuron**

			
Bacteria cell	(a)	(b)	(c)
			
(d)	(e)	(f)	(g)

6. The diagram shows the label found on blood stored for transfusion in a hospital.

(a) Name the liquid part of blood.

(b) State **one** function of this liquid.

(c) What may be removed from blood to prevent it clotting during storage?

(d) The diagram shows blood group AB. Name **two** other blood groups.

(e) Name the blood cells that transport oxygen in the body.

(f) Name the blood cells that produce antibodies to fight infection.

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.

7. (a) (i) Give a reason why living cells need water.

(ii) State a function of a selectively permeable membrane.

(b) Answer the following questions in relation to an investigation you carried out to demonstrate osmosis.

(i) Name **one** piece of apparatus and **one** solution you used during your investigation.

(ii) What control was used?

(iii) What did you use as a selectively permeable membrane?

(iv) What information did you record at the start of the investigation?

(v) What did you observe during the investigation that showed osmosis had occurred?

(vi) What did you conclude from your observations about the direction of water movement during osmosis?

(vii) Name a simple food preservation technique linked to osmosis.

8. (a) (i) What is a qualitative survey?

(ii) Complete the statement below by placing the missing word in the answer box.

"Flora is to plants as……..is to animals".

(b) A student carried out a quantitative survey to estimate the % cover of a number of plants in an Irish ecosystem close to her school.

(i) Name an ecosystem she may have studied.

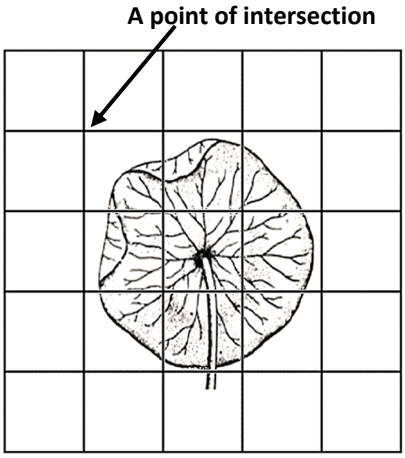
(ii) Name a plant or producer found in the ecosystem named in (i) above.

(iii) Name an instrument the student may have used to select an area for study.

(iv) How did the student avoid bias in the investigation?

The diagram shows a plant found in one of the sample areas. A hit is recorded if a point of intersection is directly above the plant.

(v) How many hits would the student record for this plant?



(vi) Calculate the % cover for the plant in this sample area.

(vii) What step could the student do next to improve the reliability of the survey?

9. (a) (i) Name a growth response of a plant to a stimulus.

(ii) Give **one** example where this growth response is important to a germinating seed.

(b) A student carried out an investigation into the effect of IAA growth regulator on plant tissue and recorded the following.

		Average stem length after 1 week	**Average root length after 1 week**
Petri dish A	5 seeds + IAA solution	15 mm	2 mm
Petri dish B	5 seeds + water	10 mm	8 mm

(i) Identify which dish was the control.

(ii) Suggest a type of seed suitable for this investigation.

(iii) Describe how the IAA solution was applied to the plant tissue.

(iv) Describe how the growth of the plant tissue was measured.

(v) Why was the same number of seeds used in each dish?

(vi) Which part of the plant was stimulated by IAA?

(vii) Which part of the plant was inhibited by IAA?

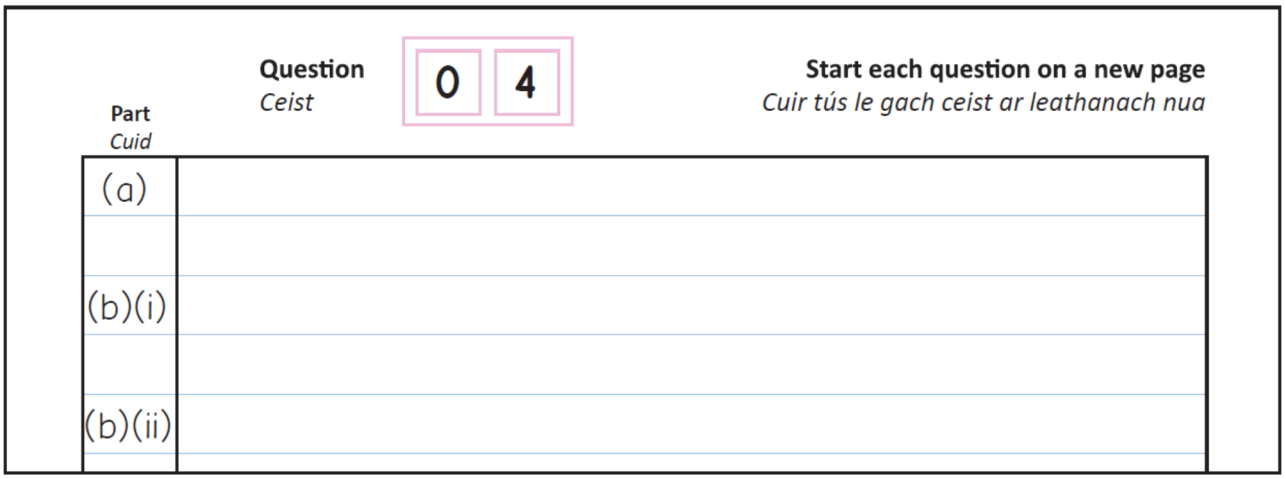
(viii) Name another plant growth regulator.

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.



Four pages of graph paper are provided at the back 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

Start each question on a new page

Part

Question

Start each question on a new page

Part

Question

Start each question on a new page

Part

Question

Start each question on a new page

Part

Question

Start each question on a new page

Part

Question

Start each question on a new page

Part

Question

Start each question on a new page

Part

Question

Start each question on a new page

Part

Question

Start each question on a new page

Part

Question

Start each question on a new page

Part

Question

Start each question on a new page

Part

Question

Start each question on a new page

Part

Question

Start each question on a new page

Part

Question

Start each question on a new page

Part

Question

Start each question on a new page

Part

Question

Start each question on a new page

Part

Question

Start each question on a new page

Part

Question

Start each question on a new page

Part

Question

Start each question on a new page

Part

Question

Start each question on a new page

Part

Question

Start each question on a new page

Part

Question

Start each question on a new page

Part

Question

Start each question on a new page

Part

Question

Start each question on a new page

Part

Question

Start each question on a new page

Part

Question

Question

Question

Question

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 – Ordinary Level

Biology Sections A and B and Answerbook

Three hours