



Please write clearly in block capitals.

Centre number

Candidate number

Surname _____

Forename(s) _____

Candidate signature _____

I declare this is my own work.

Level 3 Certificate/Extended Certificate

APPLIED SCIENCE

Unit 1 Key Concepts in Science
Section A – Biology

Tuesday 17 January 2023

Morning

Time allowed: 1 hour 30 minutes.
You are advised to spend
approximately 30 minutes on this
section.

Materials

For this paper you must have:

- a calculator
- the Formulae Sheet (enclosed).

Instructions

- Use black ink or black ball-point pen.
- Fill in the boxes at the top of this page.
- Answer **all** questions in each section.
- You must answer the questions in the spaces provided. Do not write outside the box around each page or on blank pages.
- If you need extra space for your answer(s), use the lined pages at the end of this book. Write the question number against your answer(s).
- Do all rough work in this book. Cross through any work you do not want to be marked.

For Examiner's Use	
Question	Mark
1	
2	
3	
TOTAL	

Information

- You will be provided with a copy of the Formulae Sheet.
- There are three sections in this paper:
Section A – Biology **Section B** – Chemistry **Section C** – Physics.
- The marks for questions are shown in brackets.
- The maximum mark for this paper is 60 and the maximum mark for this section is 20.

Advice

Read each question carefully.



J A N 2 3 A S C 1 B O 1

IB/M/Jan23/E7

ASC1/B

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ANSWER IN THE SPACES PROVIDED**

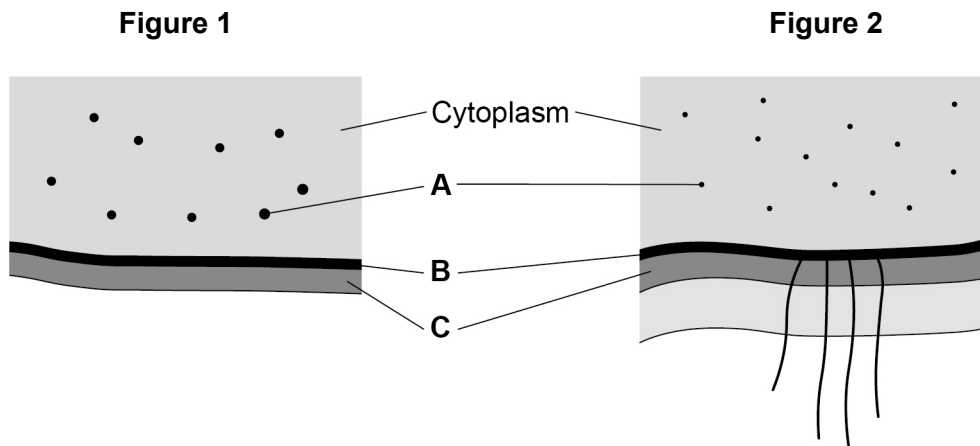


Section A – Biology

Do not write
outside the
boxAnswer **all** the questions in this section.

0 1

All living organisms are made of cells.

Figure 1 and **Figure 2** show part of two different types of cell.

0 1 . 1

The cell in **Figure 1** is a eukaryotic cell.Name parts **A**, **B** and **C** in **Figure 1**.

[3 marks]

A _____

B _____

C _____

0 1 . 2

What type of cell is shown in **Figure 2**?

[1 mark]

0 1 . 3

What evidence is shown in **Figure 2** to support your answer to Question 01.2?

[2 marks]

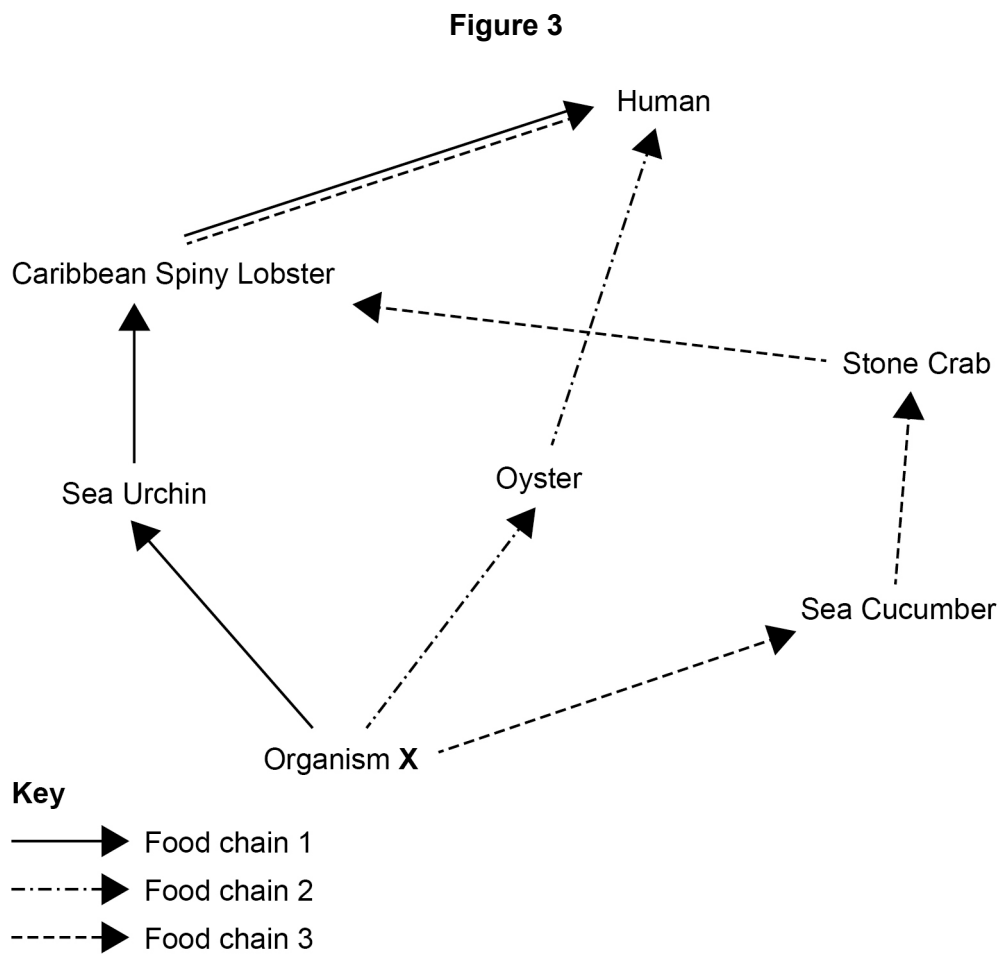
6

Turn over ►



0 2

Figure 3 shows part of a marine ecosystem food web.



0 2 . 1 What type of organism is Organism X?

[1 mark]



0 2 . 2 Three different food chains are shown in **Figure 3**.

Which is the most efficient food chain for human food production from **Figure 3**?

Give **two** reasons for your answer.

[3 marks]

Food chain _____

Reason 1 _____

Reason 2 _____

0 2 . 3 Which factor transfers energy out of food chains and reduces productivity?

[1 mark]

Tick (✓) **one** box.

Availability of space

Excretion

Light intensity

Nutrient concentration

0 2 . 4 What does 'net primary production (NPP)' mean?

[1 mark]

6

Turn over ►



0 3

One function of the kidneys is to help keep the concentration of water and salts in our blood at the correct level.

The brain monitors the concentration of the blood.

0 3**. 1**

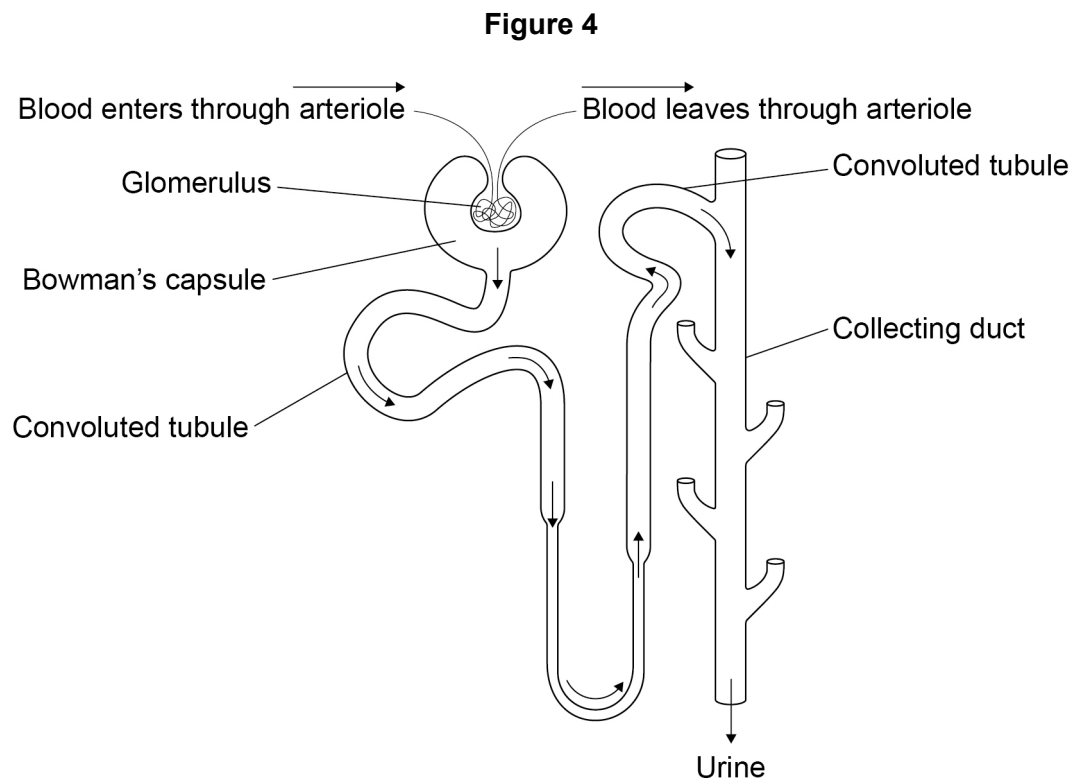
Which part of the brain monitors the concentration of the blood?

[1 mark]



Figure 4 shows the structure of a kidney nephron.

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outside the
box



0 3 . 2 Describe the function of the Bowman's capsule and the convoluted tubules.

[2 marks]

Bowman's capsule _____

Convoluted tubules _____

Question 3 continues on the next page

Turn over ►



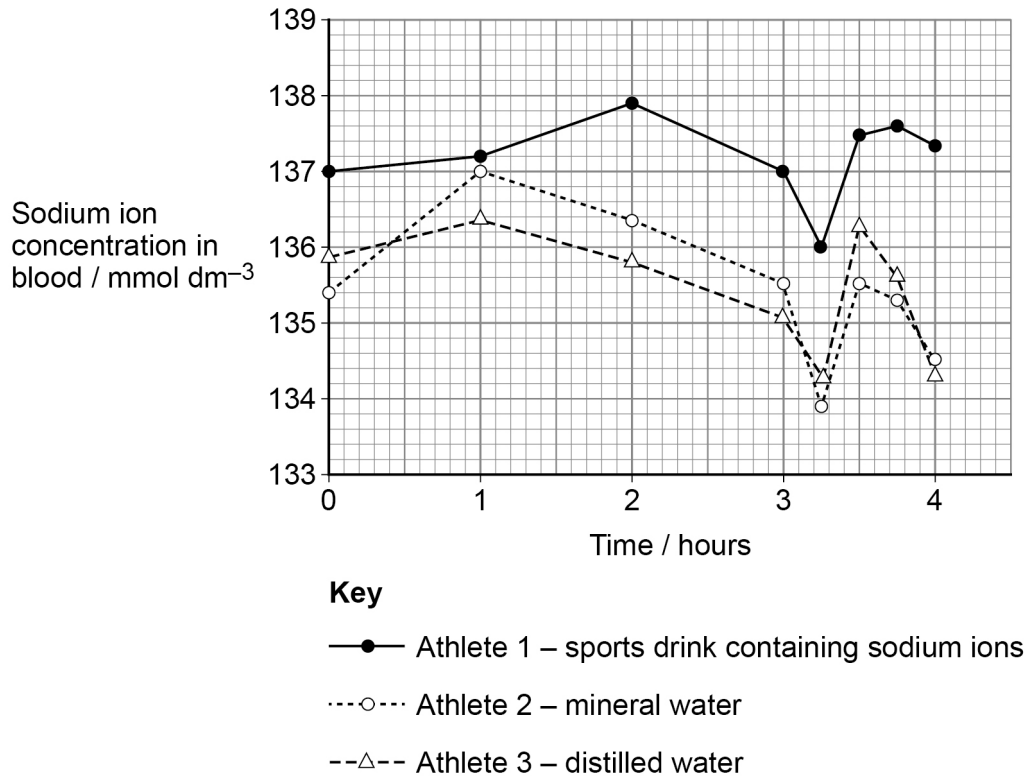
Scientists investigated the concentration of sodium ions in the blood of three athletes during exercise.

Each athlete completed the same exercise.

Each athlete drank a different drink during the exercise.

Figure 5 shows the results.

Figure 5



0 3 . 3

Normal sodium ion concentration in the blood is between 135 mmol dm⁻³ and 145 mmol dm⁻³.

Give **two** conclusions about the effectiveness of the different drinks in maintaining a healthy concentration of sodium ions in the blood.

[2 marks]

1 _____

2 _____



0 3 . 4 The adrenal cortex is on the top of each kidney.

Explain how the adrenal cortex causes the concentration of sodium ions in the blood to increase.

[3 marks]

8

END OF QUESTIONS



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ANSWER IN THE SPACES PROVIDED**



