

Please write clearly in block capitals.

Centre number

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Candidate number

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Surname

Forename(s)

Candidate signature

Level 3 Certificate/Extended Certificate

APPLIED SCIENCE

Unit 1 Key Concepts in Science
Section A – Biology

Tuesday 11 June 2019

Afternoon

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
- Formulae Sheet.

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.

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.

For Examiner's Use	
Question	Mark
1	
2	
TOTAL	



Section A – Biology

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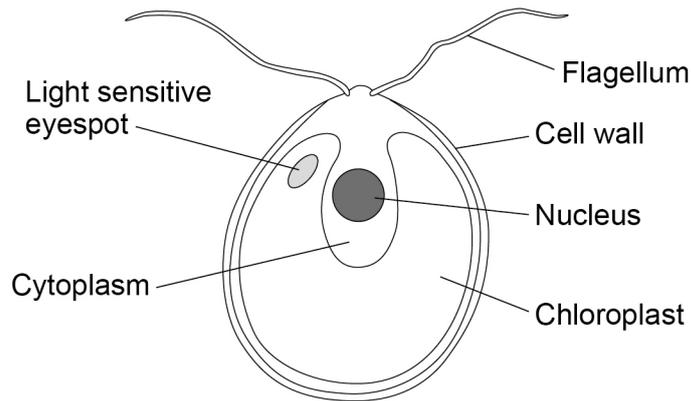
Answer **all** questions in this section.

0 1

Biologists study cell structure.

Figure 1 shows an algal cell.

Figure 1



0 1 . 1

Give **two** features shown in **Figure 1** that you would find in plant cells but **not** in animal cells.

[2 marks]

1 _____

2 _____

0 1 . 2

What is the function of the flagellum?

[1 mark]



0 1 . 3 The algal cell in **Figure 1** can photosynthesise.

Water molecules are split during the light-dependent stage of photosynthesis.

What are the water molecules split into?

Tick (✓) **one** box.

[1 mark]

Carbohydrate and carbon dioxide

Carbon and oxygen

Carbon dioxide and oxygen

Hydrogen and oxygen

0 1 . 4 The cell in **Figure 1** is eukaryotic.

Give **two** ways that prokaryotic cells are different from eukaryotic cells.

[2 marks]

1 _____

2 _____

Question 1 continues on the next page

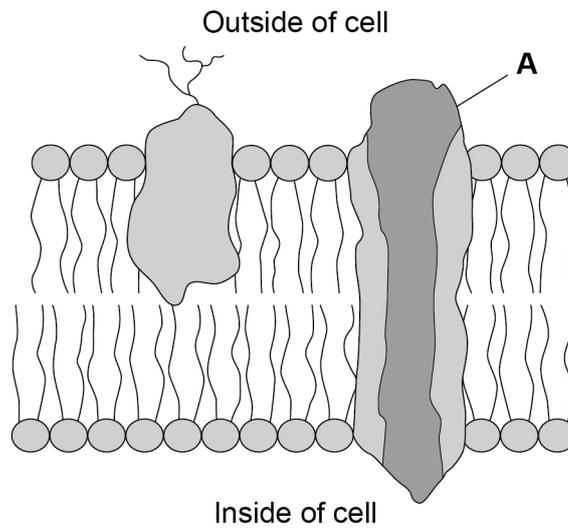
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Figure 2 shows a section of a cell membrane.

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Figure 2



0 1 . 5 What are the functions of **A** in **Figure 2**?

Tick (✓) **two** boxes.

[2 marks]

To allow active transport.

To allow facilitated diffusion.

To carry out respiration.

To control the movement of oxygen.

To hold the bilayers together.

8



0 2

Osmoregulation controls the water content of blood. Controlling water in the blood helps to keep the concentration of the blood within narrow limits.

Antidiuretic hormone (ADH) is a hormone used in osmoregulation.

0 2 . 1

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

[1 mark]

0 2 . 2

Which organ releases ADH?

Tick (✓) **one** box.

[1 mark]

Adrenal gland

Liver

Pancreas

Pituitary gland

0 2 . 3

Some brain tumours can cause very high levels of ADH secretion.

Suggest **one** symptom of very high levels of ADH secretion.

[1 mark]

Question 2 continues on the next page

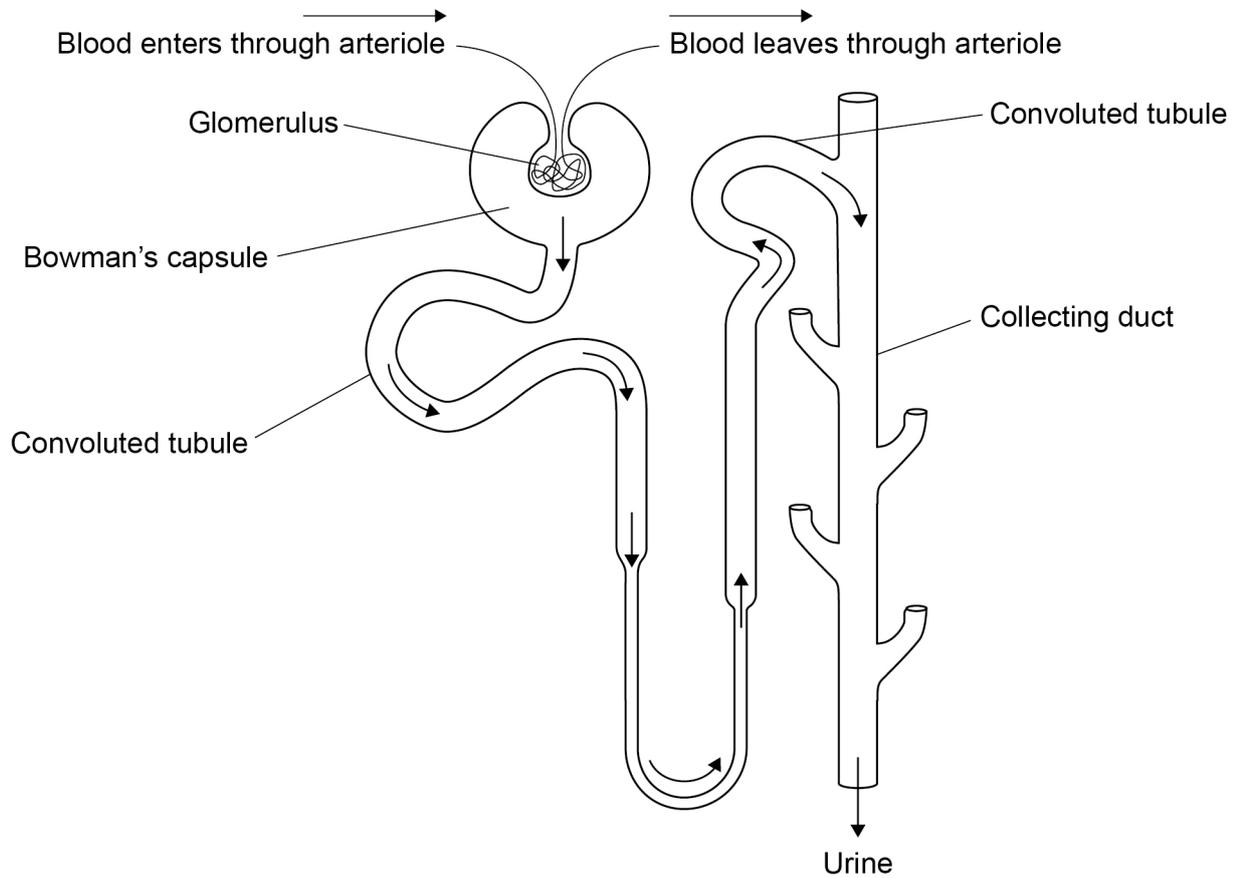
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ADH affects the functions of the kidney.

Figure 3 shows a kidney nephron.

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Figure 3



0 2 . 4

Describe what happens in the Bowman's capsule.

[2 marks]



0 2 . 5 Describe what happens in the convoluted tubule to make urine.

[3 marks]

0 2 . 6 A woman goes to the doctor because she is thirsty all the time.
The doctor tests the woman for diabetes using a fasting glucose test.
Describe how to do a fasting glucose test.

[2 marks]

0 2 . 7 Give **two** other tests the doctor could use to test for diabetes.

[2 marks]

1 _____

2 _____

12

END OF QUESTIONS



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ANSWER IN THE SPACES PROVIDED**



