

Please write clearly in block capitals.

Centre number

Candidate number

Surname \_\_\_\_\_

Forename(s) \_\_\_\_\_

Candidate signature \_\_\_\_\_

# Level 3 Certificate and Extended Certificate in Applied Science

## KEY CONCEPTS IN SCIENCE

Unit Number: ASC1

Section A – ASC1/B (Biology)

Thursday 22 June 2017 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
- Formula sheet

### Instructions

- Use black ink or black ball-point pen.
- 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.
- Do all rough work in this book.
- Cross through any work you do not want to be marked.
- The total time for all three sections of this paper is one-and-a-half hours.

### Information

- You will be provided with a copy of the formula 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.

For Examiner's Use	
Examiner's Initials	
Question	Mark
1	
2	
3	
TOTAL	

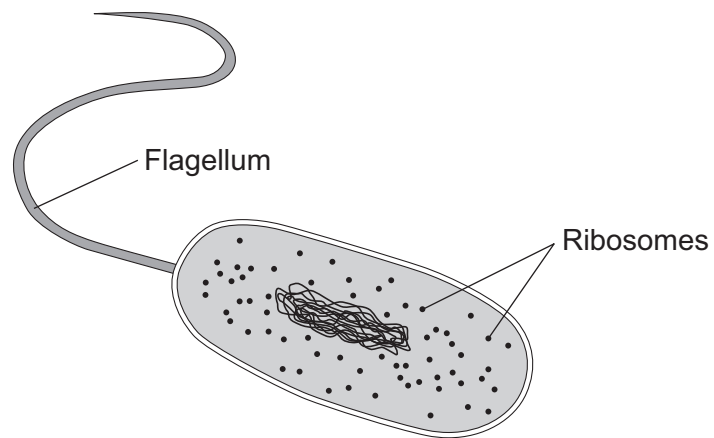
### Advice

Read each question carefully.



**Section A – Biology**Answer **all** questions in this section.**0 1**

Cell biologists explore the functions of cells.

**Figure 1** shows a cell.**Figure 1****0 1 . 1**A cell biologist concludes that the cell in **Figure 1** is a prokaryotic cell.  
Give **two** reasons to support this conclusion.**[2 marks]**

Reason 1 \_\_\_\_\_

\_\_\_\_\_

Reason 2 \_\_\_\_\_

\_\_\_\_\_



0 1 . 2

What is the function of the rough endoplasmic reticulum (RER) in eukaryotic cells?

[1 mark]

Tick (✓) **one** box.

Digests worn out organelles

Packages proteins for secretion

Produces lipids and steroid hormones

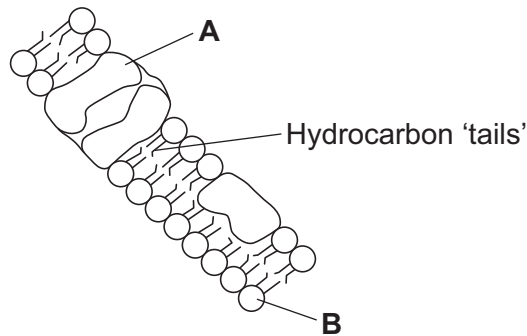
Produces proteins

0 1 . 3

Knowledge of how substances interact with cell membranes is important in the development of new drugs.

**Figure 2** shows a cell membrane.

**Figure 2**



Name parts **A** and **B** in **Figure 2**.

[2 marks]

A \_\_\_\_\_

B \_\_\_\_\_

0 1 . 4

What is the function of part **A** in **Figure 2**?

[1 mark]

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

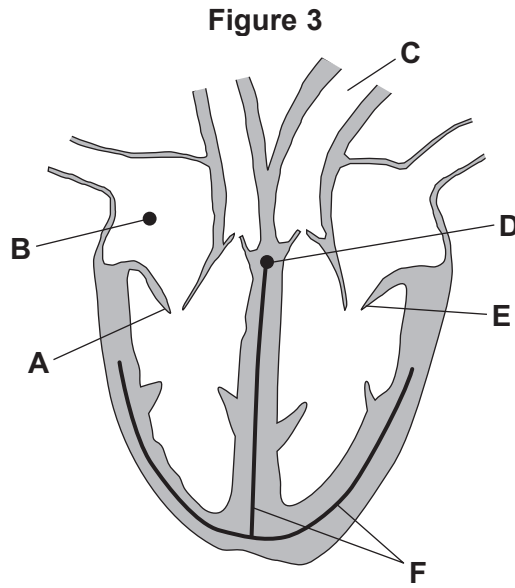
6

Turn over ►



0 2

Figure 3 shows a heart.



0 2 . 1

Complete **Table 1** to identify parts of the heart. Tick (✓) the box that corresponds to the right answer.

[2 marks]

Table 1

	A	B	C	D	E	F
<b>Aorta</b>			✓			
<b>Atrioventricular node (AVN)</b>						
<b>Purkinje fibres</b>						
<b>Sinoatrial node (SAN)</b>						

0 2 . 2

Some children are born with a disorder called histiocytoid cardiomyopathy (HC).

The Purkinje fibres do not form properly in a child with HC. The symptoms of HC include arrhythmia.

Explain why HC causes arrhythmia.

[2 marks]

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4



0 3

Diabetes is a disorder that disrupts the homeostatic control of blood glucose level.

0 3 . 1

What is the normal range for blood glucose?

[1 mark]

Normal range = \_\_\_\_\_ mg/dL

0 3 . 2

When a doctor thinks a person has diabetes they can test the person's urine for glucose.

Describe how the urine test is done.

[2 marks]

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**Question 3 continues on the next page**

**Turn over ►**



03 . 3

A man is diagnosed with Type 2 diabetes. A dietician asks the man to keep a food and exercise diary.

Figure 4 shows part of his diary.

Figure 4

	Thursday	Friday	Saturday
Breakfast	Toast and egg	Chocolate pancake	Bacon, egg and sausage
Morning snack	Doughnut	Cake	Biscuit
Lunch	Ham sandwich	Cheese sandwich	Soup
Dinner	Chicken pasta	Chicken and chips	Pizza
Evening snack	2 pints of beer and a bar of chocolate	3 pints of beer	Crisps and wine
Exercise	10 minute walk	None	30 minute walk

Suggest **two** changes the dietician could recommend to the man, to help control his Type 2 diabetes.

Use the information from **Figure 4** in your answer.

[2 marks]

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0 3 . 4

The man forgets to eat his lunch and dinner. His blood glucose level drops dangerously low.

Explain how the body responds to bring his blood glucose level back to normal.

**[5 marks]**

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**END OF QUESTIONS**



**There are no questions printed on this page**

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ANSWER IN THE SPACES PROVIDED**

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