AQA

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)

Tuesday 23 January 2018 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
- formulae 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.

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	
Examiner's Initials	
Question	Mark
1	
2	
3	
TOTAL	

Section A – Biology

Answer **all** questions in this section.

0 1 Photosynthesis is a process of carbon capture.

0 1 . 1 Name the **two** raw materials needed for photosynthesis in grass, and give the source for each raw material.

[2 marks]

Material 1 _____

Source _____

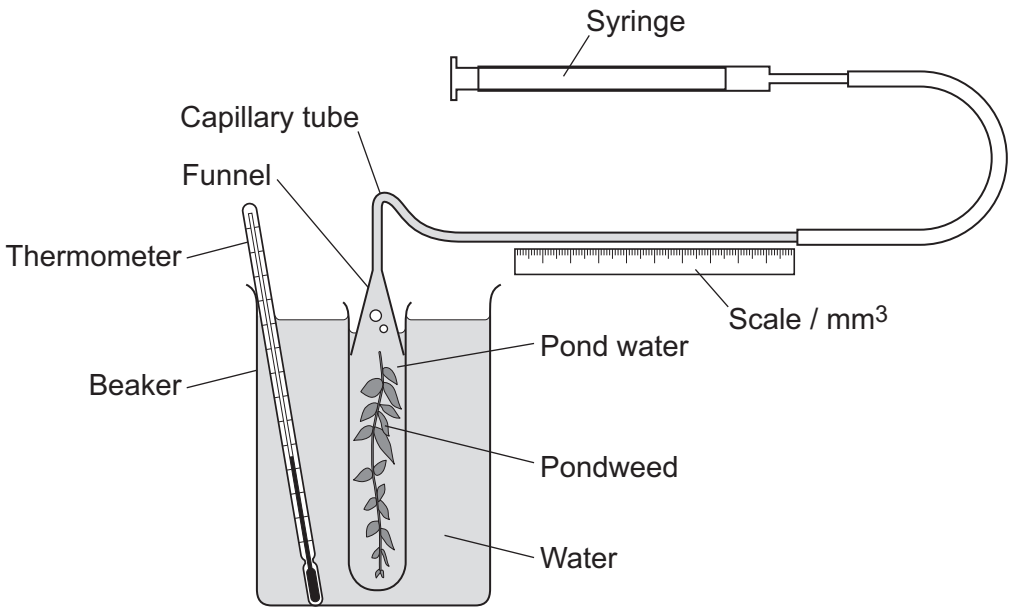
Material 2 _____

Source _____

Figure 1 shows the equipment used by a student to investigate the rate of photosynthesis.

The equipment was set up in sunlight.

Figure 1

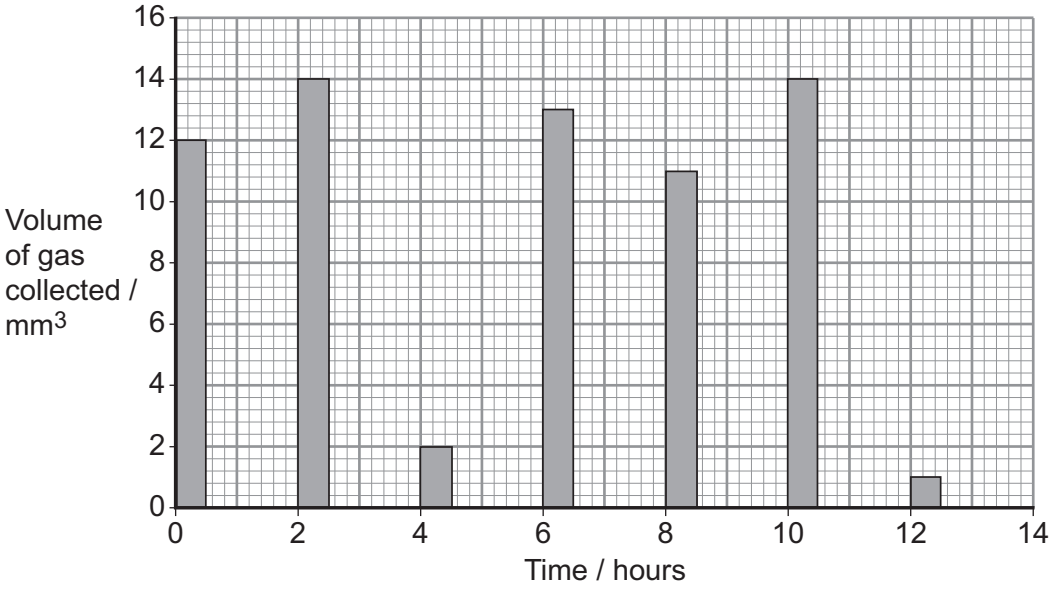


The student used the following standard procedure.

1 Collect the gas given off by the plant in the funnel for 30 minutes.
2 Use the syringe to pull the gas into the capillary tubing.
3 Record the volume of gas using the scale.
4 Repeat steps 1–3 after 2, 4, 6, 8, 10 and 12 hours.

The student's results are shown in **Figure 2**.

Figure 2



Use information from **Figure 1** and **Figure 2** to answer the following questions.

0 1 . 2 Which stage of photosynthesis produced the results shown in **Figure 2**?

Give an explanation for your answer.

[3 marks]

Stage _____

Explanation _____

_____

_____

_____

_____

0 1 . 3 Suggest a possible reason for the results at 4.0–4.5 hours and 12.0–12.5 hours in **Figure 2**.

[1 mark]

_____

_____

6

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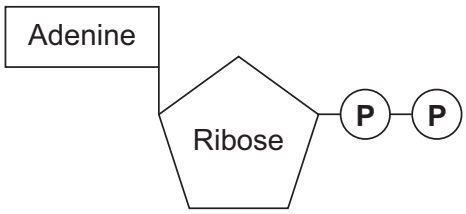
0 2 ATP is used to release energy for cell activity.

Figure 3 shows a molecule of adenosine diphosphate (ADP).

Figure 3



0 2 . 1 Complete **Figure 3** to show a molecule of ATP.

[1 mark]

0 2 . 2 ATP is produced during the different stages of respiration.

Complete **Table 1** to show which site each stage of respiration occurs in.

Tick (✓) **three** boxes.

[3 marks]

Table 1

	Site of each stage				
Stage of respiration	**cell membrane**	**cell cytoplasm**	**golgi apparatus**	**mitochondrion**	**ribosome**
Glycolysis					
Krebs cycle					
Electron Transfer Chain					

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0 2 . 3 Describe how ATP is used and produced during glycolysis.

[3 marks]

0 2 . 4 There are two types of respiration: aerobic and anaerobic.

Give **one** advantage of aerobic respiration compared with anaerobic respiration.

[1 mark]

8

Turn over for the next question

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0 3 A woman visits a very hot country. Her body helps to control her core body temperature by sweating.

0 3 . 1 What is the normal body temperature range?

[1 mark]

From _____ °C to _____ °C

0 3 . 2 The woman starts to feel ill because her blood pressure is too low. The low blood pressure was caused by sodium chloride deficiency.

Give **two** symptoms the woman would experience due to low blood pressure.

[2 marks]

1 _____

_____

2 _____

_____

0 3 . 3 Describe how the adrenal cortex responds to the low blood pressure.

[3 marks]

_____

_____

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6

END OF QUESTIONS

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