A

AQA

Surname _____

Other Names _____

Centre Number _____

Candidate Number _____

For Examiner's Use

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

For this paper you must have:
- **a calculator**
- **formulae sheet.**

At the top of the page, write your surname and other names, your centre number, your candidate number and add your signature.

[Turn over]

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 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

- 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.
- 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.

ADVICE

- You are advised to spend approximately 30 minutes on this section.
- Please read each question carefully before starting.

DO NOT TURN OVER UNTIL TOLD TO DO SO

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 _____

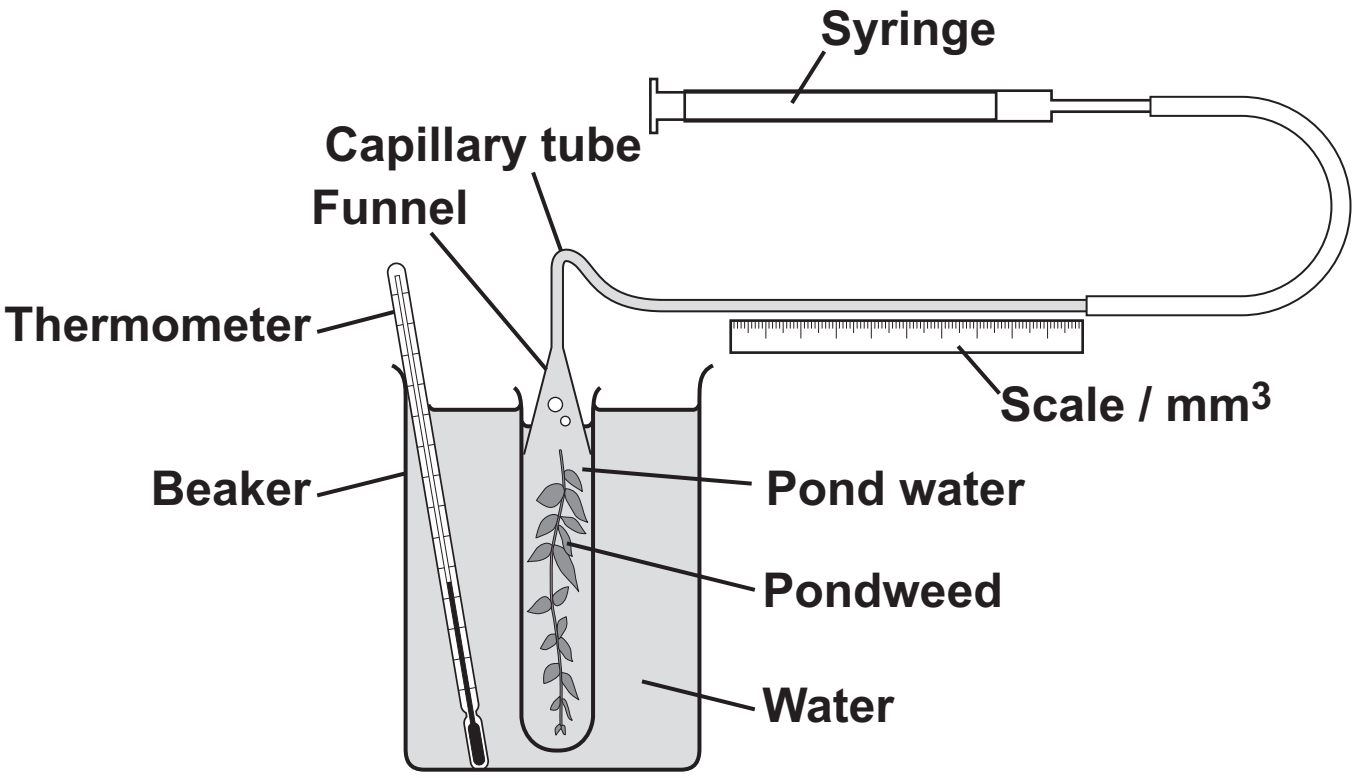
Material 2 _____

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



[Turn over]

The student used the following standard procedure.

1 Collect the gas given off by the plant in the funnel for 30 minutes.

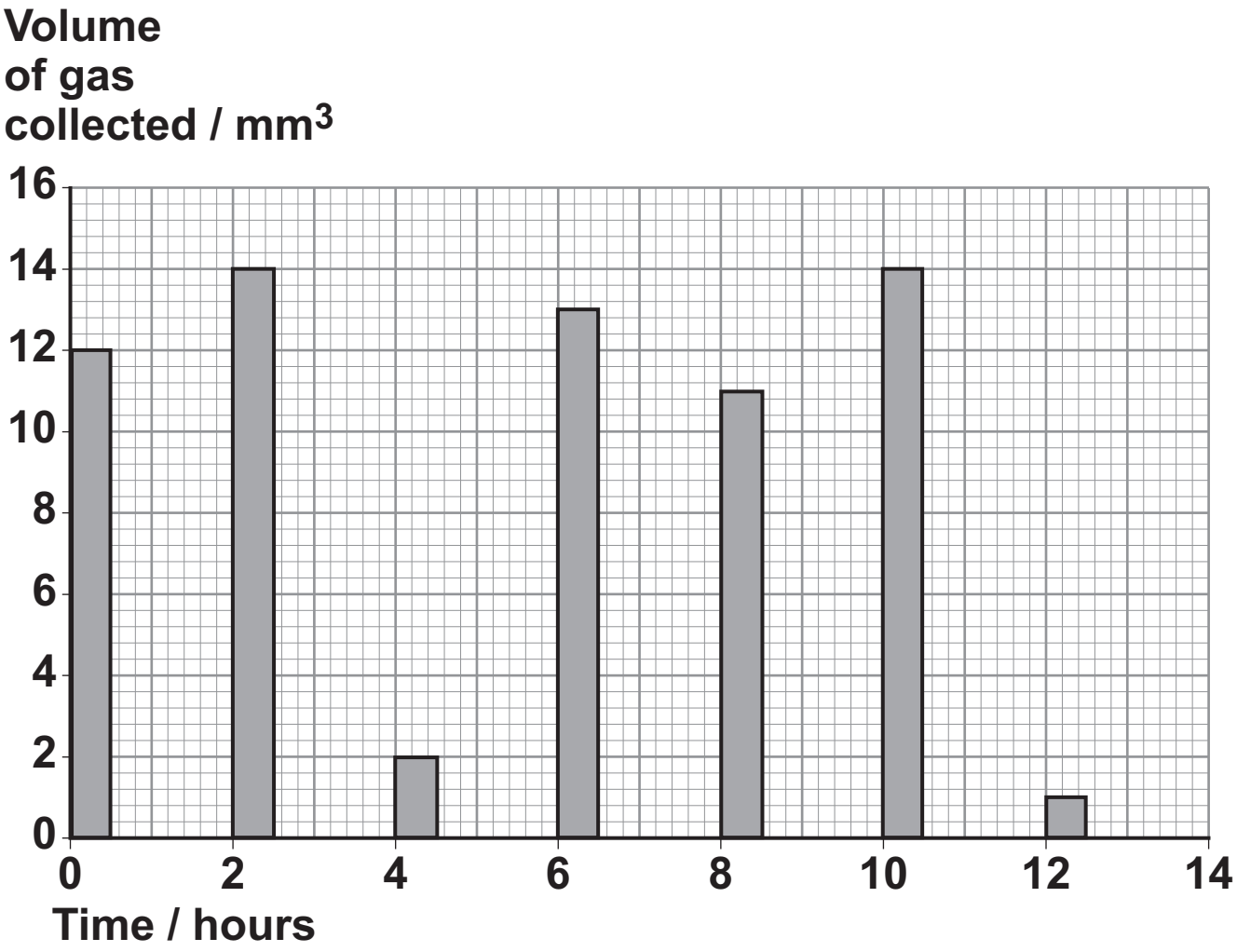
2 Use the syringe to pull the gas into the capillary tubing.

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]

_____

_____

_____

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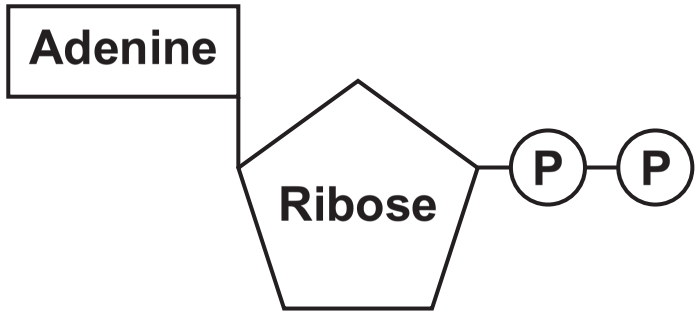
0 2 ATP is used to release energy for cell activity.

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, on page 9, 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					

[Turn over]

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]

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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END OF QUESTIONS

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