AQA GCSE Combined Science - Trilogy | 8464

SPECIFICATION POINT 4.4.1.1

Photosynthetic reaction

Past-paper questions

Tier	**Foundation**
Question groups	**11**
Available paper years	**2018–2025**

Using this booklet

1. Answer the questions in order and show your working.
2. Original question numbers and marks are retained.
3. Print at actual size (100%) for measuring questions.
4. Use the companion answer booklet to check your work.

Name: _____ **Date:** _____

Whole questions are retained for context, so some parts assess other specification points. Current and legacy sources are labelled. Continue on extra paper if needed.

4.4.1.1 Photosynthetic reaction

Question 01

June 2018 | 8464/B/1F | Original Q2

0 2 This question is about photosynthesis.

0 2 . 1 What are the **two** products of photosynthesis?

[2 marks]

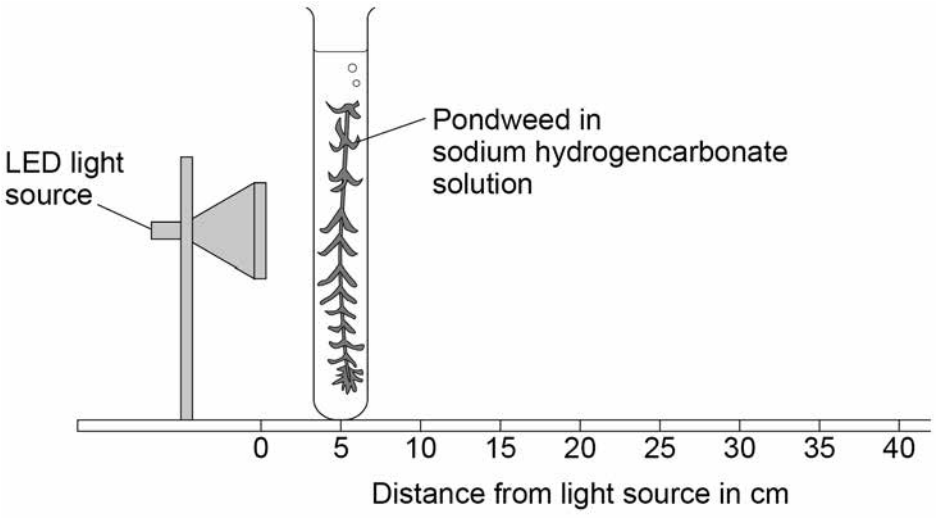
Tick **two** boxes.

- Carbon dioxide ☐
- Chlorophyll ☐
- Glucose ☐
- Oxygen ☐
- Water ☐

A student investigated the effect of light intensity on the rate of photosynthesis.

Figure 4 shows the apparatus.

Figure 4



This is the method used.

1. Place the pondweed at 5 cm from the light source.
2. Measure the rate of photosynthesis by counting the number of bubbles produced in 30 seconds.
3. Repeat the investigation with the pondweed at different distances from the light source.

4.4.1.1 Photosynthetic reaction

Question 01 · continued

0 2 . 2 How could the student measure the rate of photosynthesis more accurately?

[2 marks]

Tick **two** boxes.

- Count the number of bubbles produced in 1 minute ☐
- Measure the change in mass of the pondweed in 30 seconds ☐
- Measure the volume of gas produced in 30 seconds ☐
- Place the pondweed further from the light source ☐
- Use water instead of sodium hydrogencarbonate solution ☐

0 2 . 3 The LED light source does **not** get hot.

Why is this important?

[1 mark]

Table 1 shows the student's results.

Table 1

Distance of light source from pondweed in cm	Number of bubbles produced in 30 seconds
5	40
10	13
15	5
20	2
25	1
30	0

4.4.1.1 Photosynthetic reaction

Question 01 · continued

0 2 . 4 Calculate the number of bubbles produced in 2 minutes when the light source was 10 cm from the pondweed.

[1 mark]

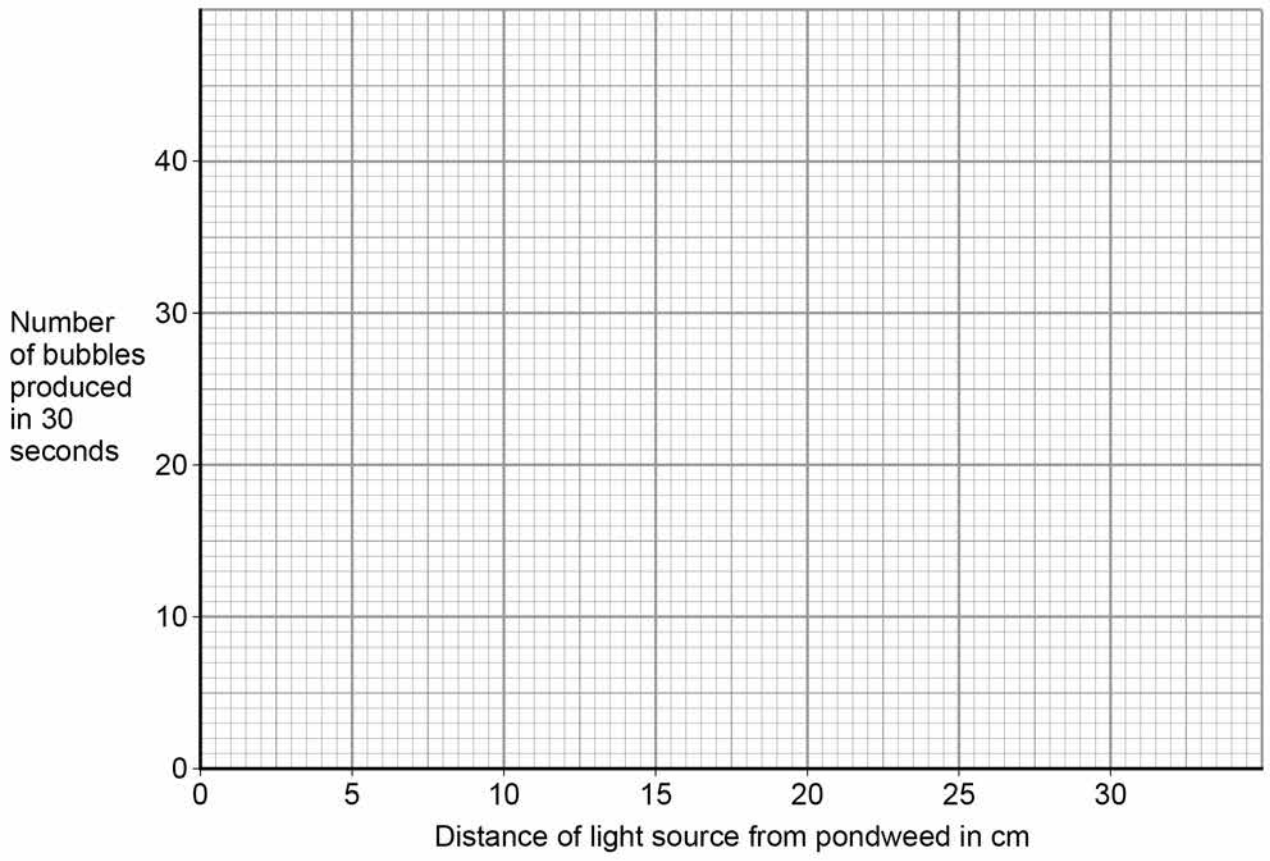
Number of bubbles produced in 2 minutes = _____

0 2 . 5 Plot the data from **Table 1** on **Figure 5**

Draw a line of best fit.

[3 marks]

Figure 5



0 2 . 6 Give **one** conclusion that can be made from these results.

[1 mark]

10

4.4.1.1 Photosynthetic reaction

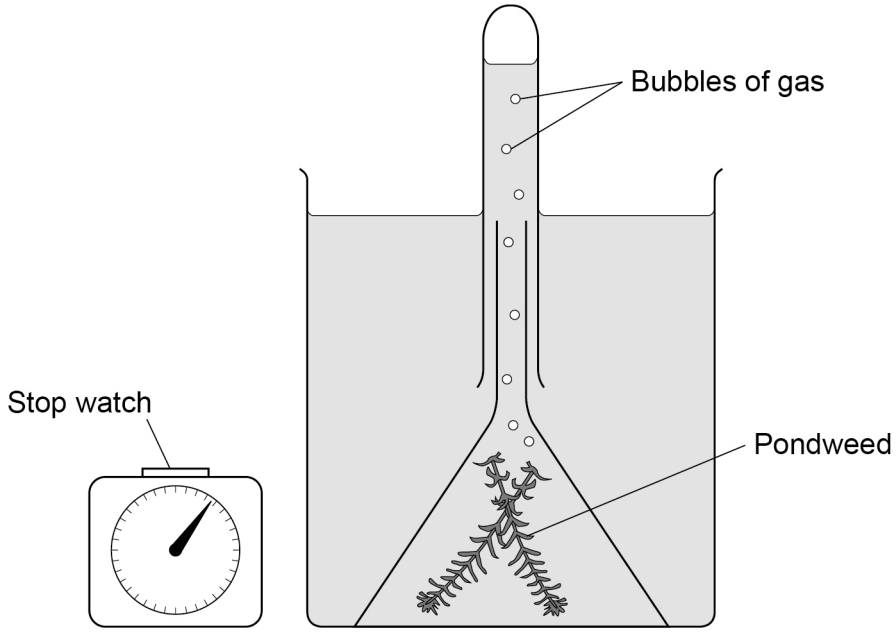
Question 02

June 2019 | 8464/B/1F | Original Q1

0 1 A student investigated the effect of light intensity on the rate of photosynthesis.

Figure 1 shows some of the apparatus used.

Figure 1



0 1 . 1 Name the gas produced by the pondweed in the light.

[1 mark]

0 1 . 2 Describe **one** way the student could change the intensity of light reaching the pondweed.

[2 marks]

4.4.1.1 Photosynthetic reaction

Question 02 · continued

0 1 . 3 Describe how the student could use the apparatus in **Figure 1** to measure the rate of photosynthesis.

[2 marks]

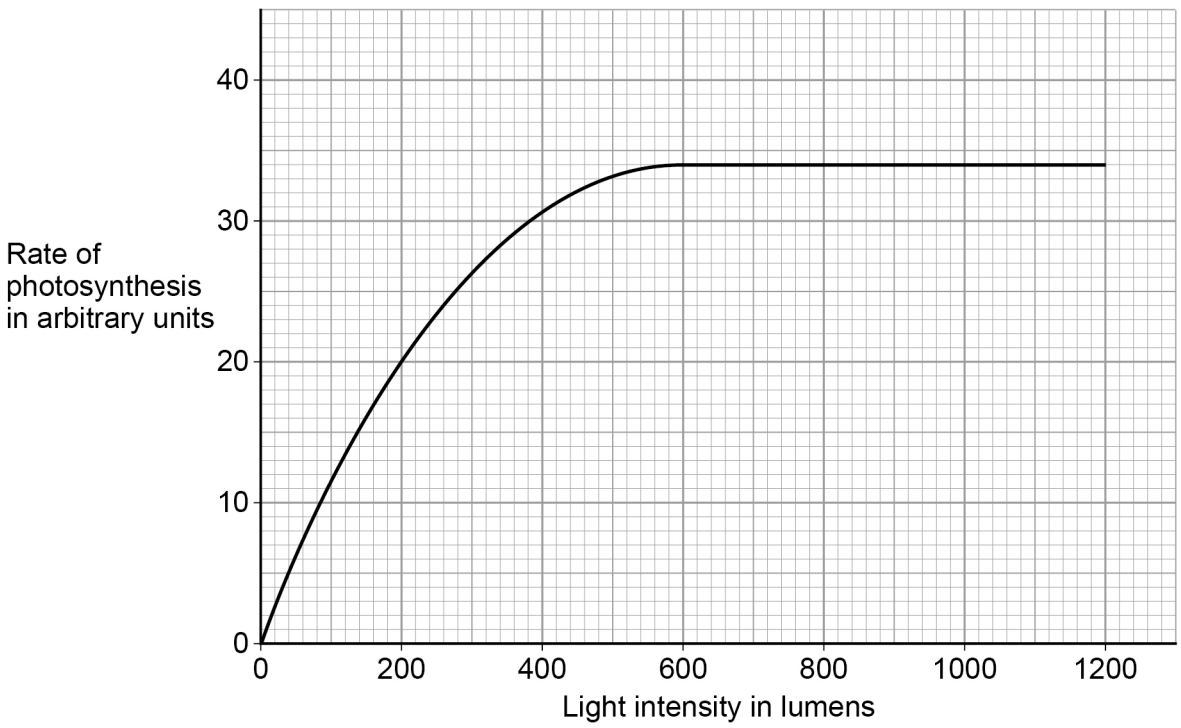
Question 1 continues on the next page

4.4.1.1 Photosynthetic reaction

Question 02 · continued

Figure 2 shows the student's results.

Figure 2



0 1 . 4 What was the maximum rate of photosynthesis?

[1 mark]

Maximum rate = _____ arbitrary units

4.4.1.1 Photosynthetic reaction

Question 02 · continued

0 1 . 5 At which light intensity was light a limiting factor?

[1 mark]

Tick (✓) **one** box.

200 lumens ☐

600 lumens ☐

1200 lumens ☐

0 1 . 6 Light intensity can affect the rate of photosynthesis.

Give **one** other factor that can affect the rate of photosynthesis.

[1 mark]

_____

8

4.4.1.1 Photosynthetic reaction

Question 03

November 2020 | 8464/B/1F | Original Q1

0 1 Being overweight can affect the health and life expectancy of a person.

0 1 . 1 What is **one** lifestyle change a person could make to help them lose body mass?

[1 mark]

Tick (✓) **one** box.

Drink more alcohol ☐

Eat less fatty food ☐

Stop smoking ☐

0 1 . 2 Exercise has many health benefits.

Give **two** health benefits of regular exercise.

Do **not** refer to losing body mass in your answer.

[2 marks]

1 _____

_____

2 _____

_____

4.4.1.1 Photosynthetic reaction

Question 03 · continued

During exercise, breathing rate increases to provide more oxygen for aerobic respiration.

0 1 . 3 What is the equation for aerobic respiration?

[1 mark]

Tick (✓) **one** box.

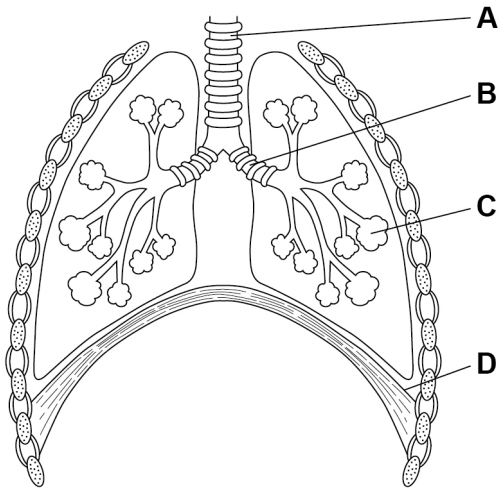
carbon dioxide + water → glucose + oxygen ☐

glucose + oxygen → carbon dioxide + water ☐

oxygen + water → glucose + carbon dioxide ☐

0 1 . 4 **Figure 1** shows the human breathing system.

Figure 1



Where does gas exchange take place?

[1 mark]

Tick (✓) **one** box.

A ☐ **B** ☐ **C** ☐ **D** ☐

4.4.1.1 Photosynthetic reaction

Question 03 · continued

A scientist investigated the effect of exercise on the breathing rate of four people.

This is the method used.

1. Measure the resting breathing rate.

2. Exercise for 10 minutes.

3. Measure the breathing rate as soon as exercise stops.

4. Record the time taken for the breathing rate to return to the resting rate.

Table 1 shows the results.

Table 1

Person	Resting breathing rate in breaths per minute	Breathing rate after exercise in breaths per minute	Increase in breathing rate in breaths per minute	Time for breathing rate to return to resting rate in minutes
A	12	45	33	5.5
B	10	28	18	4.0
C	11	35	24	6.5
D	13	52	39	10.0

0 1 . 5 The scientist concluded that person **B** was the fittest.

Give **two** reasons that support the scientist's conclusion.

Use **Table 1**.

[2 marks]

1 _____

_____

2 _____

_____

4.4.1.1 Photosynthetic reaction

Question 03 · continued

0 1 . 6 Suggest **two** reasons why the scientist's conclusion may **not** be valid.

[2 marks]

1 _____

_____

2 _____

_____

0 1 . 7 Give **two** changes that happen in the body during aerobic exercise.

Do **not** refer to increased breathing rate in your answer.

[2 marks]

1 _____

_____

2 _____

_____

0 1 . 8 Muscles respire anaerobically during vigorous exercise.

Complete the sentences.

Choose answers from the box.

[2 marks]

amino acids	**carbon dioxide**	**glucose**
lactic acid	**oxygen**	

Muscles respire anaerobically if they do not have

enough _____ .

Anaerobic respiration of glucose produces _____ .

13

4.4.1.1 Photosynthetic reaction

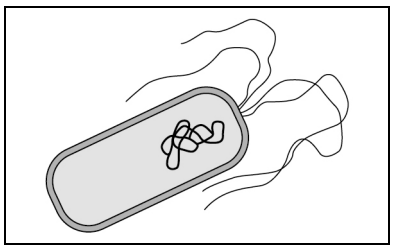
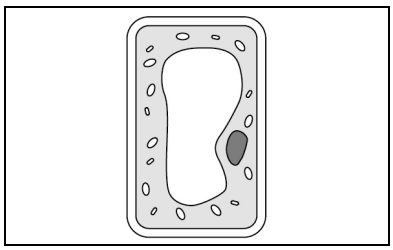
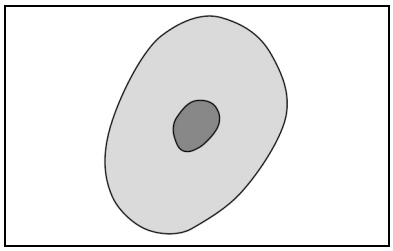
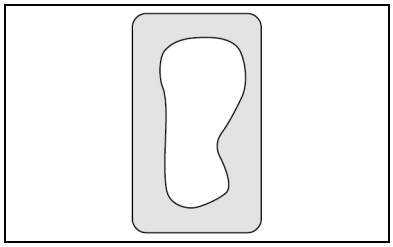
Question 04

November 2021 | 8464/B/1F | Original Q1

0 1 Cells are the building blocks of life.

0 1 . 1 Draw **one** line from each type of organism to the diagram of one of its cells.

[3 marks]

Type of organism	Diagram of one cell
Animal	
Bacterium	
Plant	
	

4.4.1.1 Photosynthetic reaction

0 1 . 2 Cells contain structures. These structures have different functions.

Draw **one** line from each function to the correct structure.

[3 marks]

Function	Structure
	Cell membrane
Contains genetic information	
	Cell wall
Controls what enters and leaves a cell	
	Chloroplast
Where photosynthesis happens	
	Nucleus

Question 1 continues on the next page

4.4.1.1 Photosynthetic reaction

0 1 . 3 Chemicals are produced in cells.

Complete the sentences.

Choose answers from the box.

[4 marks]

cellulose	**DNA**	**glycogen**	**starch**	**urea**

A chemical excreted by animals is _____ .

A chemical stored in animal cells is _____ .

A chemical stored in plant cells is _____ .

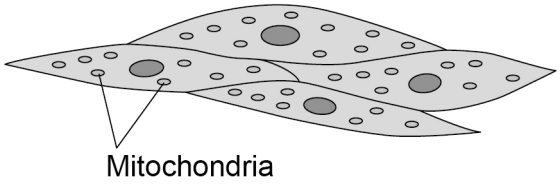
A chemical that strengthens plant cell walls is _____ .

4.4.1.1 Photosynthetic reaction

Question 04 · continued

Figure 1 shows a diagram of muscle cells.

Figure 1



0 1 . 4 Give **one** function of muscle cells.

[1 mark]

0 1 . 5 Explain how muscle cells are adapted for their function.

Use **Figure 1**.

[2 marks]

Question 1 continues on the next page

4.4.1.1 Photosynthetic reaction

Question 04 · continued

0 1 . 6 One muscle cell was 0.05 mm wide.

When viewed using a microscope the image of the muscle cell was 2 mm wide.

Calculate the magnification used to view the cell.

Use the equation:

$$\text{magnification} = \frac{\text{width of image}}{\text{width of real cell}}$$

[2 marks]

Magnification = × _____

15

4.4.1.1 Photosynthetic reaction

Question 05

November 2021 | 8464/B/1F | Original Q3

0 3 Anaerobic respiration in yeast is called fermentation.

The equation for fermentation is:

glucose → ethanol + carbon dioxide

0 3 . 1 How does the equation show that fermentation is an **anaerobic** reaction?

[1 mark]

Fermentation in yeast is used in the manufacture of beer, wine and bread.

0 3 . 2 Why is fermentation used when making beer and wine?

[1 mark]

0 3 . 3 Explain why fermentation is used when making bread.

[2 marks]

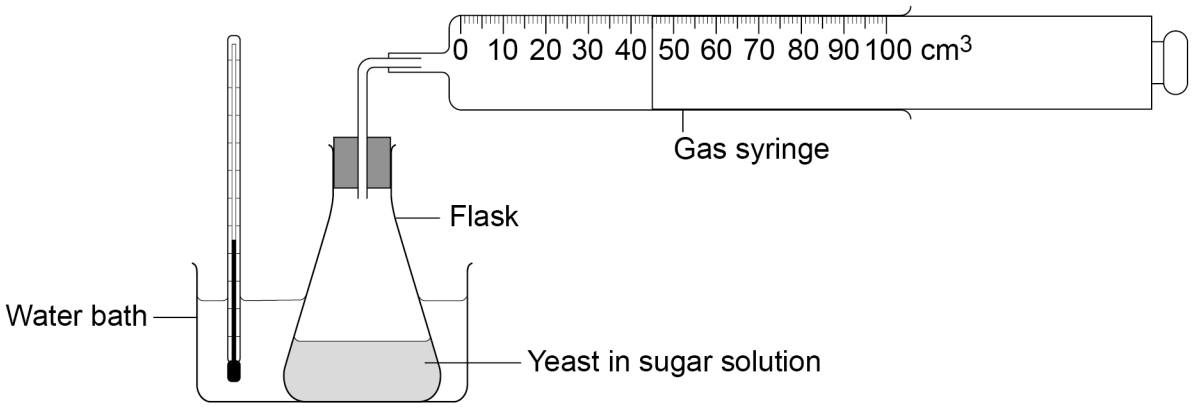
4.4.1.1 Photosynthetic reaction

Question 05 · continued

A student investigated fermentation in yeast.

Figure 3 shows the apparatus.

Figure 3



This is the method used.

1. Mix yeast with sugar solution in a flask.
2. Put the flask in a water bath at 35 °C.
3. After 10 minutes attach a gas syringe to the flask.
4. Record the volume of carbon dioxide collected every 5 minutes for 1 hour.

0 3 . 4 What volume of carbon dioxide has been collected in the gas syringe in **Figure 3**?

[1 mark]

Volume of carbon dioxide = _____ cm^3

0 3 . 5 Why did the student wait 10 minutes before attaching the gas syringe?

[1 mark]

Tick (✓) **one** box.

To allow time for the mixture to reach 35 °C ☐

To allow time for the sugar to dissolve ☐

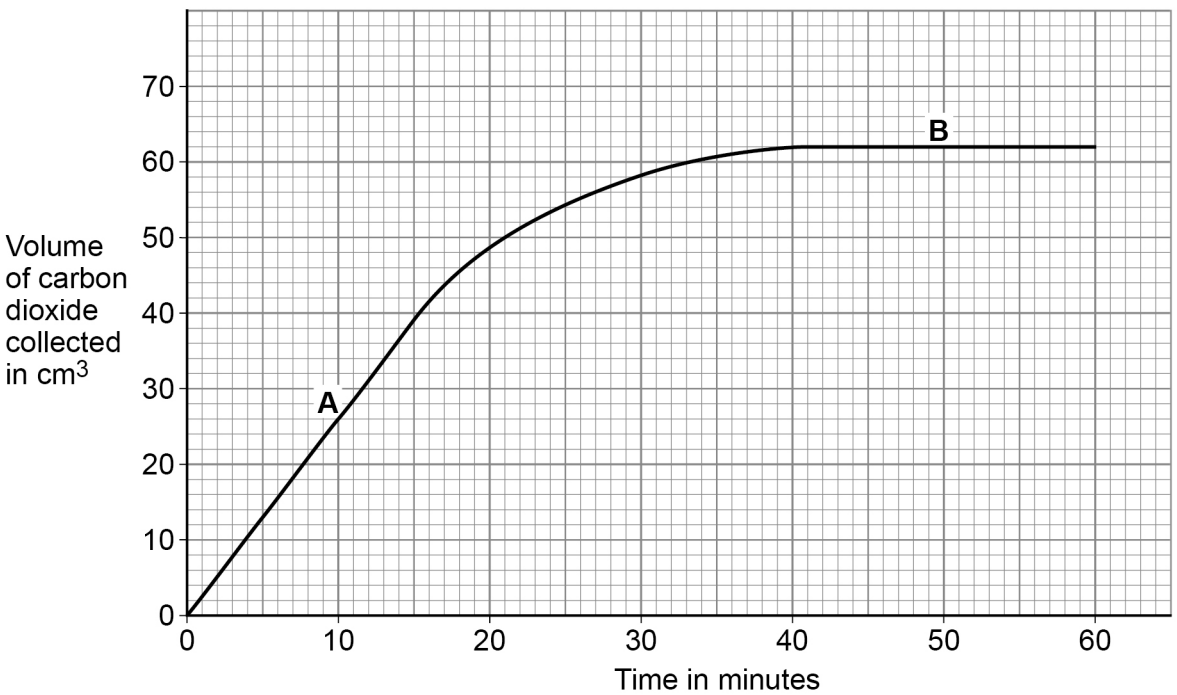
To allow time to draw a results table ☐

4.4.1.1 Photosynthetic reaction

Question 05 · continued

Figure 4 shows the results.

Figure 4



4.4.1.1 Photosynthetic reaction

Question 05 · continued

0 3 . 6 **A** and **B** are different parts of the graph in **Figure 4**.

Draw **one** line from each part of the graph to the description of the reaction.

[2 marks]

Part of the graph	Description of the reaction
	Carbon dioxide is **not** being produced
A	
	Carbon dioxide production is **fastest**
B	
	Carbon dioxide production is **slowing down**

Question 3 continues on the next page

4.4.1.1 Photosynthetic reaction

The equation for fermentation is repeated here.

glucose → ethanol + carbon dioxide

0 3 . 7 Suggest **one** reason why fermentation in the flask stopped.

[1 mark]

0 3 . 8 Fermentation is controlled by enzymes.

The investigation was repeated at 2 °C and at 75 °C.

No carbon dioxide was produced at either of these temperatures.

Suggest why **no** carbon dioxide was produced at 2 °C or at 75 °C.

[2 marks]

Reason at 2 °C

Reason at 75 °C

0 3 . 9 Anaerobic respiration also happens in animal cells.

Complete the equation for anaerobic respiration in animal cells.

Choose answers from the box.

[2 marks]

carbon dioxide	**ethanol**	**glucose**	**lactic acid**	**water**

_____ → _____

13

4.4.1.1 Photosynthetic reaction

Question 06

November 2021 | 8464/B/1F | Original Q5

0 5 Plants absorb light for photosynthesis.

0 5 . 1 Which is the equation for photosynthesis?

[1 mark]

Tick (✓) **one** box.

$C_6H_{12}O_6 + 6\,O_2 \rightarrow 6\,CO_2 + 6\,H_2O$ ☐

$6\,CO_2 + 6\,H_2O \rightarrow C_6H_{12}O_6 + 6\,O_2$ ☐

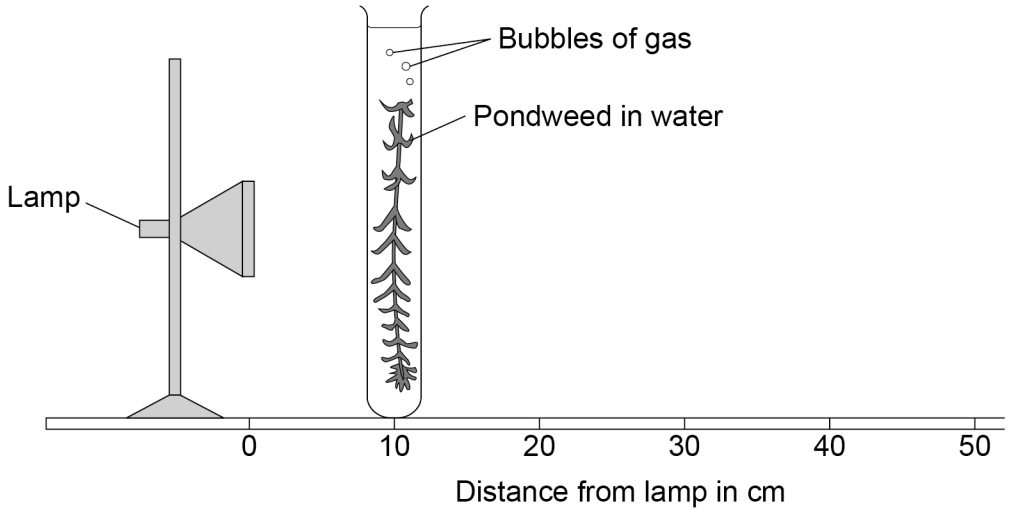
$6\,H_2O + 6\,O_2 \rightarrow C_6H_{12}O_6 + 6\,CO_2$ ☐

$6\,O_2 + 6\,CO_2 \rightarrow C_6H_{12}O_6 + 6\,H_2O$ ☐

A student investigated the effect of light intensity on the rate of photosynthesis.

Figure 6 shows the apparatus.

Figure 6



4.4.1.1 Photosynthetic reaction

Question 06 · continued

This is the method used.

1. Set up the apparatus as shown in **Figure 6**.
2. Place the pondweed 10 cm away from the lamp.
3. Switch on the lamp.
4. Record the number of bubbles of gas produced in 5 minutes.
5. Repeat steps 2 to 4 with the pondweed at different distances from the lamp.

0 5 . 2 What was the independent variable in this investigation?

[1 mark]

Tick (✓) **one** box.

- Distance of the pondweed from the lamp ☐
- Length of the piece of pondweed ☐
- Number of bubbles of gas produced ☐
- Time taken to collect the gas ☐

Question 5 continues on the next page

4.4.1.1 Photosynthetic reaction

Question 06 · continued

The lamp gets warm when it is on. This causes the temperature of the water to increase.

0 5 . 3 Explain how an increase in temperature would affect the results of this investigation.

[2 marks]

0 5 . 4 Suggest **one** way the investigation could be improved so the temperature of the water does **not** increase.

[1 mark]

0 5 . 5 Suggest **two** improvements to the investigation so the results would be more valid.

Do **not** refer to controlling the temperature of the water.

[2 marks]

1

2

4.4.1.1 Photosynthetic reaction

Question 06 · continued

Table 2 shows the results.

Table 2

Distance of pondweed from the lamp in cm	Number of bubbles of gas produced in 5 minutes
10	120
20	56
30	31
40	16
50	10

0 5 . 6 Calculate the rate of photosynthesis when the pondweed was 40 cm from the lamp.

Give the rate of photosynthesis as the number of bubbles of gas produced per minute.

[1 mark]

Rate = _____ bubbles of gas produced per minute

0 5 . 7 Give **one** conclusion that can be made from **Table 2**.

[1 mark]

4.4.1.1 Photosynthetic reaction

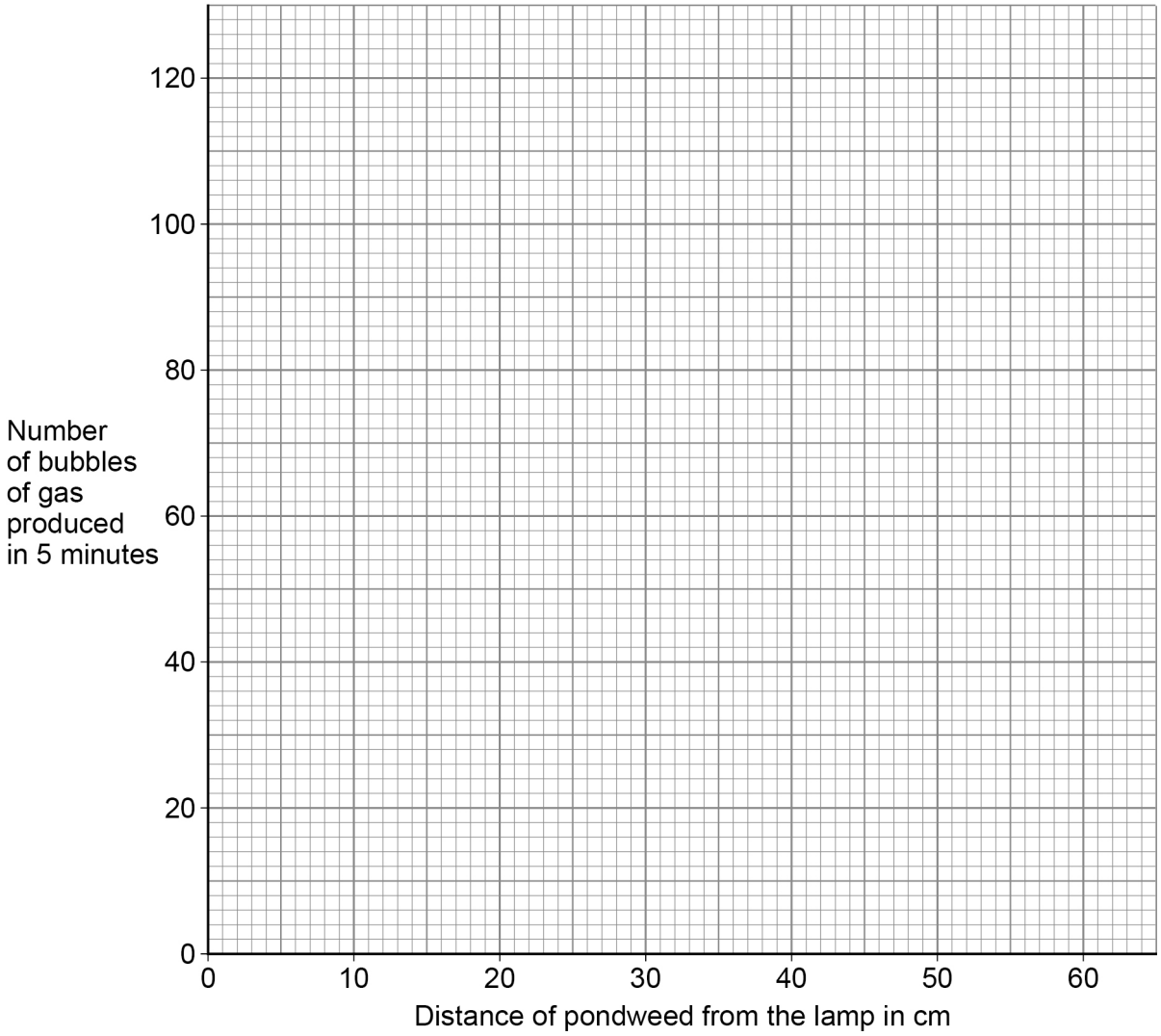
Question 06 · continued

0 5 . 8 Plot the data from **Table 2** on **Figure 7**.

Draw a line of best fit.

[3 marks]

Figure 7



0 5 . 9 Predict the number of bubbles that would be produced in 5 minutes if the pondweed was 60 cm from the lamp.

Use **Figure 7**.

[1 mark]

Number of bubbles produced in 5 minutes = _____

13

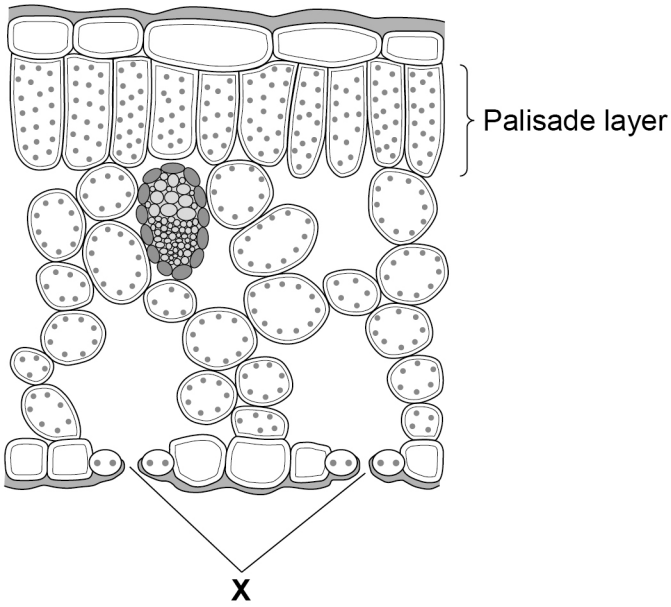
4.4.1.1 Photosynthetic reaction

Question 07

June 2022 | 8464/B/1F | Original Q2

0 2 **Figure 2** shows a section through a leaf.

Figure 2



0 2 . 1 Give **one** way that the palisade layer is adapted for photosynthesis.

[1 mark]

0 2 . 2 Gases pass into and out of the leaf through small pores in the surface of the leaf.

What are the small pores labelled **X** called?

[1 mark]

Tick (✓) **one** box.

Guard cells ☐

Stomata ☐

Xylem vessels ☐

4.4.1.1 Photosynthetic reaction

Question 07 · continued

0 2 . 3 A student viewed a section of a leaf using a microscope.

The student measured the length of one of the palisade cells.

The cell image measured 28 mm in length when viewed at a magnification of ×400

Calculate the real length of the palisade cell in millimetres (mm).

Use the equation:

$$\text{real length} = \frac{\text{image length}}{\text{magnification}}$$

[3 marks]

Real length = _____ mm

Convert the real length of the cell from millimetres to micrometres (μm).

1 mm = 1000 μm

Real length = _____ μm

0 2 . 4 Carbon dioxide can move into and out of cells.

What is the process by which carbon dioxide can move into and out of cells?

[1 mark]

Tick (✓) **one** box.

- Active transport ☐
- Diffusion ☐
- Osmosis ☐

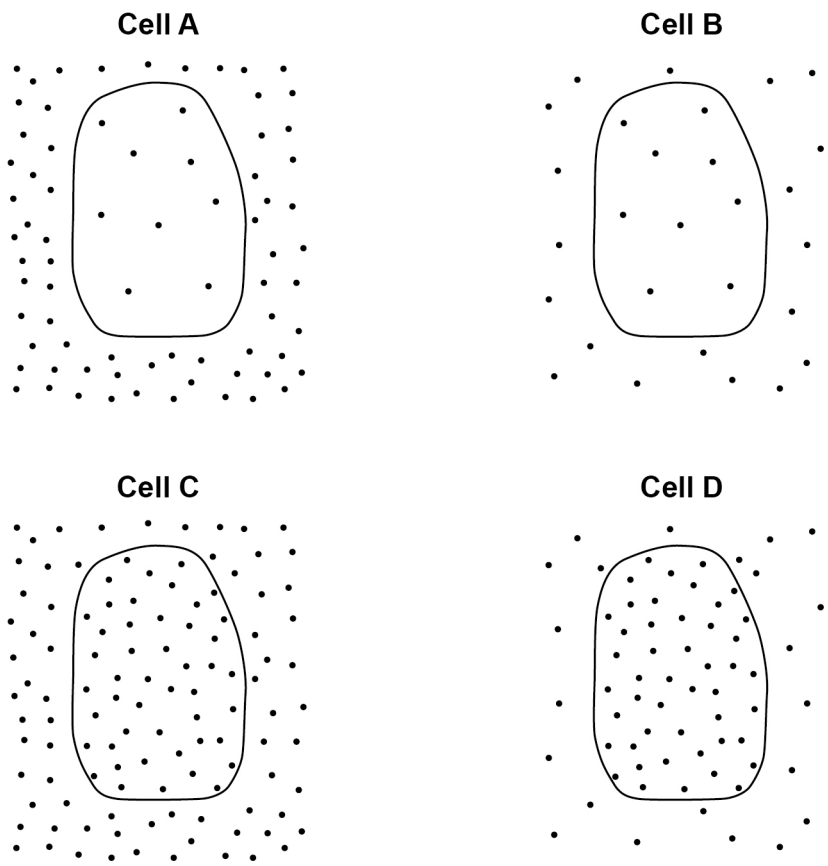
4.4.1.1 Photosynthetic reaction

Question 07 · continued

Figure 3 shows a diagram of four cells.

Each cell is surrounded by carbon dioxide molecules.

Figure 3



0 2 . 5 Which cell will carbon dioxide move into at the fastest rate?

Give a reason for your answer.

[2 marks]

Tick (✓) **one** box.

A ☐ **B** ☐ **C** ☐ **D** ☐

Reason _____

_____

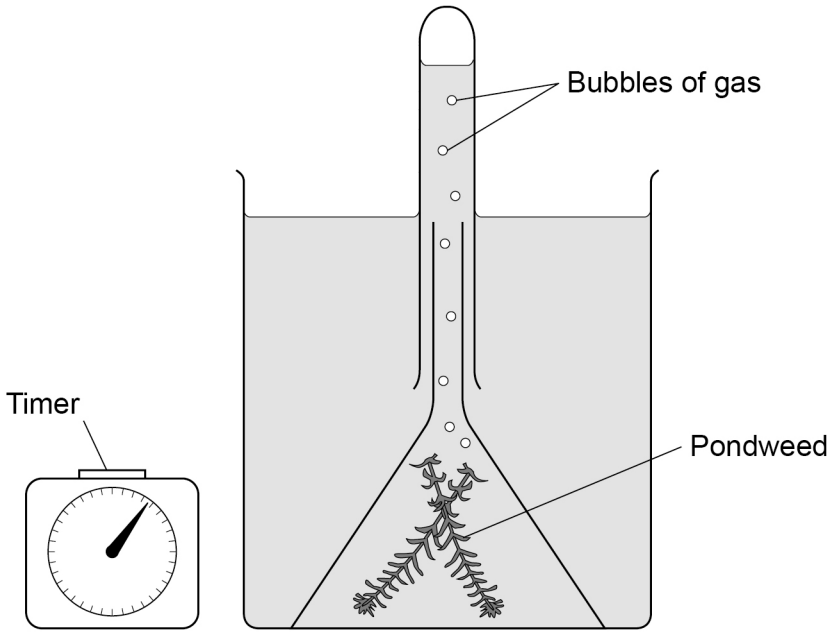
4.4.1.1 Photosynthetic reaction

Question 07 · continued

A student investigated the effect of different colours of light on the rate of photosynthesis.

Figure 4 shows some of the apparatus the student used.

Figure 4



The student placed the apparatus in blue light, then in green light and then in red light.

The student measured the rate of photosynthesis in each colour of light.

0 2 . 6 What **two** measurements should the student make to calculate the **rate** of photosynthesis?

[2 marks]

1 _____

2 _____

Question 2 continues on the next page

4.4.1.1 Photosynthetic reaction

Question 07 · continued

0 2 . 7 Give **two** variables the student should keep the same in this investigation.

[2 marks]

1 _____

_____

2 _____

_____

Table 2 shows the results.

Table 2

Colour of light	Rate of photosynthesis in arbitrary units
Blue	9
Green	1
Red	8

4.4.1.1 Photosynthetic reaction

Question 07 · continued

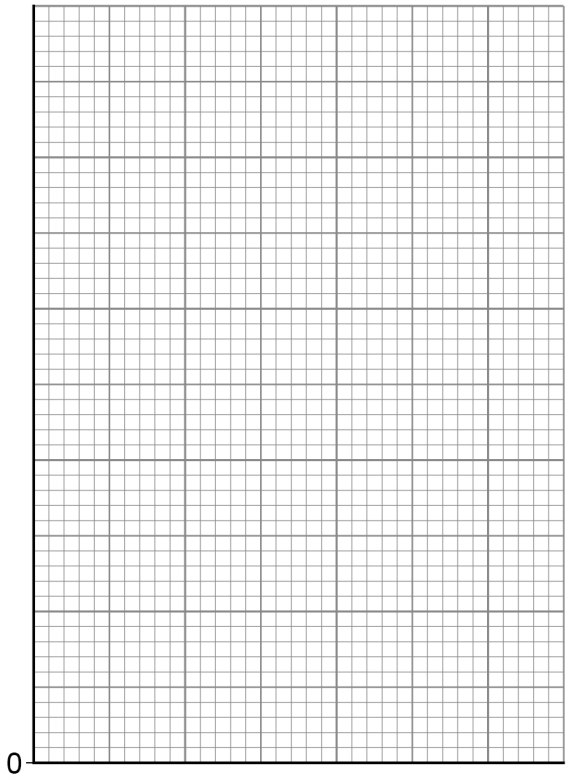
0 2 . 8 Complete **Figure 5**.

You should:

- label the y-axis
- use a suitable scale
- plot the data from **Table 2** as a bar chart
- label each bar.

[4 marks]

Figure 5



0 2 . 9 Look at **Table 2**.

What colour of light should be used to grow plants in a greenhouse?

[1 mark]

Tick (✓) **one** box.

Blue ☐ Green ☐ Red ☐

17

4.4.1.1 Photosynthetic reaction

Question 08

June 2023 | 8464/B/1F | Original Q3

0 3 Plants need water for photosynthesis.

0 3 . 1 Where do plants obtain water for photosynthesis from?

[1 mark]

Plants lose water from their leaves through small pores called stomata.

0 3 . 2 What is the evaporation of water from leaves called?

[1 mark]

Tick (✓) **one** box.

- Active transport ☐
- Respiration ☐
- Transpiration ☐

Question 3 continues on the next page

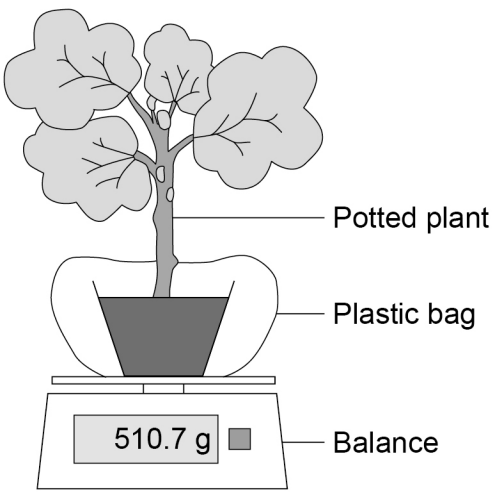
4.4.1.1 Photosynthetic reaction

Question 08 · continued

A student investigated the mass of water lost from a plant.

Figure 4 shows the apparatus.

Figure 4



This is the method used.

1. Seal a plastic bag around the pot of a potted plant.
2. Place the plant on a balance in a room at 20 °C.
3. Record the mass.
4. Record the mass every hour for 5 hours.
5. Calculate the total mass of water lost from the plant after each hour.

4.4.1.1 Photosynthetic reaction

Table 1 shows the results.

Table 1

Time in hours	Mass in grams	Total mass of water lost in grams
0	510.7	0.0
1	508.9	1.8
2	507.1	3.6
3	505.3	5.4
4	503.5	7.2
5	**X**	9.0

0 3 . 3 Calculate mass **X** in **Table 1**.

[2 marks]

Mass **X** = _____ grams

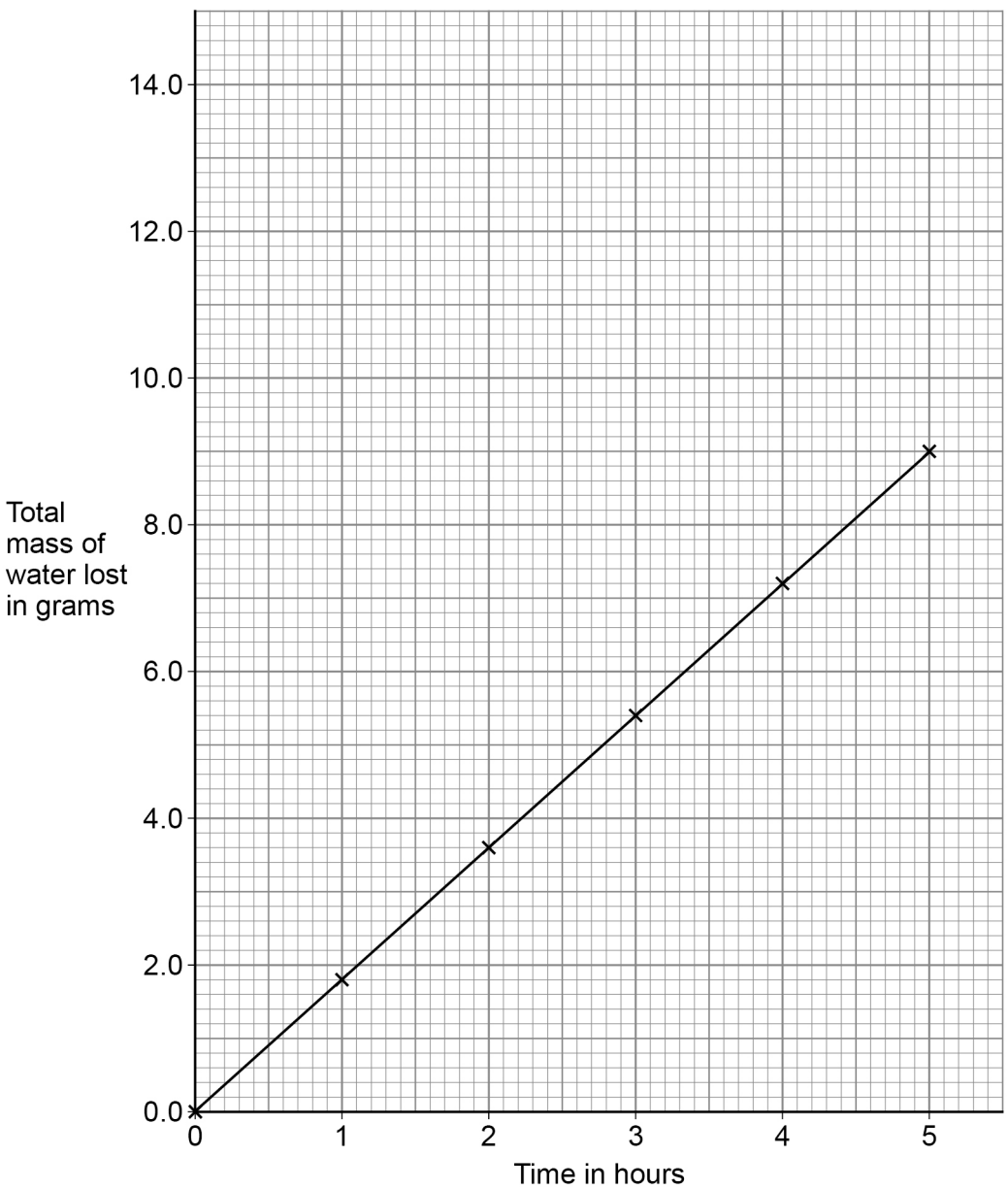
Question 3 continues on the next page

4.4.1.1 Photosynthetic reaction

Question 08 · continued

Figure 5 shows the results.

Figure 5



4.4.1.1 Photosynthetic reaction

Question 08 · continued

0 3 . 4 What was the rate of water loss from the plant?

[1 mark]

Tick (✓) **one** box.

0.9 grams/hour ☐

1.8 grams/hour ☐

9.0 grams/hour ☐

0 3 . 5 The investigation was repeated at a **lower** temperature.

Draw **one** line on **Figure 5** to show how the results would be different at a **lower** temperature.

[2 marks]

0 3 . 6 Suggest **one** change to the investigation that would **increase** the rate of water loss from the plant.

Do **not** refer to temperature in your answer.

[1 mark]

_____

_____

8

4.4.1.1 Photosynthetic reaction

Question 09

June 2024 | 8464/B/1F | Original Q5

0 5 This question is about photosynthesis.

0 5 . 1 Complete the equation for photosynthesis.

Choose answers from the box.

[2 marks]

nitrogen	**oxygen**	**ethanol**	**water**

carbon dioxide + _____ $\xrightarrow{\text{light}}$ glucose + _____

0 5 . 2 What is the chemical formula for glucose?

[1 mark]

Tick (✓) **one** box.

CO_2 ☐ $C_6H_{12}O_6$ ☐ H_2O ☐ O_2 ☐

0 5 . 3 Give **two** ways plants use the glucose produced by photosynthesis.

[2 marks]

1 _____

_____

2 _____

_____

4.4.1.1 Photosynthetic reaction

Question 09 · continued

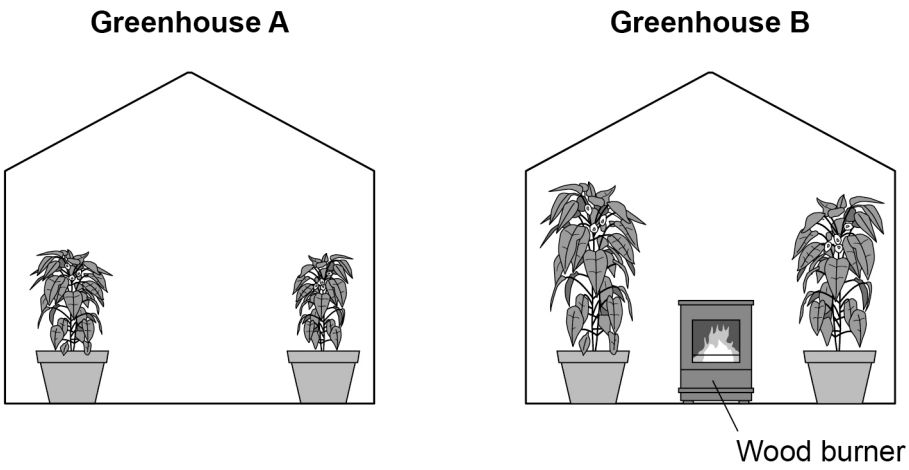
0 5 . 4 A person has two greenhouses.

In each greenhouse, the plants:

- are all the same type
- receive the same intensity of light and the same volume of water
- grow in the same type of soil.

Figure 7 shows the greenhouses.

Figure 7



The person burns logs in the wood burner in greenhouse **B**.

Explain why the plants in greenhouse **B** grow faster than the plants in greenhouse **A**.

[4 marks]

9

4.4.1.1 Photosynthetic reaction

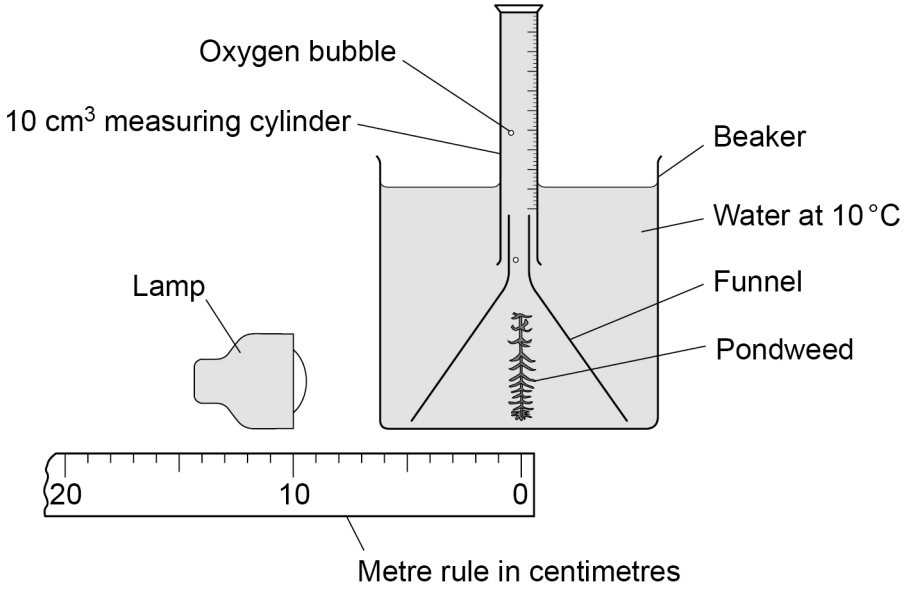
Question 10

0 2 Photosynthesis is important for plant growth.

A student used pondweed to investigate photosynthesis.

Figure 3 shows the apparatus used.

Figure 3



This is the method used.

1. Set up the apparatus as shown in **Figure 3**.
2. Switch on the lamp.
3. After 1 hour, record the volume of oxygen collected in the measuring cylinder.
4. Repeat steps 1 to 3 a further four times, placing the lamp at different distances from the pondweed.

4.4.1.1 Photosynthetic reaction

Question 10 · continued

0 2 . 1 What are **two** control variables the student should use in the investigation?

[2 marks]

Tick (✓) **two** boxes.

- The distance of the lamp from the pondweed. ☐
- The length of the pondweed. ☐
- The size of the beaker. ☐
- The temperature of the water. ☐
- The volume of oxygen collected. ☐

Table 2 shows the results.

Table 2

Distance of the lamp from the pondweed in cm	Volume of oxygen in cm^3
10	
20	1.0
30	0.4
40	0.2
50	0.0

0 2 . 2 Describe the trend shown in **Table 2**.

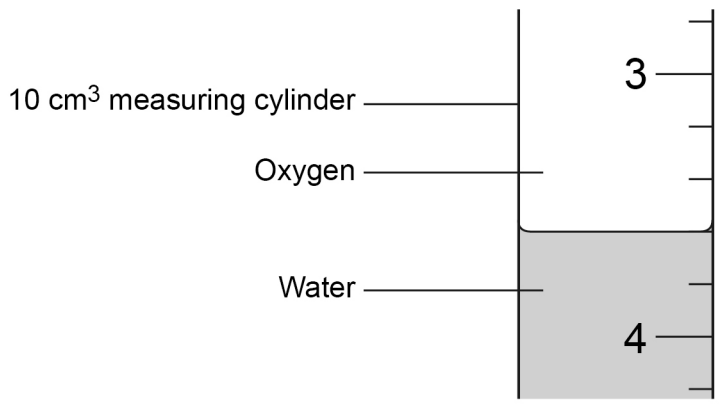
[1 mark]

4.4.1.1 Photosynthetic reaction

Question 10 · continued

0 2 . 3 **Figure 4** shows the volume of oxygen when the lamp was 10 cm from the pondweed.

Figure 4



What volume of oxygen is shown in **Figure 4**?

[1 mark]

Volume = _____ cm^3

4.4.1.1 Photosynthetic reaction

Question 10 · continued

0 2 . 4 The student repeated the investigation using a measuring cylinder with smaller intervals of 0.1 cm^3.

What did using smaller intervals improve?

[1 mark]

Tick (✓) **one** box.

Accuracy ☐

Repeatability ☐

Reproducibility ☐

0 2 . 5 The student did the investigation at 10 °C.

The student repeated the investigation at 20 °C.

Complete the sentence.

Choose the answer from the box.

[2 marks]

smaller	**the same**	**greater**

Compared to the results at 10 °C, the volumes of oxygen collected

in one hour at 20 °C would be _____.

Give a reason for your answer.

_____

_____

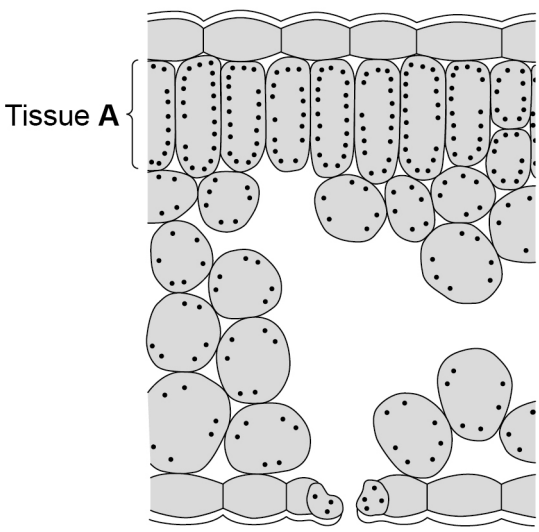
4.4.1.1 Photosynthetic reaction

Question 10 · continued

Photosynthesis is important for apple trees.

Figure 5 shows a section through the leaf of an apple tree.

Figure 5



0 2 . 6 What is tissue **A**?

[1 mark]

Tick (✓) **one** box.

Epidermis ☐

Palisade mesophyll ☐

Spongy mesophyll ☐

0 2 . 7 The cells in tissue **A** contain chloroplasts.

What is the name of the green chemical in chloroplasts?

[1 mark]

_____

4.4.1.1 Photosynthetic reaction

Question 10 · continued

Apple scab is a disease of apple trees.

Apple scab is caused by a fungus.

Figure 6 shows a leaf from an apple tree infected with apple scab fungus.

Figure 6



0 2 . 8 How could the fungal infection be removed from the tree?

[1 mark]

Tick (✓) **one** box.

Destroy the affected leaves. ☐

Spray the affected leaves with antibiotics. ☐

Use an antitoxin on the affected leaves. ☐

Question 2 continues on the next page

4.4.1.1 Photosynthetic reaction

Question 10 · continued

0 2 . 9 Infection with apple scab fungus decreases the number of chloroplasts in the leaves.

Explain why apple trees with apple scab fungus produce smaller apples than apple trees that are **not** infected.

[3 marks]

13

4.4.1.1 Photosynthetic reaction

Question 11

0 2 Farmers can increase crop yield by controlling the conditions that plants grow in.

0 2 . 1 Draw **one** line from each substance to how the substance increases crop yield.

[2 marks]

Substance	How the substance increases crop yield
Fertiliser	Adds mineral ions to the soil
	Decreases carbon dioxide concentration in the soil
Herbicide	Increases oxygen concentration in the air
	Kills weeds that compete with crops

0 2 . 2 **Figure 1** shows a food chain for a farmer's field.

Figure 1

Seeds → Mice → Owls

Which is the secondary consumer in the food chain?

[1 mark]

Tick (✓) **one** box.

- Seeds ☐
- Mice ☐
- Owls ☐

0 2 . 3 Bees are insects that live in hives.

The bees fly in and out of the hives.

Figure 2 shows a crop growing in a field.

The farmer has added bee hives to increase the number of bees in the field.

Figure 2



Increasing the number of bees and other insects increases crop yield.

Which are **two** ways that increasing the number of insects in an area will increase crop yield?

[2 marks]

Tick (✓) **two** boxes.

- Insects change the soil pH around the crop. ☐
- Insects eat leaves from the crop. ☐
- Insects eat pests on the crop. ☐
- Insects pollinate the crop. ☐
- Insects shelter in the crop. ☐

4.4.1.1 Photosynthetic reaction

Question 11 · continued

0 2 . 4 Some farmers increase the size of hedgerows between fields where crops grow.

Suggest **one** reason why.

[1 mark]

Peat comes from peat bogs.

0 2 . 5 Peat can be used to produce garden compost.

Table 1 compares peat compost with a sample of soil.

Table 1

	Mineral ion concentration	Speed at which water drains through
Peat compost	Low	Slow
Soil	High	Fast

Young plants have short roots.

Explain **one** advantage of growing young plants in peat compost instead of in soil.

[2 marks]

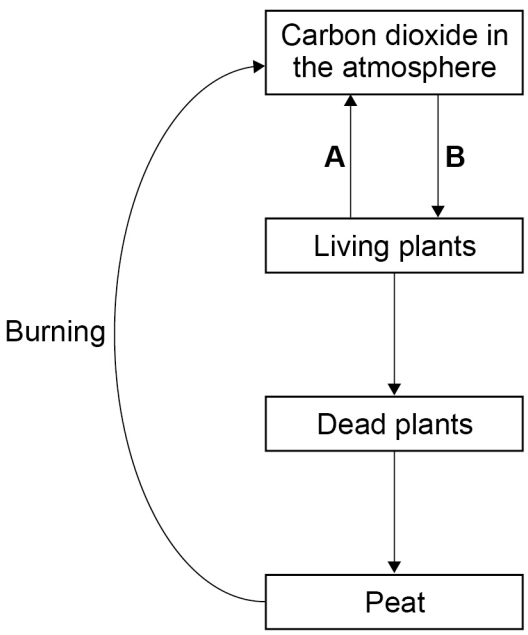
Question 2 continues on the next page

4.4.1.1 Photosynthetic reaction

Peat can also be burnt as fuel.

Figure 3 shows part of the carbon cycle.

Figure 3



0 2 . 6 Name process **A** and process **B**.

Choose answers from the box.

[2 marks]

condensation	**photosynthesis**	**respiration**	**transpiration**

Process **A** _____

Process **B** _____

4.4.1.1 Photosynthetic reaction

Question 11 · continued

0 2 . 7 Peat contains carbon compounds.

Explain why burning peat contributes to climate change.

[2 marks]

0 2 . 8 Decay is an important process in the carbon cycle.

Which **two** types of organism cause decay?

[2 marks]

Tick (✓) **two** boxes.

- Algae ☐
- Animals ☐
- Bacteria ☐
- Fungi ☐
- Plants ☐

0 2 . 9 Deforestation affects the carbon cycle.

Give **one** use of the land after the land has been cleared by deforestation.

[1 mark]

15