AQA GCSE Combined Science - Trilogy | 8464

SPECIFICATION POINT 4.2.3.1

Plant tissues

Past-paper questions

Tier	**Higher**
Question groups	**3**
Available paper years	**2023–2025**

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.

4.2.3.1 Plant tissues

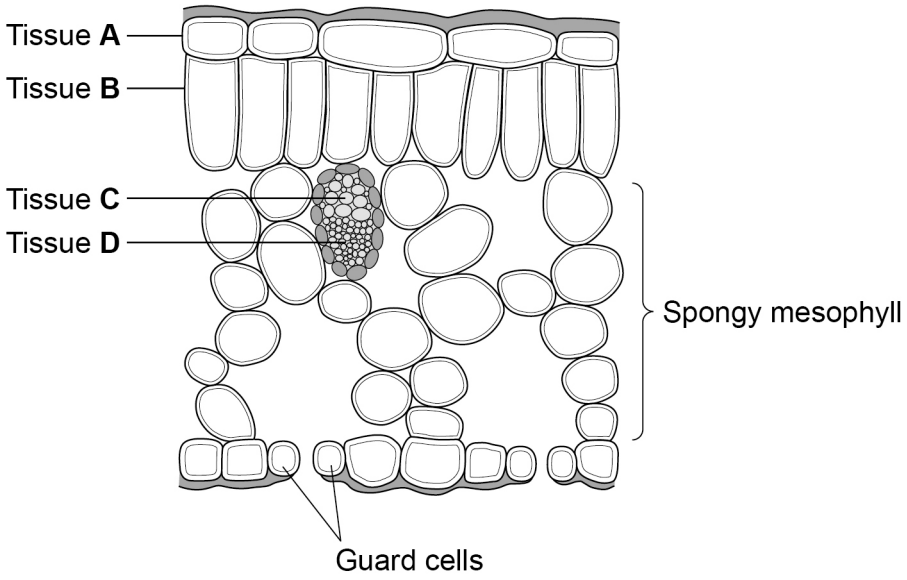
Question 01

June 2023 | 8464/B/1H | Original Q4

0 4 A leaf is a plant organ.

Figure 4 shows tissues in a leaf.

Figure 4



0 4 . 1 Which tissue is the epidermis?

[1 mark]

Tick (✓) **one** box.

A ☐ **B** ☐ **C** ☐ **D** ☐

4.2.3.1 Plant tissues

Question 01 · continued

0 4 . 2 Explain how the spongy mesophyll is adapted for its function.

Use **Figure 4**.

[3 marks]

0 4 . 3 The xylem is adapted to transport water through a plant.

Explain **one** way that xylem is adapted for its function.

[2 marks]

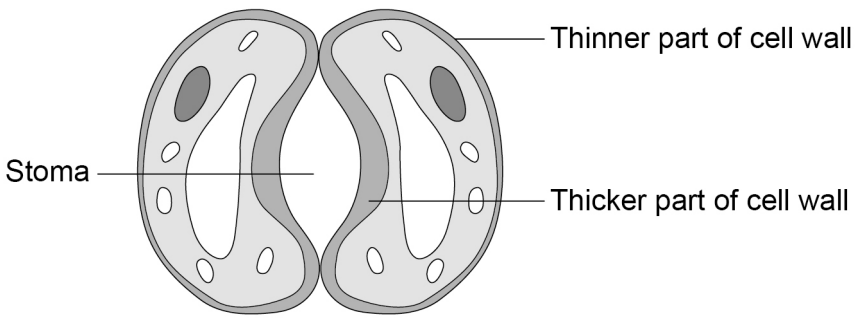
Question 4 continues on the next page

4.2.3.1 Plant tissues

Question 01 · continued

0 4 . 4 **Figure 5** shows a pair of guard cells around a stoma.

Figure 5



During the day, glucose is made in the guard cells.

Describe how an increase in glucose concentration in the guard cells causes the stoma to open.

[2 marks]

8

4.2.3.1 Plant tissues

Question 02

June 2024 | 8464/B/1H | Original Q4

0 4 This question is about photosynthesis.

0 4 . 1 What is the symbol equation for photosynthesis?

[1 mark]

Tick (✓) **one** box.

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

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

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

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

Question 4 continues on the next page

4.2.3.1 Plant tissues

Question 02 · continued

A student investigated the relationship between temperature and the rate of photosynthesis.

The student measured the volume of gas produced by an aquatic plant in 1 hour.

The student collected the gas in a measuring cylinder.

Table 2 shows the results.

Table 2

Temperature in °C	Volume of gas produced in 1 hour in cm^3
10	1
15	2
20	4
25	8
30	16
35	16
40	2
45	0

0 4 . 2 Describe the effect of increasing temperature on the **rate** of photosynthesis.

Use data from **Table 2**.

[3 marks]

4.2.3.1 Plant tissues

Question 02 · continued

0 4 . 3 Explain why no gas was produced by the plant at 45 °C.

[2 marks]

0 4 . 4 How could the student increase the accuracy of the results?

[1 mark]

Tick (✓) **one** box.

- Repeat the investigation, collecting the gas for 24 hours. ☐
- Repeat the investigation, measuring the volume of gas to 0.5 cm^3. ☐
- Repeat the investigation using a different aquatic plant. ☐
- Repeat the investigation, using temperatures of 5 °C and 50 °C. ☐

Question 4 continues on the next page

4.2.3.1 Plant tissues

Question 02 · continued

A person grows tomatoes in a greenhouse.

0 4 . 5 The mean temperature of the greenhouse is 15 °C.

A heater would keep the temperature of the greenhouse at 25 °C.

Suggest **two** reasons **against** using a heater set at 25 °C in the greenhouse.

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

[2 marks]

1 _____

_____

2 _____

_____

0 4 . 6 The person cut a stem from one of the tomato plants.

The cut stem was placed in soil to grow new roots.

Which tissue in the cut stem will differentiate into new root cells?

[1 mark]

Tick (✓) **one** box.

- Epidermis ☐
- Meristem ☐
- Mesophyll ☐
- Phloem ☐

10

4.2.3.1 Plant tissues

Question 03

June 2025 | 8464/B/1H | Original Q5

0 5 This question is about plants.

0 5 . 1 Some plants can respire anaerobically.

Which are the **two** products of anaerobic respiration in plants?

[2 marks]

Tick (✓) **two** boxes.

- Carbon dioxide ☐
- Ethanol ☐
- Glucose ☐
- Lactic acid ☐
- Water ☐

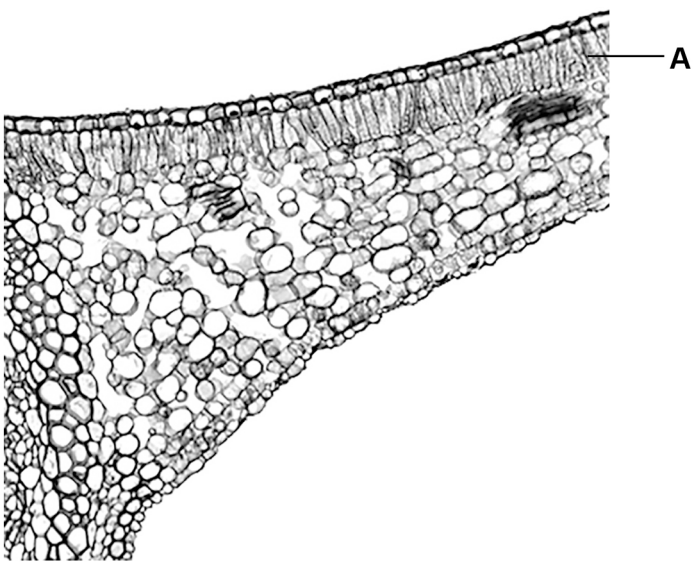
Question 5 continues on the next page

4.2.3.1 Plant tissues

Question 03 · continued

Figure 6 shows the structure of part of a leaf

Figure 6



0 5 . 2 What is the name of tissue **A**?

[1 mark]

0 5 . 3 Explain how tissue **A** is adapted to its function.

[2 marks]

4.2.3.1 Plant tissues

Question 03 · continued

0 5 . 4 Plants absorb water from the soil.

Describe how water is transported from the soil through plant tissues to the atmosphere.

[5 marks]

Extra space

10