Plant Nutrition

Question Paper 3

Level	IGCSE
Subject	Biology
Exam Board	CIE
Topic	Plant Nutrition
Sub-Topic	
Paper Type	Alternative to Practical
Booklet	Question Paper 3

Time Allowed: **45 minutes**

Score: **/37**

Percentage: **/100**

1 Fig. 2.1 shows the upper surface of two leaves, **W3** and **W4**.

W3 **W4**

Fig. 2.1

(a) Make a large, labelled drawing of leaf **W3**.

[4]

(b) Carefully observe leaf **W3** and leaf **W4** in Fig. 2.1.

Describe **one similarity** and **two differences** that you can see. Do **not** include size in your comparison.

(i) similarity

.....

..... [1]

(ii) differences

1 .....

.....

2 .....

..... [2]

Fig. 2.2 shows a photomicrograph of a section of a leaf similar to **W3**.

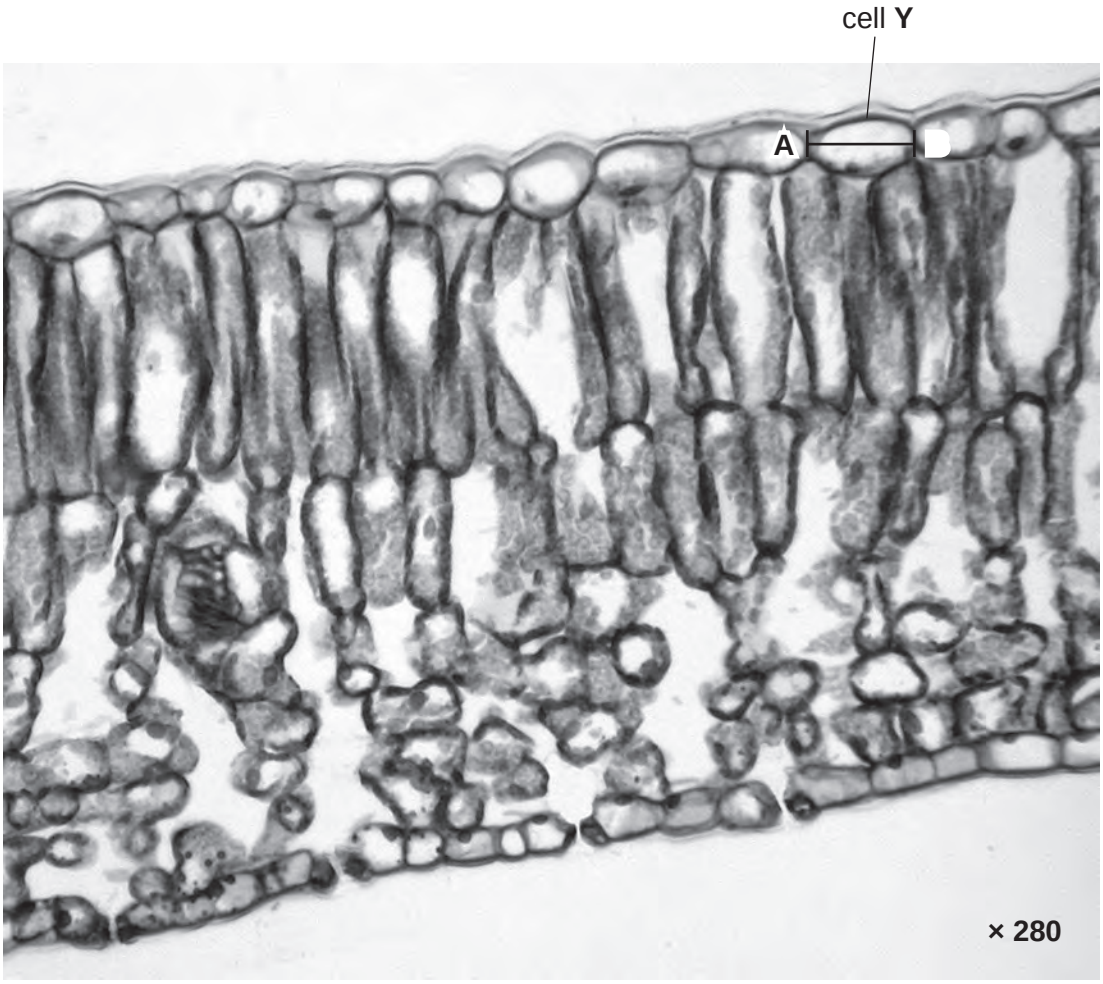


Fig. 2.2

(c) (i) On Fig. 2.2, draw a line to label a photosynthetic cell in the palisade layer. [1]

(ii) Draw arrows on Fig. 2.2 to show the pathway that carbon dioxide gas must take to reach the photosynthetic cell labelled in **(c)(i)** from the air outside the leaf. [2]

(d) Measure the length, from **A** to **B**, of cell **Y** on Fig. 2.2.

Record your measurement.

length from **A** to **B** ..... mm

Calculate the actual length of cell **Y**.

Show your working.

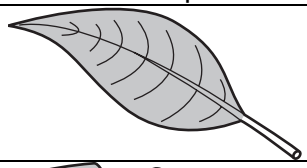
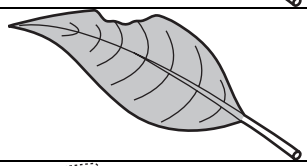
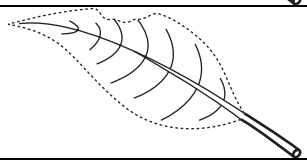
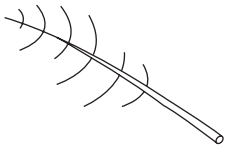
actual length of cell **Y** ..... mm [3]

When leaves die, they fall from the tree and are eventually decomposed.

Some students investigated the decomposition of samples of leaves. They made drawings and weighed the samples at intervals over a period of two years.

Table 2.1 shows the results of this investigation.

Table 2.1

time / months	mass of leaves in sample / g	appearance of one leaf in the sample.
0	42.5	
6	46.0	
12	32.5	
18	16.0	
24	7.5	

(e) (i) Describe **and** explain the changes in appearance of the leaves during the two years.

.....

.....

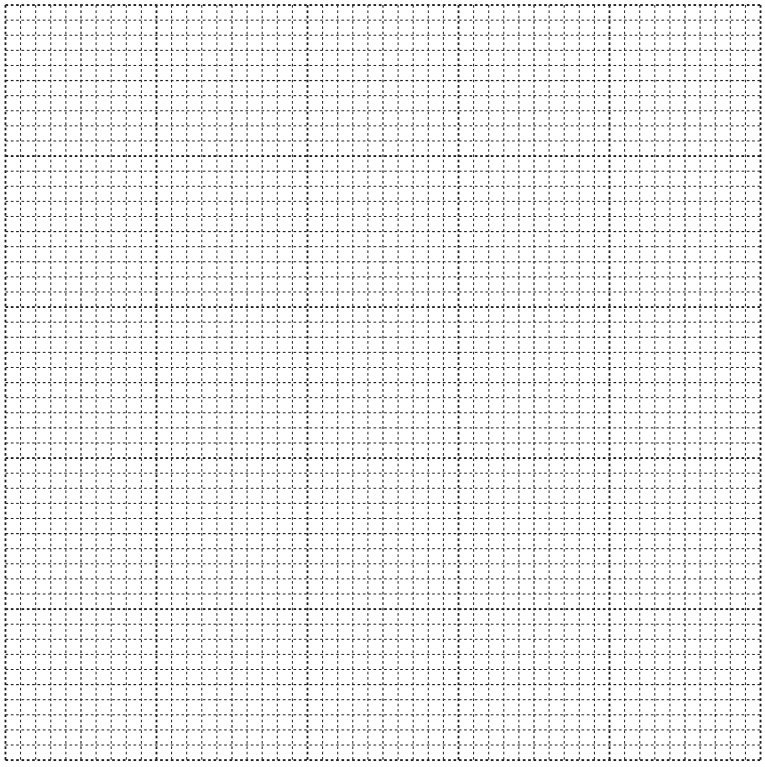
.....

.....

.....

..... [3]

(ii) Use the measurements from Table 2.1 to plot a graph to show how the mass of the leaf samples change with time.



[4]

(iii) Describe the results for the change in mass shown on the graph.

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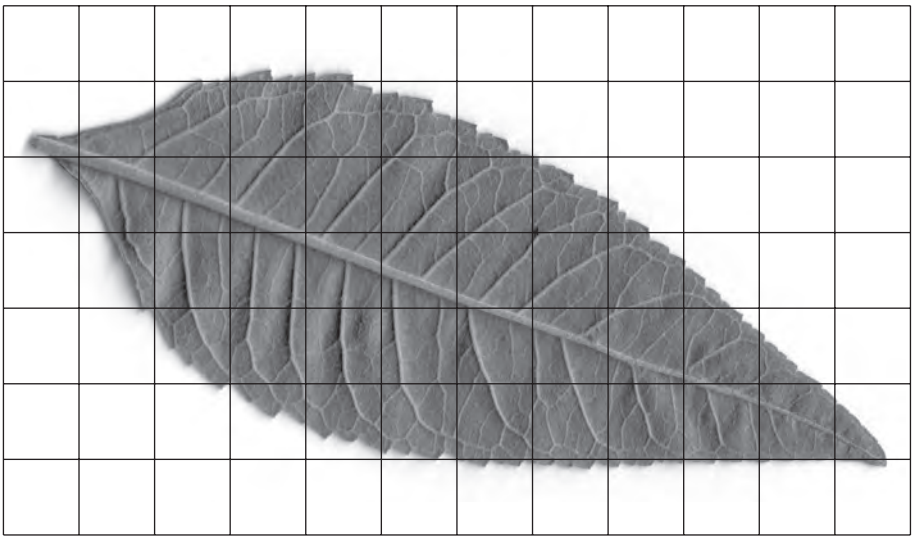
..... [3]

[Total: 23]

2 Fig.2.1 shows the lower surface of a dicotyledonous leaf.



Magnification ×1

Fig. 2.1

(a) Make a labelled drawing of the leaf in Fig. 2.1. Your drawing should be the same size as that shown in Fig. 2.1.

[4]

(b) (i) Calculate the surface area of this leaf in Fig.2.1 to the nearest cm^2.

..... cm^2 [1]

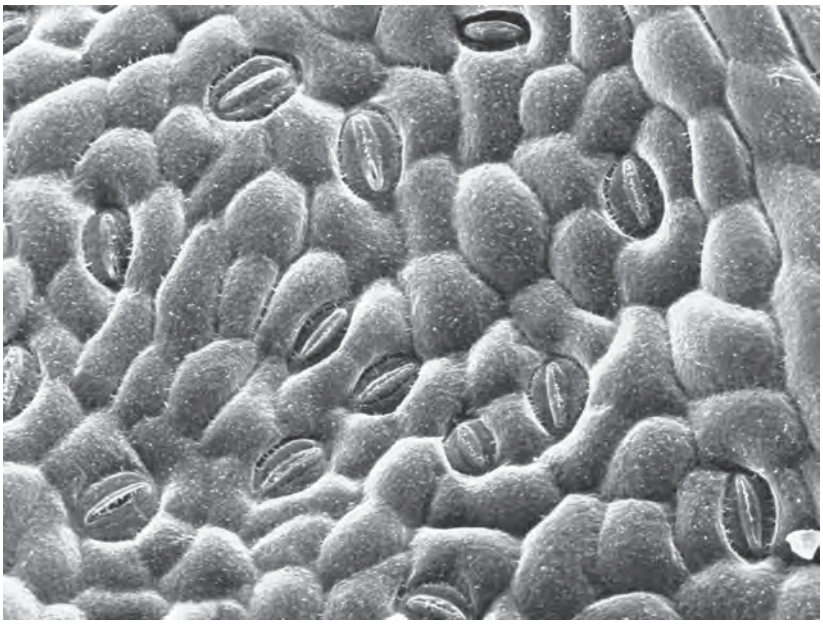
(ii) Describe how you obtained an answer that was as accurate as possible.

.....

.....

..... [2]

(c) Fig. 2.2 shows the detail of part of the lower surface of a similar leaf.



Magnification ×145

Fig. 2.2

(i) On Fig. 2.2, label **two** different types of cell. Use ruled label lines. [2]

(ii) On Fig. 2.2, put a circle around **two** of the cells where chloroplasts are normally present. [1]

(d) Suggest how you could determine the number of stomata present on one surface of a whole leaf.

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..... [4]

[Total: 14]