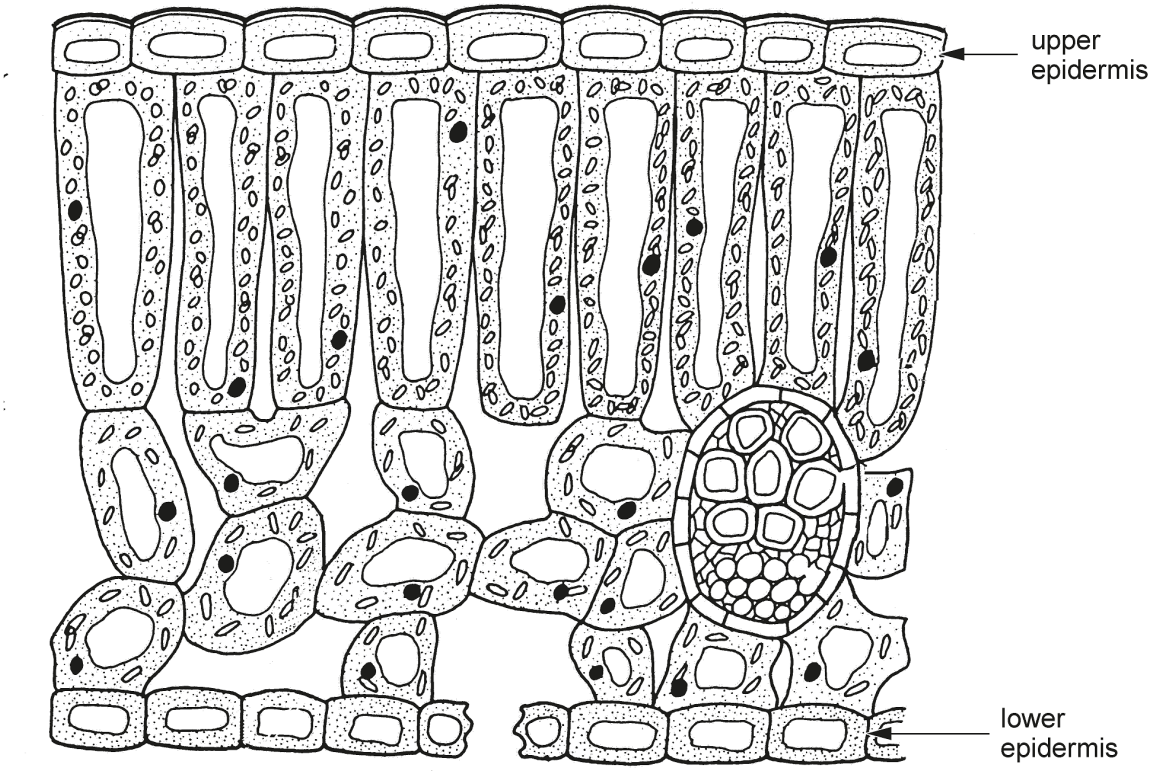
WJEC (Eduqas) Biology GCSE Topic 2.3 Transport Systems in Plants

Questions by Topic

1.

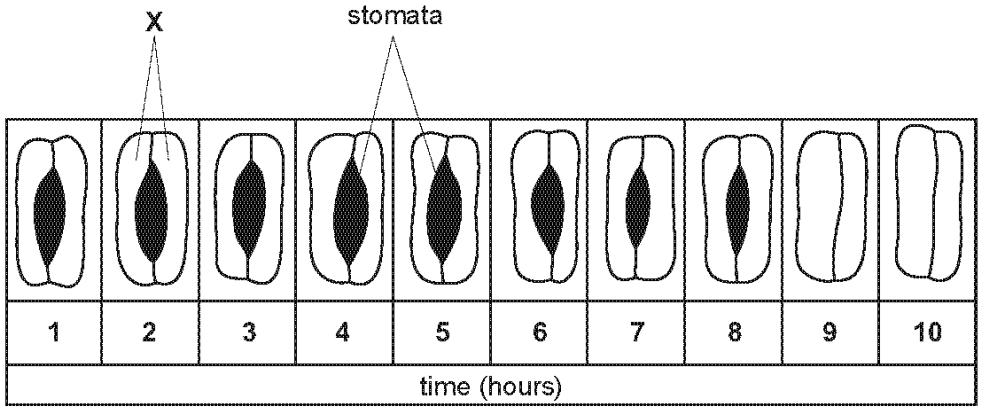
(a) The diagram below shows a leaf in section.



(i) State the name of the tissue in a leaf that transports sugar. [1]

2.

A potted plant was left in a hot, brightly lit room for ten hours. The plant was not watered during this period. The drawings below show how the mean width of the stomata (pores) changed over the ten hour period.



(a) Give **two** functions of stomata. [1]

.....

.....

(b) Name the cells labelled **X** on the drawing above. [1]

.....

(c) The width of the stomata changed over the ten hour period. State the advantage to the plant of this change. [1]

.....

.....

(d) Suggest how the time taken for the change in width to occur would be affected by:

(i) an increase in airflow over the plant; [1]

.....

(ii) an increase in water vapour around the plant. [1]

.....

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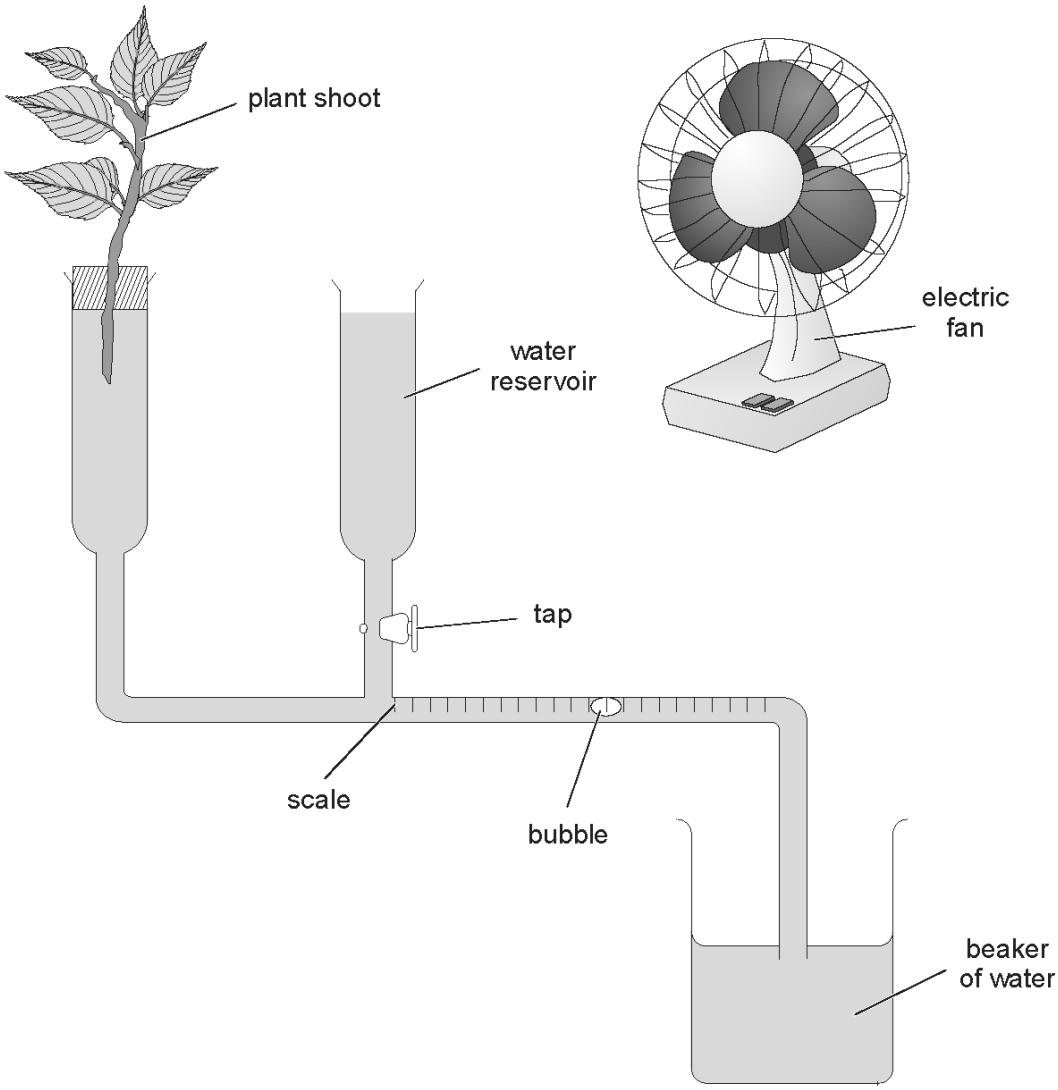
3.

(a) What word is used to describe water loss from the leaves of a plant? [1]

.....

The diagram below shows a plant shoot in a simple potometer and an electric fan.



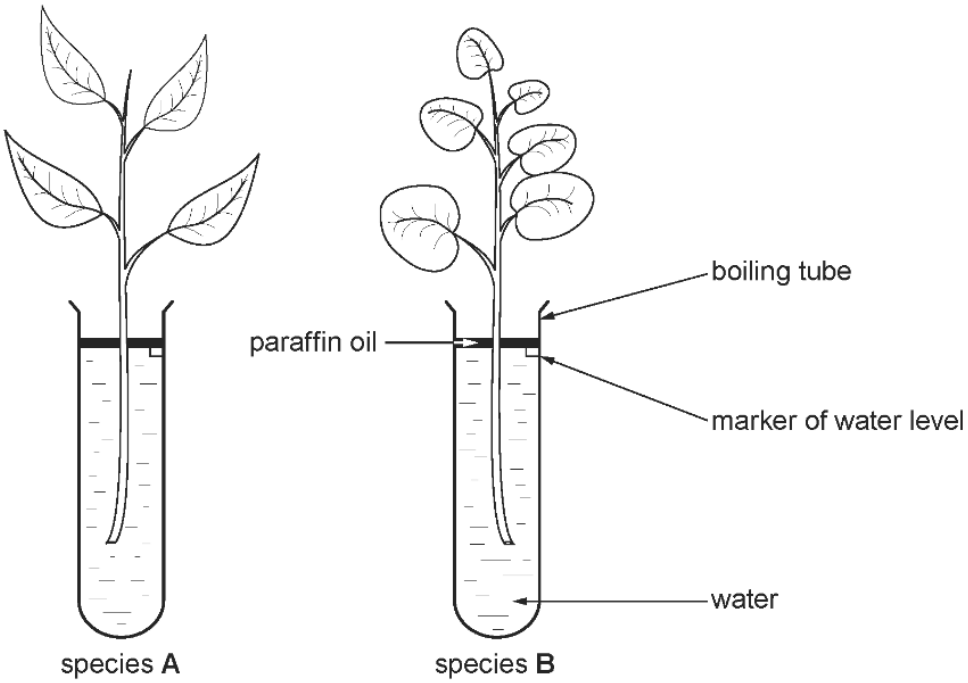
.....

(c) Apart from air movement, give **two** *other* environmental factors that affect the rate of water loss from a plant. [2]

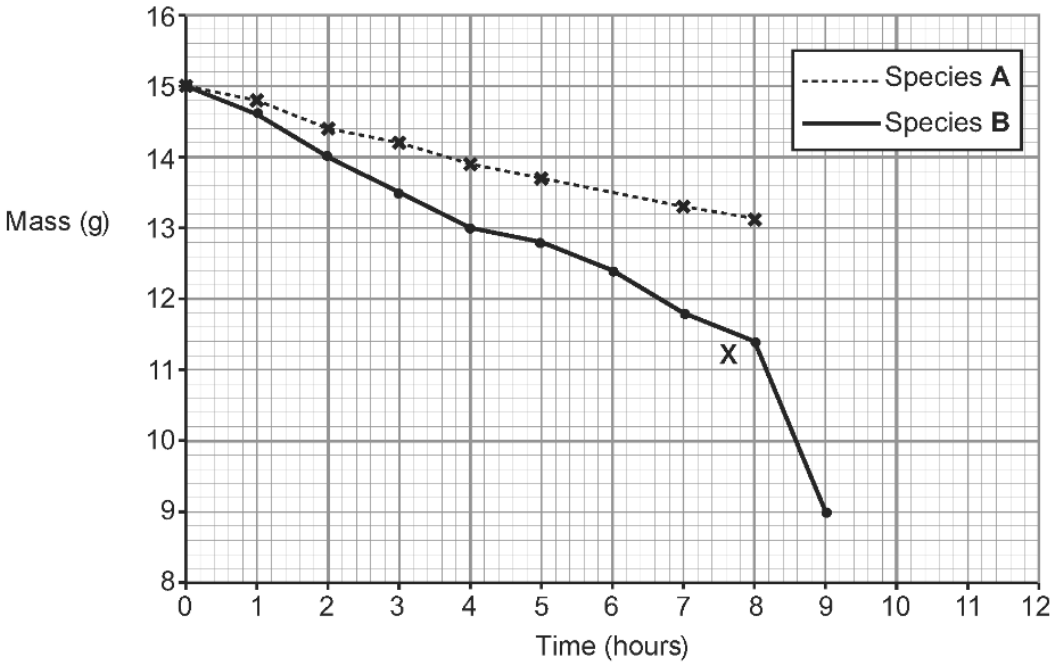
1. .....

2. .....

4. Shoots from two different species of plants, **A** and **B**, were placed in water in boiling tubes as shown below.



Both species were kept in the same conditions and their mass recorded at hourly intervals for eight hours. The results were recorded as line graphs shown below.



(a) (i) Use the data to help you calculate the difference in the loss in mass between species **A** and **B** at 8 hours. [1]

Difference in loss of mass = ... g

(ii) State the term given to the process responsible for this loss of mass in plants. [1]

.....

(iii) Suggest **two** reasons for the difference in loss of mass between the two different species, **A** and **B**. [2]

.....

.....

(c) What would you expect to happen to the rate of loss of mass if species **A** and **B** had roots? Give a reason for your answer. [2]

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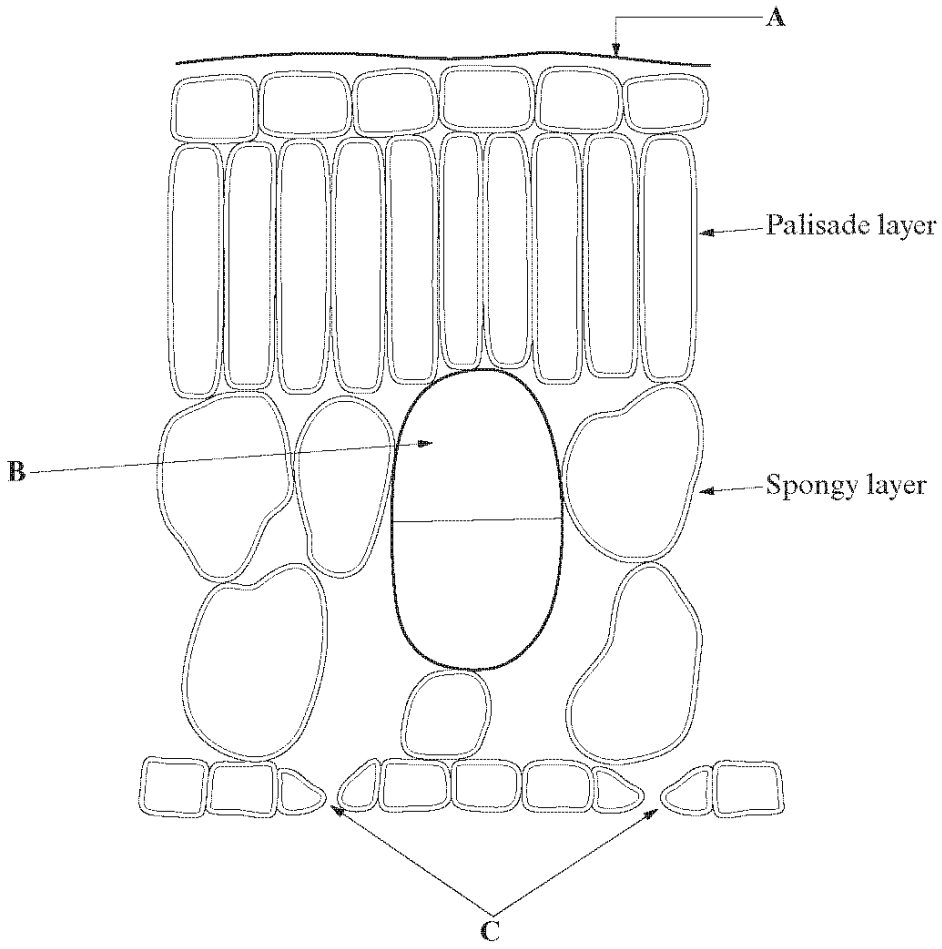
.....

5.

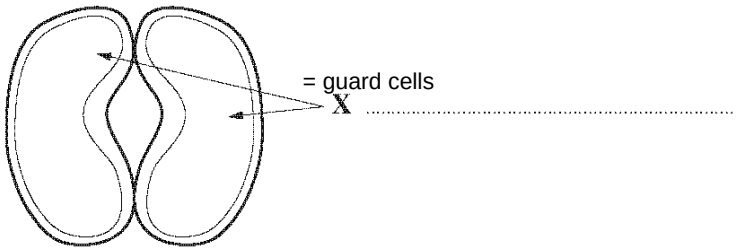
The diagram below shows a transverse section through a leaf.



(a) From the diagram above, complete the table below. [3]

Label	Name of structure	Function
A	.....	prevents water loss from the leaf
B	.....	transports water to all parts of the plant
C	.....	allows water vapour to pass out of the leaf

(b) The diagram below shows a surface view of structure **C** at high magnification.



(i) Label cells **X** on the diagram above. [1]

(ii) State the function of cells **X**. [1]

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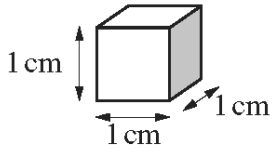
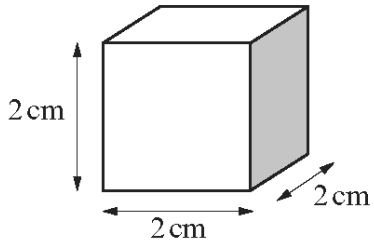
6.

An investigation was carried out to find the effect of surface area: volume ratio on the rate of absorption in plants.
Cubes of potato were cut to the following sizes.



Surface area = 6 cm^2

Volume = 1 cm^3



Surface area = 24 cm^2

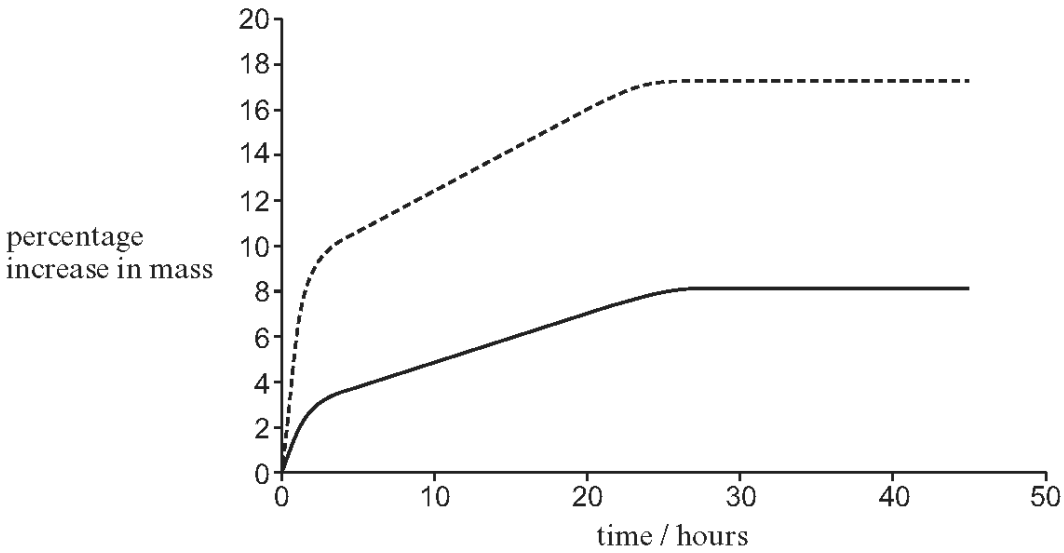
Volume = 8 cm^3

The cubes were carefully blotted dry, weighed and their masses recorded.

One cube, 2 cm × 2 cm × 2 cm, was put into a beaker and completely covered with distilled water.

Eight cubes, each measuring 1 cm × 1 cm × 1 cm, were put into another beaker and completely covered with distilled water.

At regular intervals for a period of 45 hours, the cubes were removed from the beakers, blotted dry, reweighed and then replaced into fresh distilled water. The percentage increase in mass was measured for the eight cubes of side 1 cm and the one cube of side 2 cm. The results are shown in the graphs below.



(iii) Use the evidence gained by the investigation to describe the importance of root hairs in the absorption of water from the soil. [3]

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(c) Name the process by which mineral salts are absorbed into the roots of plants. [1]

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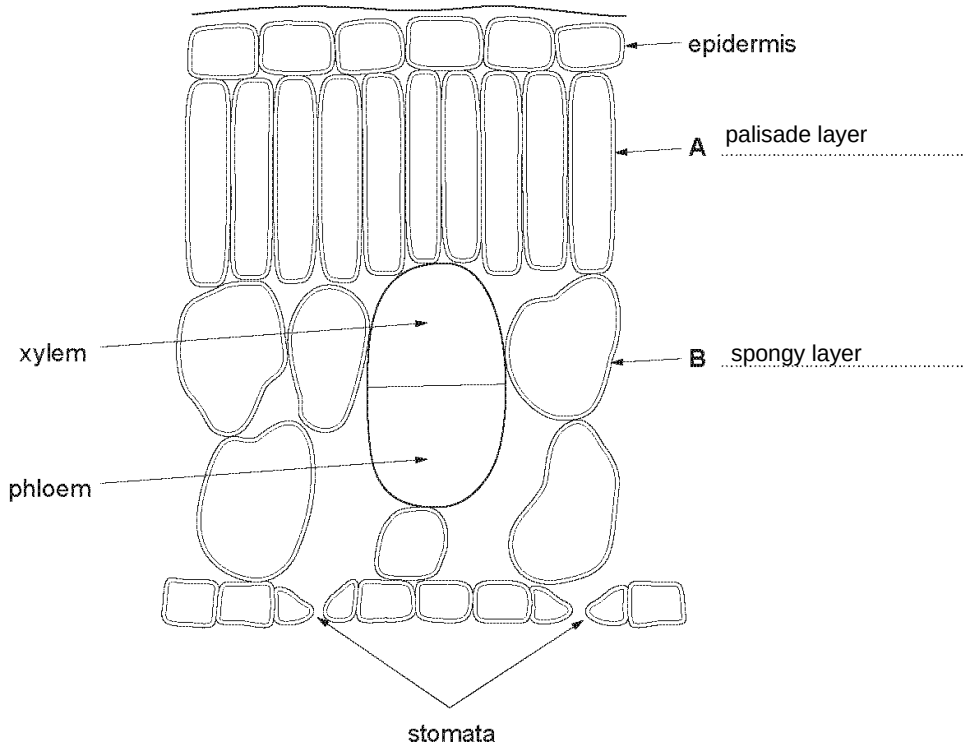
7.

The diagram below shows a transverse section through a leaf.



(b) (i) Name the process which occurs in layers **A** and **B** that produces sugars. [1]

.....

(ii) State the function of phloem. [1]

.....

.....

(c) State **one** function of the stomata. [1]

.....

8. The photograph below shows a tomato plant.

(a) Some of the sugar made in photosynthesis is transported to the tomato fruits.

State the name of the tissue in plants that transports sugar. [1]

.....

(ii) Siân carried out a trial to find out the effect of using Topgrow on the tomato plants.
She used tap water only on half the plants and diluted Topgrow on the rest.

What else should Siân have done to make sure that the trial was a fair test? [2]
Give **two** suggestions.

I. .....

II. .....

(iii) The table shows some of the results of the trial.

treatment	**mean yield (mean mass of tomatoes per plant) (kg)**	**mean number of tomatoes per plant**	**mean mass per tomato (g)**
tap water	4.8	40	120
Topgrow	5.2	65	.....

I. Complete the table above by calculating the mean mass per tomato (in g) for Topgrow. [1]