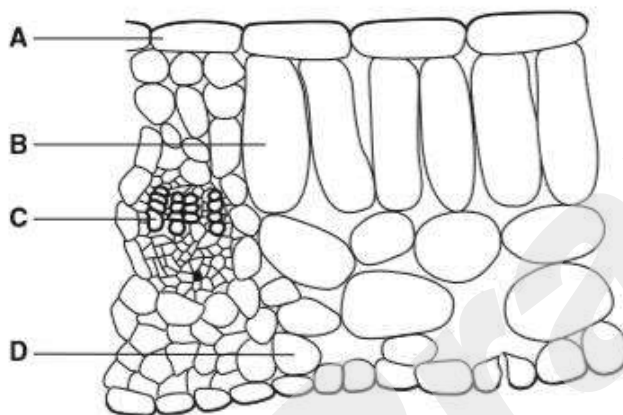


## Transport in plant

### IGCSE Biology Topical Questions Paper 1

May/June 2003

Use this diagram, which shows a cross-section through a leaf, to answer questions 14 and 15.



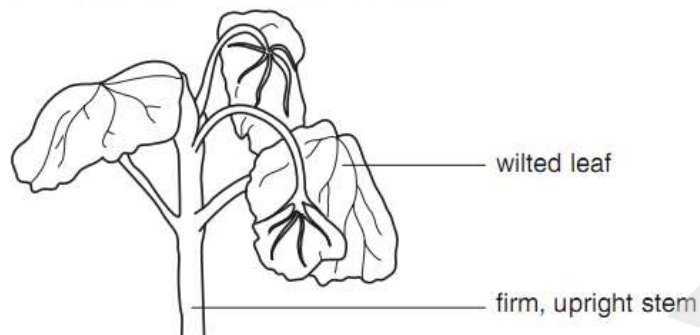
14 Which cell type absorbs the most carbon dioxide during the day?

15 A leafy shoot is placed in a solution of red dye.

After 30 minutes, which part of a leaf from this shoot will contain the red dye?

Oct/Nov 2003

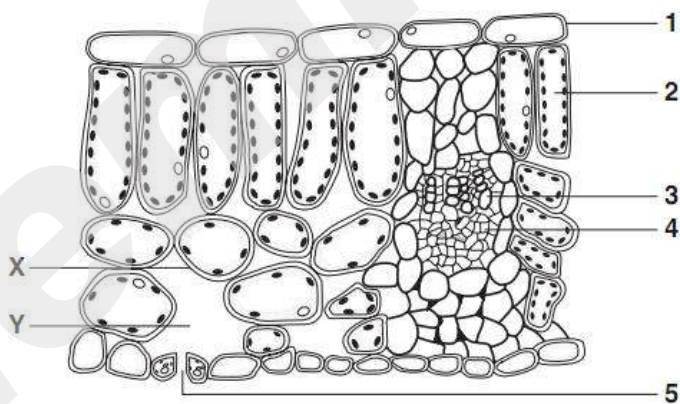
- 13 The diagram shows part of a plant with a woody stem, which does not have enough water. The leaves have wilted, but the stem is still firm and upright.



Why have the leaves wilted?

- A Photosynthesis cannot take place without water.
- B The cells in the leaves have lost their internal pressure.
- C The humidity in the air is too high.
- D The lignin in the leaves has become soft.

Use this diagram, which shows a section through a leaf, to answer questions 14 and 15.



14 What takes place in the structures indicated?

	transport of water to the cells of the leaf	use of water to make sugar	transport of sugar to the stem and root
<b>A</b>	4	1	5
<b>B</b>	3	2	4
<b>C</b>	3	1	4
<b>D</b>	4	2	5

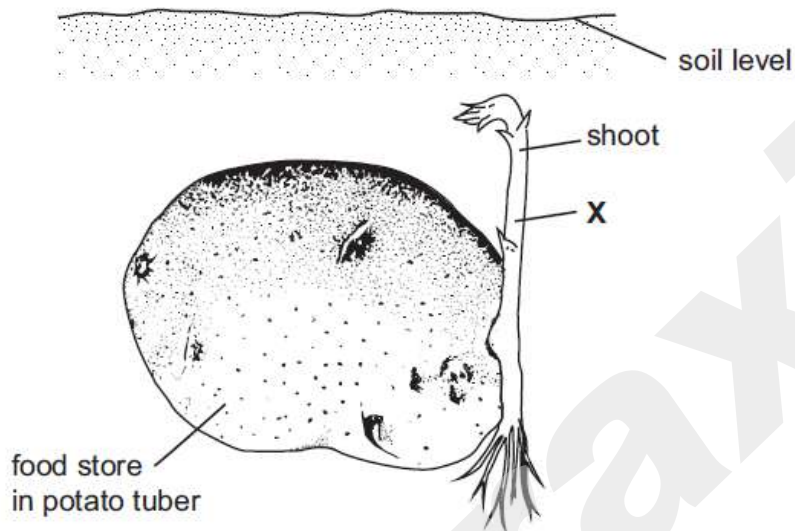
15 The leaf is losing water to the atmosphere.

What processes are occurring at **X** and **Y**?

	<b>X</b>	<b>Y</b>
<b>A</b>	diffusion	evaporation
<b>B</b>	evaporation	diffusion
<b>C</b>	osmosis	transpiration
<b>D</b>	transpiration	osmosis

May/June 2004

12 The diagram shows a shoot growing from a potato tuber.



What is being transported in the phloem cells at X?

- A starch downwards
- B starch upwards
- C sugars downwards
- D sugars upwards

Oct/Nov 2004

13 Which of the following, needed for protein synthesis, is carried into a leaf through the xylem?

- A carbon dioxide
- B nitrate ions
- C oxygen
- D sugar

May/June 2005

17 What is translocated from the leaves to the growing parts of the plant?

- A amino acids
- B carbon dioxide
- C starch
- D water vapour

Oct/Nov 2005

18 The table shows the rates of water uptake and transpiration of a plant during a morning.

time	09.00	10.00	11.00	12.00
rate of water uptake / cm <sup>3</sup> per hour	15	16	16	17
transpiration / cm <sup>3</sup> per hour	7	12	16	19

At what time does the plant show signs of wilting?

- A 09.00      B 10.00      C 11.00      D 12.00

May/June 2006

What happens to the limewater in **X** and in **Y**?

	<b>X</b>	<b>Y</b>
<b>A</b>	goes cloudy	goes cloudy
<b>B</b>	goes cloudy	stays clear
<b>C</b>	stays clear	goes cloudy
<b>D</b>	stays clear	stays clear

,a

**15** How is the rate of transpiration affected by decreasing temperature and by decreasing light intensity?

	decreasing temperature	decreasing light intensity
<b>A</b>	slower	slower
<b>B</b>	slower	faster
<b>C</b>	faster	slower
<b>D</b>	faster	faster

**17** The diagram shows a potted plant and the same plant 24 hours later.

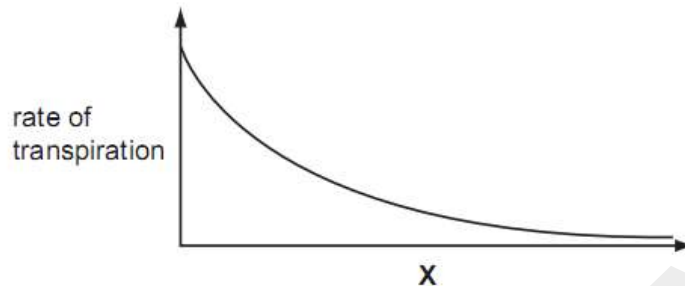


What causes the change in the appearance of the plant?

- A** Water moves from the leaves to stem.
- B** Water loss is greater than water uptake.
- C** Water uptake is equal to water loss.
- D** Water uptake is greater than water loss.

Oct/Nov 2006

14 The graph shows how the rate of transpiration is affected by X.



What is X?

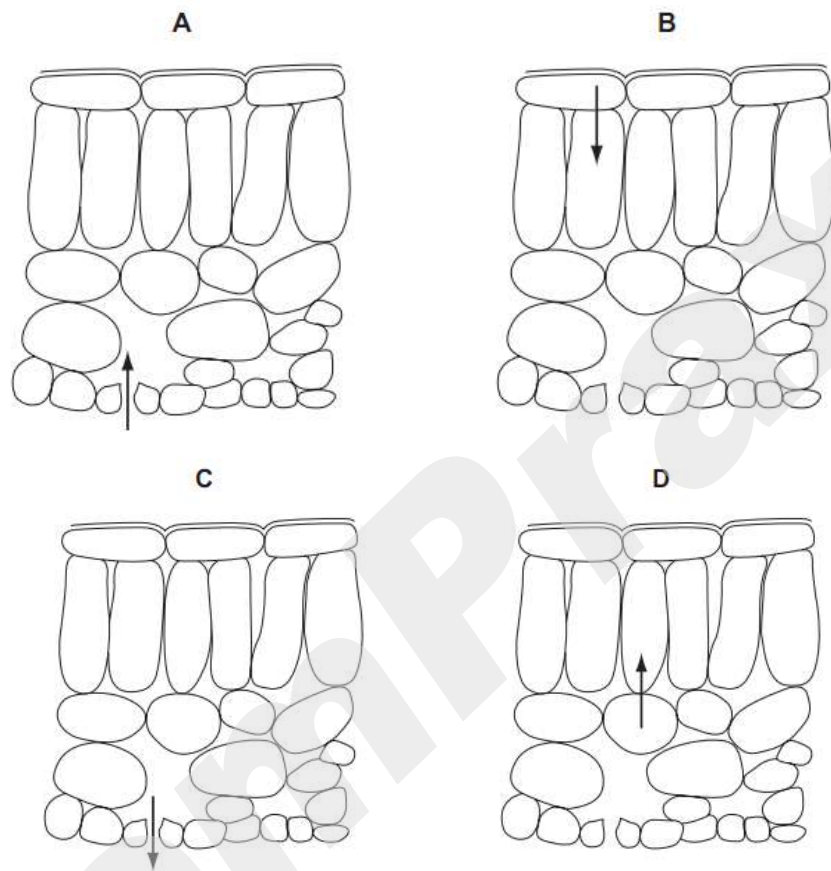
- A humidity
- B light intensity
- C soil moisture
- D temperature



May/June 2007

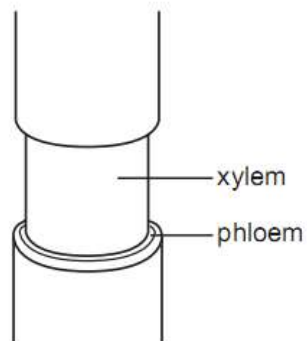
13 The diagrams show the arrangement of cells in a section of a green leaf.

Which arrow represents the diffusion of the most oxygen during bright sunlight?



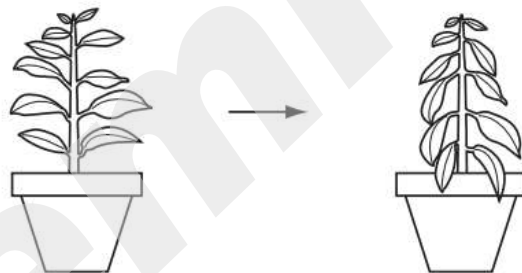


- 17 The diagram shows the stem of a plant. A strip of the outer tissue including the phloem has been removed.



How is transport in the plant affected?

- A Amino acids and sucrose cannot pass to the roots.
  - B Dissolved salts cannot pass to the leaves.
  - C Water cannot pass to the leaves.
  - D Water cannot pass to the roots.
- 18 The diagram shows how the appearance of a potted plant changes over a period of four days.



Which environmental conditions are most likely to cause this change?

	humidity	light intensity
A	high	high
B	high	low
C	low	high
D	low	low

Oct/Nov 2007

- 16 What shows the correct translocation of carbohydrate in a potato plant that is growing in bright sunlight?

	source of carbohydrate	type of carbohydrate translocated	destination of carbohydrate
<b>A</b>	leaves	glucose	tubers
<b>B</b>	leaves	sucrose	tubers
<b>C</b>	tubers	glucose	leaves
<b>D</b>	tubers	sucrose	leaves

- 18 Which conditions of humidity, light intensity and temperature make transpiration slowest?

	humidity / %	light intensity	temperature / °C
<b>A</b>	10	high	4
<b>B</b>	10	low	14
<b>C</b>	80	high	14
<b>D</b>	80	low	4

May/June 2008

- 17 In which state does water enter and leave a plant?

	enters	leaves
<b>A</b>	liquid	liquid
<b>B</b>	liquid	vapour
<b>C</b>	vapour	liquid
<b>D</b>	vapour	vapour

Oct/Nov 2008

14 Some liquid is collected from the xylem in the stem of a plant.

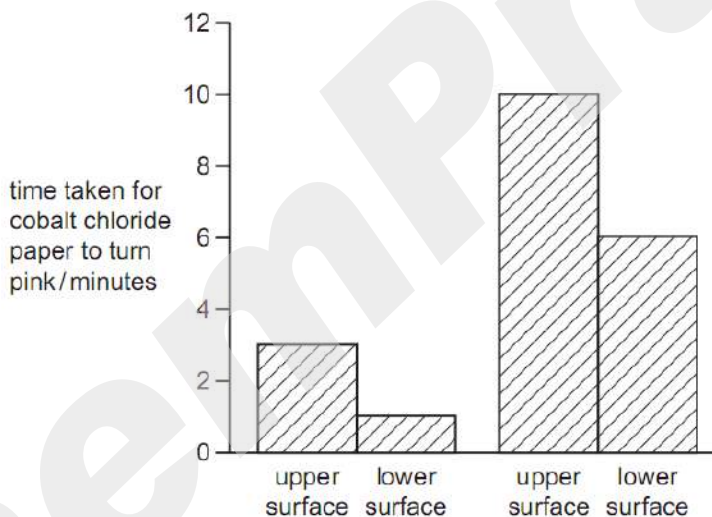
What is present in the liquid?

- A amino acids
- B inorganic ions
- C starch
- D sugar

May/June 2009

15 Cobalt chloride paper is blue when dry but turns pink when wet. Some blue cobalt chloride paper was fastened to the upper and lower surfaces of a leaf on a plant X and a leaf on plant Y.

The diagram shows the results of the experiment.



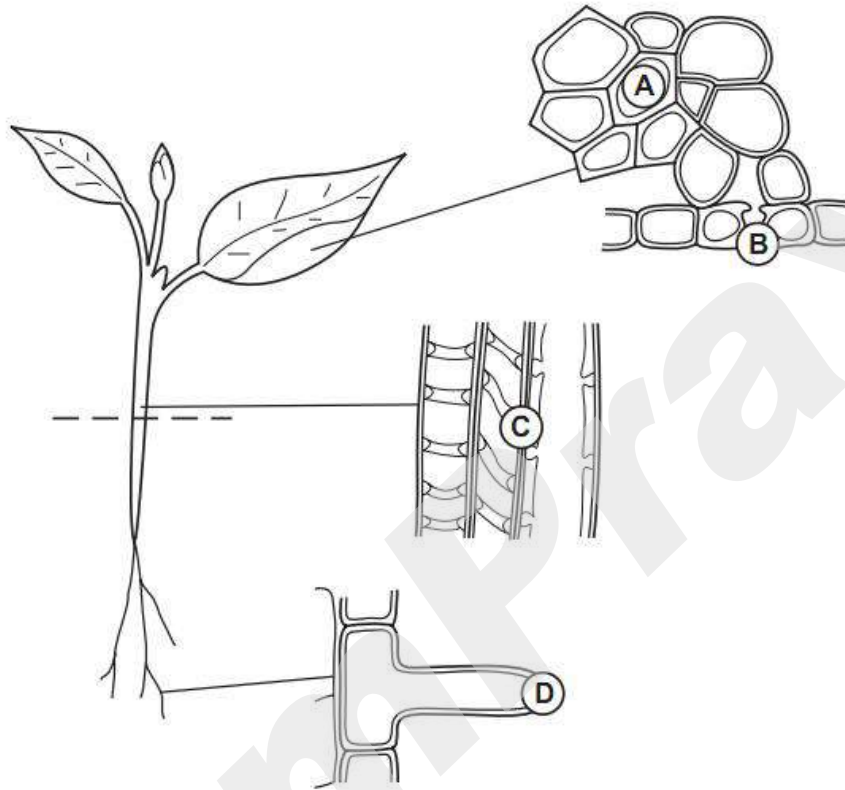
Through which leaf surface was water lost most quickly?

- A plant X, upper surface
- B plant X, lower surface
- C plant Y, upper surface
- D plant Y, lower surface

16 The diagrams show stages in the passage of water through a plant.

The circles are the starting points for arrows to show the direction in which the water moves.

Which circle **must** have an arrow pointing downwards **only**?



17 Translocation occurs in phloem tubes. Aphids feed on the contents of phloem tubes.

What type of food would be lacking in their diet?

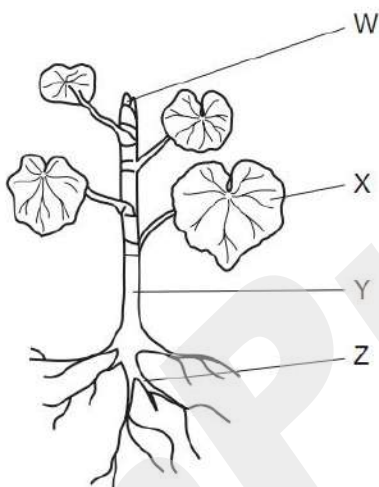
- A amino acid
- B fat
- C sucrose
- D water

Oct/Nov 2009

14 Which substances do root hairs take from the soil?

- A water and carbon dioxide
- B water and mineral ions
- C carbon dioxide and oxygen and mineral ions
- D carbon dioxide and oxygen and water

15 The diagram shows a plant.



What is the pathway taken by most of the water absorbed by this plant?

- A  $X \rightarrow Y \rightarrow Z$
- B  $W \rightarrow Y \rightarrow Z$
- C  $Z \rightarrow Y \rightarrow X$
- D  $Z \rightarrow Y \rightarrow W$