

Transport in plants

Question Paper 1

Level	IGCSE
Subject	Biology (0610/0970)
Exam Board	Cambridge International Examinations (CIE)
Topic	Transport in plants
Sub-Topic	
Booklet	Question Paper 1

Time Allowed: 24 minutes

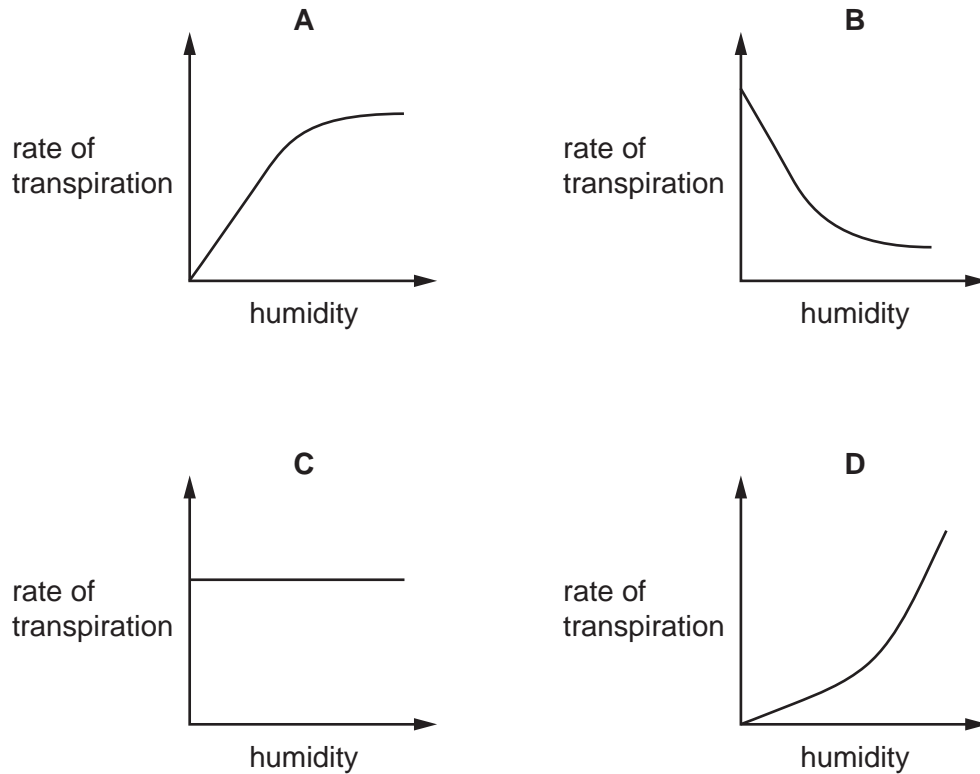
Score: /20

Percentage: /100

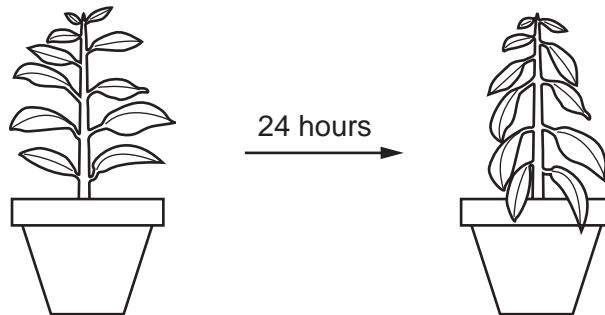
Grade Boundaries:

9	8	7	6	5	4	3	2	1
>85%	75%	68%	60%	53%	48%	40%	33%	<25%

1. Which graph shows most clearly what will happen to the rate of transpiration as humidity increases?



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

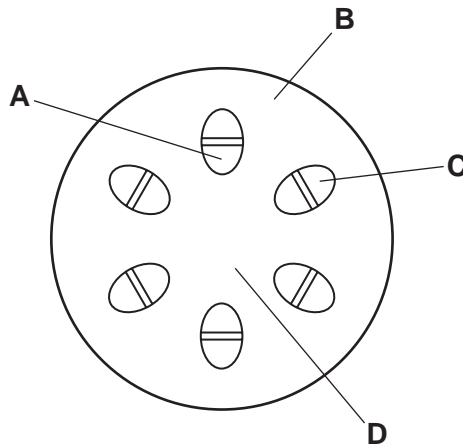
3. Which process is an example of translocation?
- A absorption of water by the roots and its movement through the xylem to the leaves
 - B loss of water from the leaves as it evaporates into the air
 - C movement of sucrose from the leaves through phloem to other parts of the plant
 - D the process by which plants use the food produced by photosynthesis to obtain energy

4. By which process is water lost from a leaf?

- A active transport
- B diffusion
- C osmosis
- D photosynthesis

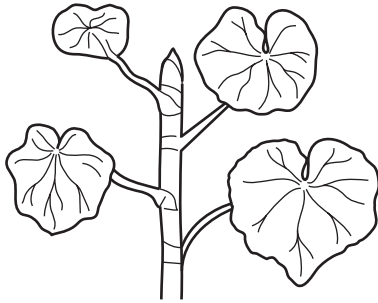
5. The lower end of a plant stem is placed in water coloured with red dye. After three hours, the stem is cut as shown in the diagram.

Which labelled region is stained red?

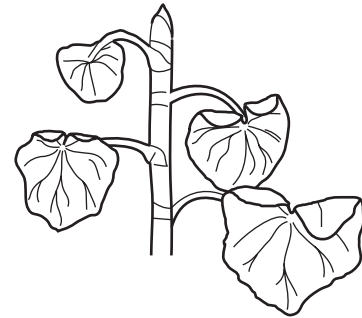


6. Which process is used to transport sucrose from the leaves of a plant to its flowers?
- A diffusion
 - B osmosis
 - C translocation
 - D transpiration
7. What is transported in the phloem and what is the direction of transport?
- A starch, up and down
 - B starch, up only
 - C sucrose, down and up
 - D sucrose, down only
8. In which order does water pass through the cells of a plant, as the water travels from the roots to a leaf?
- A mesophyll cells → root hair → root cortex → xylem
 - B root cortex → root hair → xylem → mesophyll cells
 - C root hair → mesophyll cells → root cortex → xylem
 - D root hair → root cortex → xylem → mesophyll cells

9. The diagram shows a plant shoot and the same shoot six hours later.



plant shoot

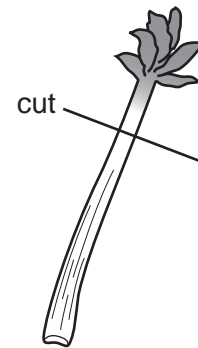
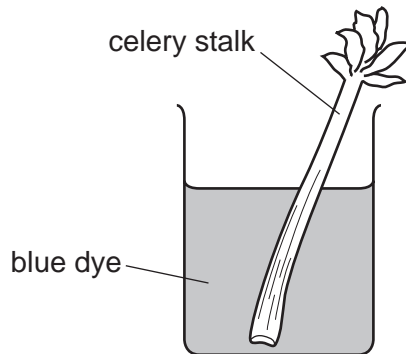


same shoot six hours later

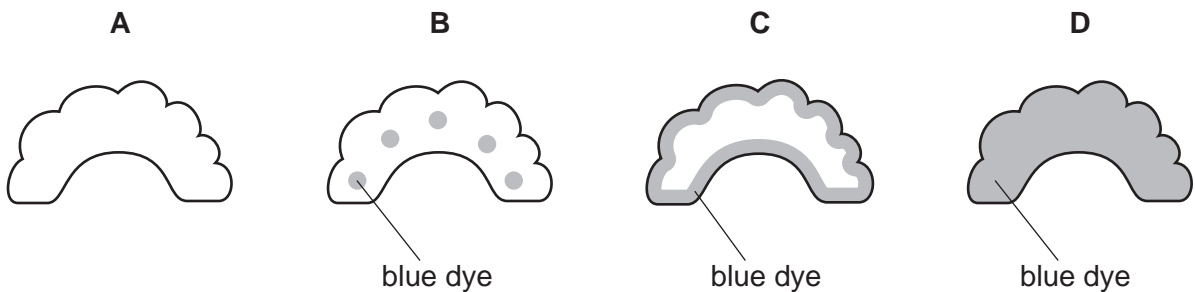
Which change in environmental conditions could cause this change in the shoot?

- A a decrease in available water
- B a decrease in light intensity
- C a decrease in wind speed
- D an increase in humidity

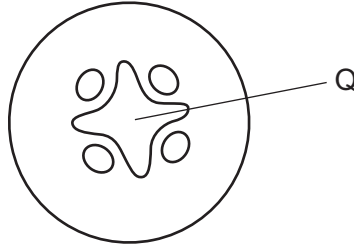
10. A celery stalk is placed in a beaker of blue dye. Once the dye reaches the leaves, the stalk is taken out and cut in half.



Which diagram shows the appearance of the cut end of the stalk?



11. The diagram shows a cross-section through a plant root.



Q shows the part that is stained red when the root is placed in water containing a red dye.

What is found at Q?

- A** guard cells
 - B** palisade cells
 - C** phloem
 - D** xylem
12. Which processes produce a continuous space for the flow of water in xylem vessels?

	break down of the cell walls between adjacent cells	removal of the cytoplasm in each cell
A	yes	yes
B	yes	no
C	no	yes
D	no	no

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

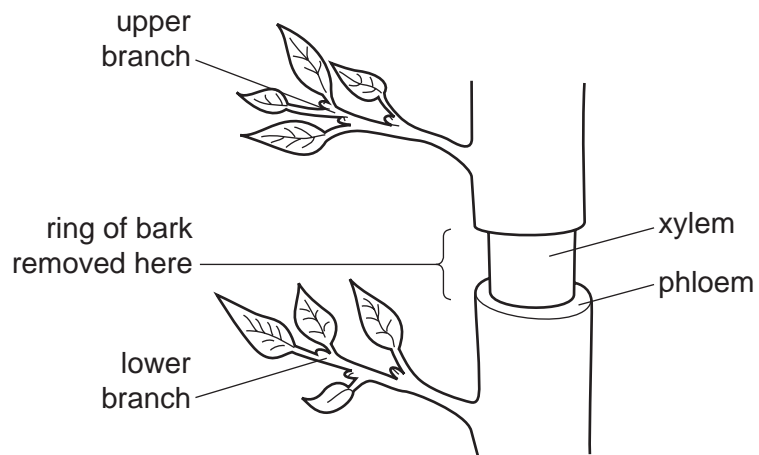
What is present in the liquid?

- A cellulose
- B inorganic ions
- C starch
- D sugar

14. What is a function of phloem?

- A translocation
- B transpiration
- C storage of food
- D support

15. The diagram shows part of the trunk of a small tree with a ring of bark removed. Removing the ring of bark takes away phloem but leaves the xylem intact.



What effect will removing the bark have on the two branches?

	lower branch		upper branch	
	growth	leaves	growth	leaves
A	normal	normal	normal	wilted
B	normal	wilted	normal	normal
C	reduced	normal	normal	normal
D	reduced	wilted	reduced	wilted

16. The table shows some characteristics of four different plants.

The plants are growing in the same environmental conditions.

Which plant will have the highest rate of transpiration?

	number of leaves on plant	average surface area of one leaf /cm ²	average density of stomata on leaves /per mm ⁻²	average diameter of one stoma /μm
A	12	42	248	19
B	25	20	250	16
C	35	52	275	18
D	36	45	150	15

17. A decrease in which factor normally causes transpiration rate to increase?

- A** humidity
- B** light intensity
- C** stomatal opening
- D** temperature

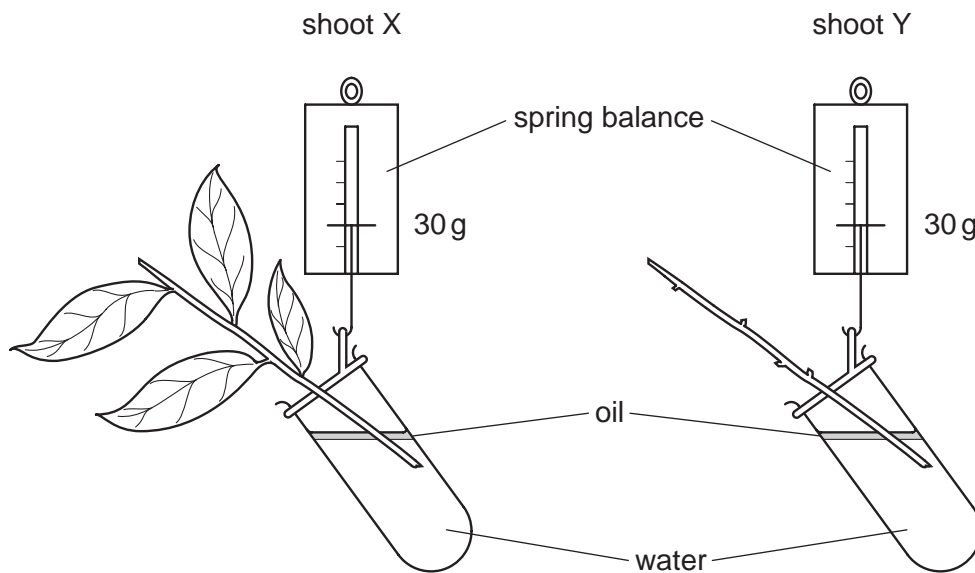
18. What is the path of water through a plant?

- A** cortex cells → xylem → stomata → roots
- B** root hair → xylem → mesophyll cells → stomata
- C** roots → cortex cells → stomata → phloem
- D** roots → root hair → stomata → xylem

19. In which order does water pass through these tissues in a plant?

- A mesophyll → xylem → root cortex
- B root cortex → mesophyll → xylem
- C root cortex → xylem → mesophyll
- D xylem → mesophyll → root cortex

20. The diagram shows two shoots at the start of an experiment on transpiration.



What are the likely readings on the spring balances after three days?

	shoot X	shoot Y
A	30g	30g
B	30g	25g
C	25g	30g
D	25g	25g