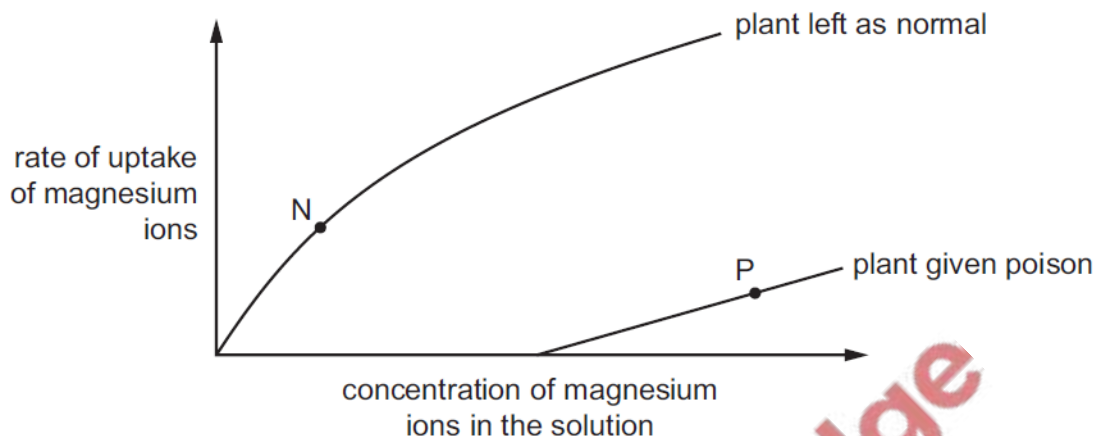


Plant nutrition – 2020 O Level 5090

1. Nov/2020/Paper_11/No.3

An experiment measured the rate at which plants take up magnesium ions from solution. One plant was given a poison that stops respiration. Another plant was left as normal. The graph shows the results.



How are the magnesium ions being absorbed by the plants at points N and P?

	point N	point P
A	active transport	active transport
B	active transport	diffusion
C	diffusion	active transport
D	diffusion	diffusion

2. Nov/2020/Paper_11/No.5

Which row correctly shows the number of molecules, for each substance used and produced, during photosynthesis?

	substances used	number of molecules	substances produced	number of molecules
A	CO ₂ H ₂ O	1 1	C ₆ H ₁₂ O ₆ O ₂	1 1
B	CO ₂ H ₂ O	1 6	C ₆ H ₁₂ O ₆ O ₂	6 1
C	CO ₂ H ₂ O	1 6	C ₆ H ₁₂ O ₆ O ₂	6 6
D	CO ₂ H ₂ O	6 6	C ₆ H ₁₂ O ₆ O ₂	1 6

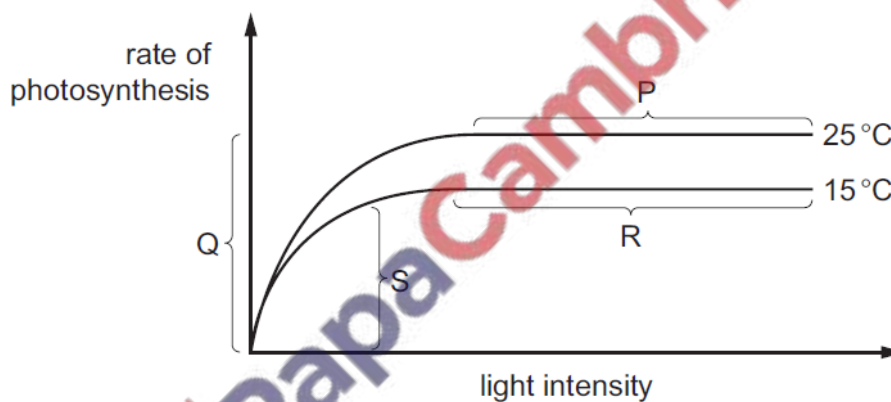
3. Nov/2020/Paper_11/No.6

How do carbon dioxide and water enter a leaf?

	carbon dioxide	water
A	diffusion	active transport
B	diffusion	transpiration pull
C	osmosis	active transport
D	osmosis	transpiration pull

4. Nov/2020/Paper_11/No.7

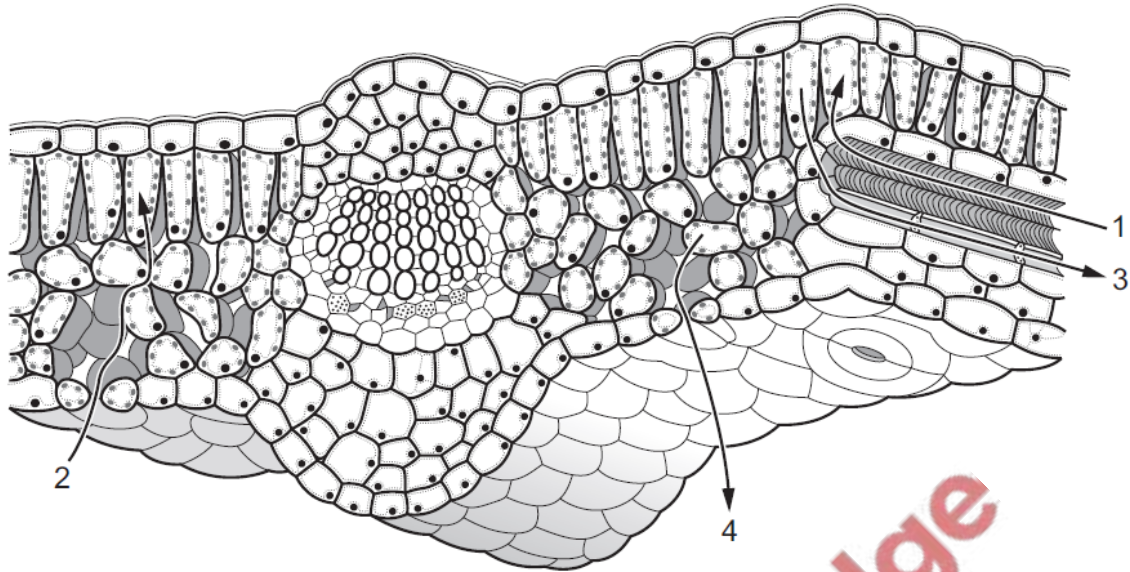
The graph shows how the rate of photosynthesis varies with light intensity at two different temperatures. Other variables are kept the same.



In which sections of the graph is light intensity limiting the rate of photosynthesis?

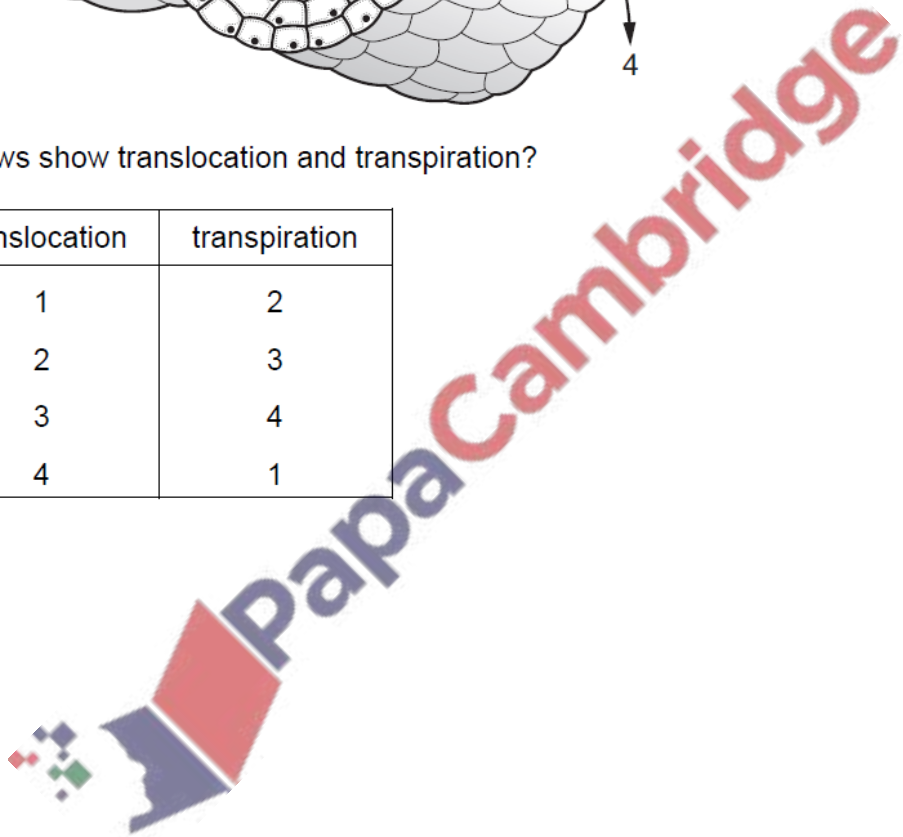
- A** P and R **B** Q and S **C** R and Q **D** S and P

5. Nov/2020/Paper_11/No.12
The diagram represents part of a leaf.



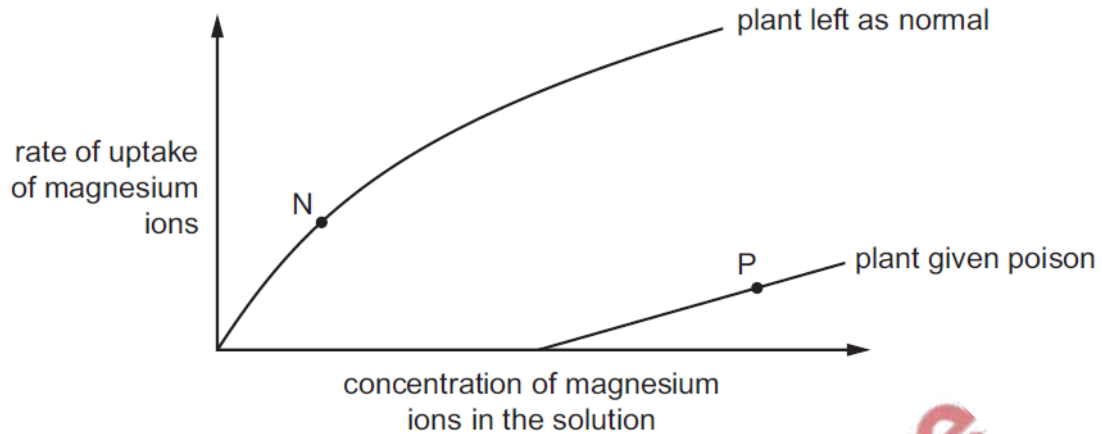
Which arrows show translocation and transpiration?

	translocation	transpiration
A	1	2
B	2	3
C	3	4
D	4	1



6. Nov/2020/Paper_12/No.3

An experiment measured the rate at which plants take up magnesium ions from solution. One plant was given a poison that stops respiration. Another plant was left as normal. The graph shows the results.



How are the magnesium ions being absorbed by the plants at points N and P?

	point N	point P
A	active transport	active transport
B	active transport	diffusion
C	diffusion	active transport
D	diffusion	diffusion

7. Nov/2020/Paper_12/No.5

Which part of a leaf absorbs and uses carbon dioxide from the air?

- A cuticle
- B mesophyll
- C phloem
- D xylem

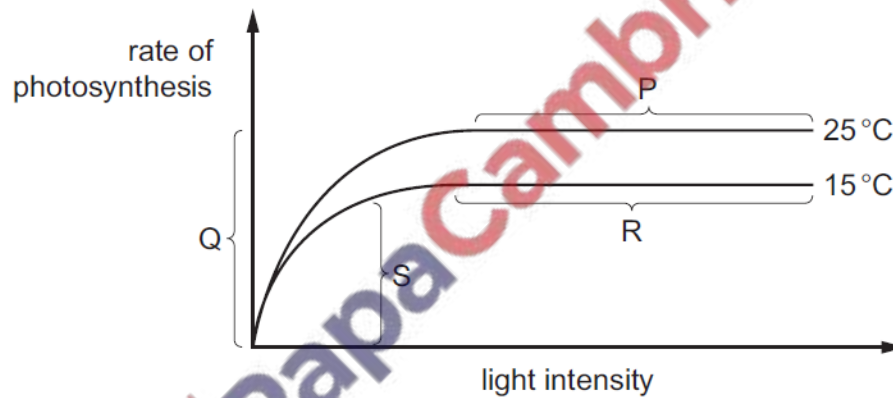
8. Nov/2020/Paper_12/No.6

How do carbon dioxide and water enter a leaf?

	carbon dioxide	water
A	diffusion	active transport
B	diffusion	transpiration pull
C	osmosis	active transport
D	osmosis	transpiration pull

9. Nov/2020/Paper_12/No.7

The graph shows how the rate of photosynthesis varies with light intensity at two different temperatures. Other variables are kept the same.

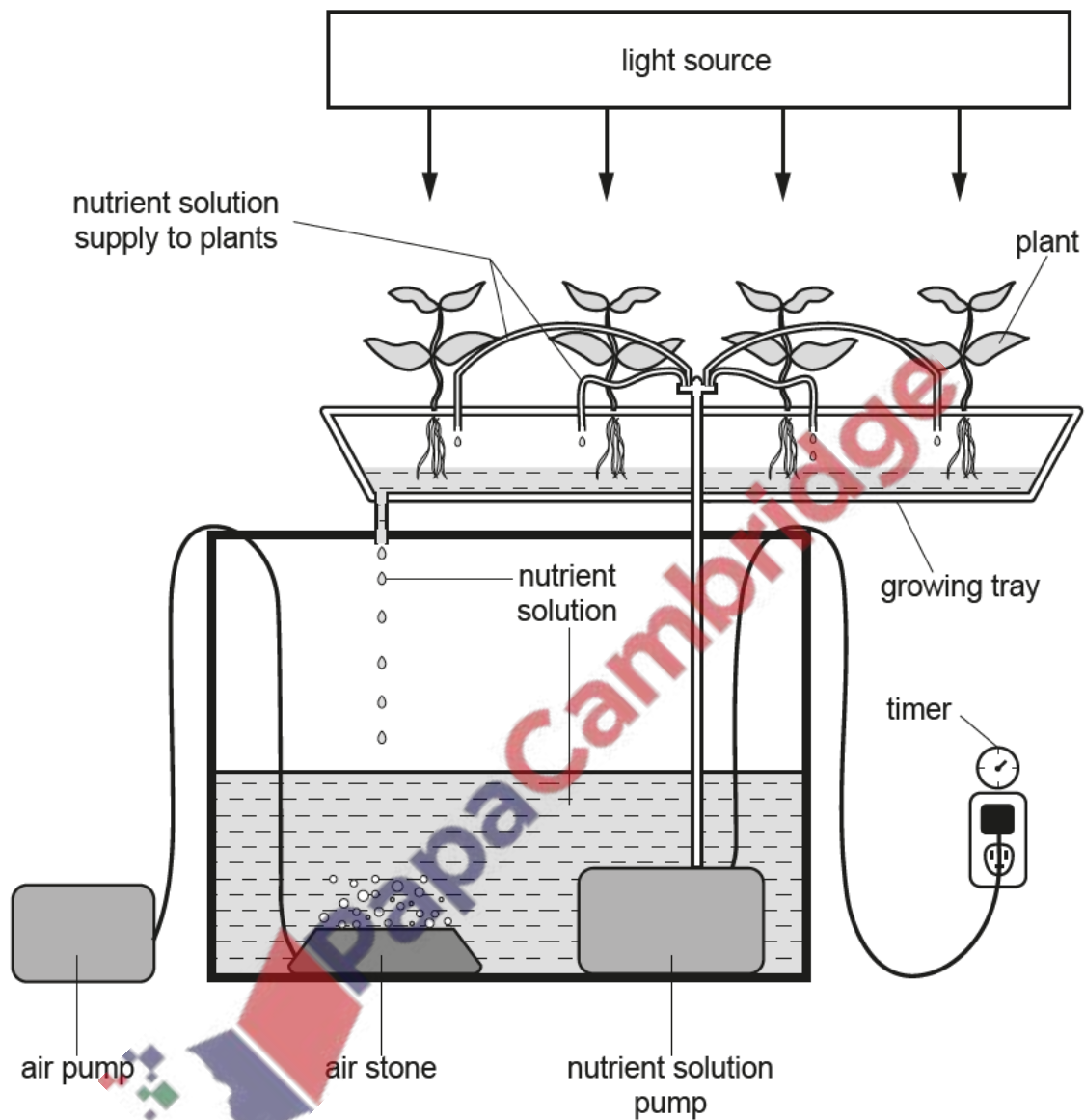


In which sections of the graph is light intensity limiting the rate of photosynthesis?

- A** P and R **B** Q and S **C** R and Q **D** S and P

Hydroponics is a technique used to grow plants without soil.

The diagram shows plants being grown using hydroponics.



(a) The leaves of the plants are provided with a source of light for photosynthesis.

State, in **either** words **or** symbols, the equation for photosynthesis.

..... [2]

(b) The roots of the plants are provided with a nutrient solution. The nutrient solution contains magnesium ions.

Air is pumped through the nutrient solution using an air stone that contains many very small holes.

(i) Explain the advantage to the cells of the plant roots of pumping air through the nutrient solution using the air stone.

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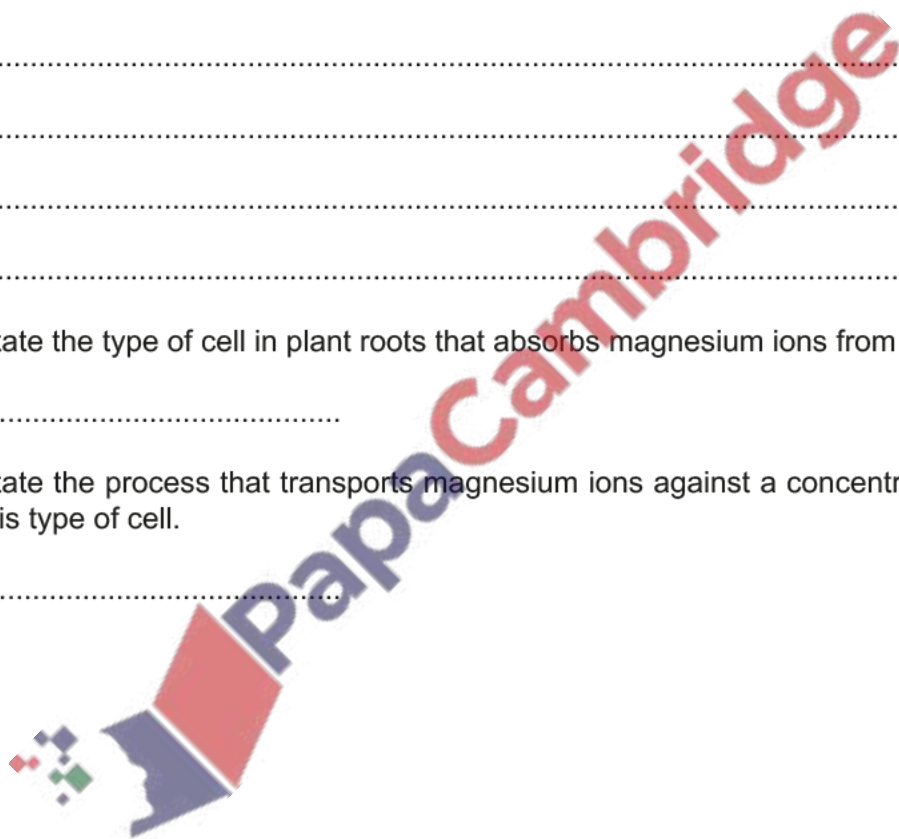
..... [4]

(ii) State the type of cell in plant roots that absorbs magnesium ions from the solution. [1]

.....

(iii) State the process that transports magnesium ions against a concentration gradient into this type of cell. [1]

.....



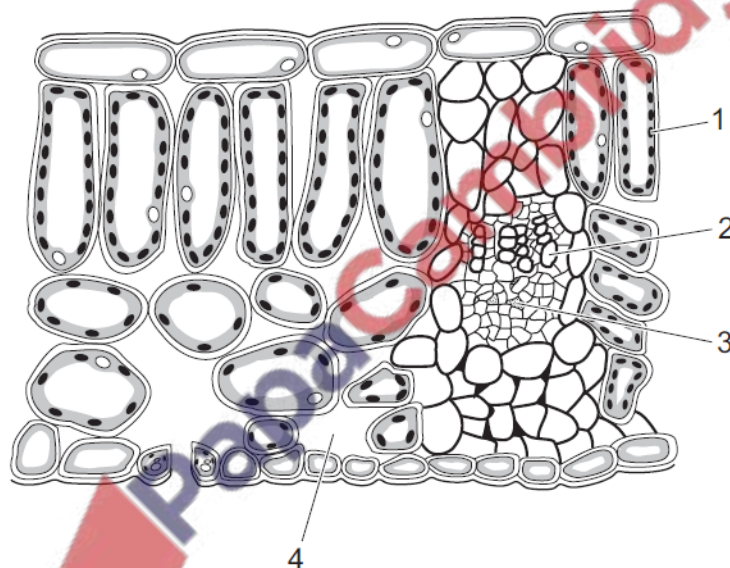
11. Jun/2020/Paper_11/No.2

By which process does water vapour pass out of a leaf?

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

12. Jun/2020/Paper_11/No.5

The diagram shows a transverse section through a leaf.

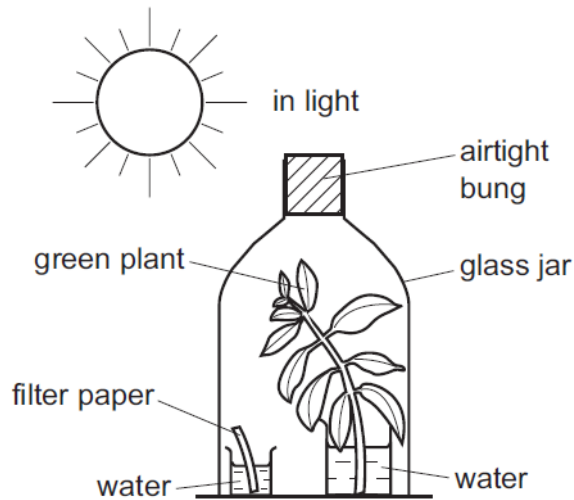


What are the functions of the parts labelled 1, 2, 3 and 4?

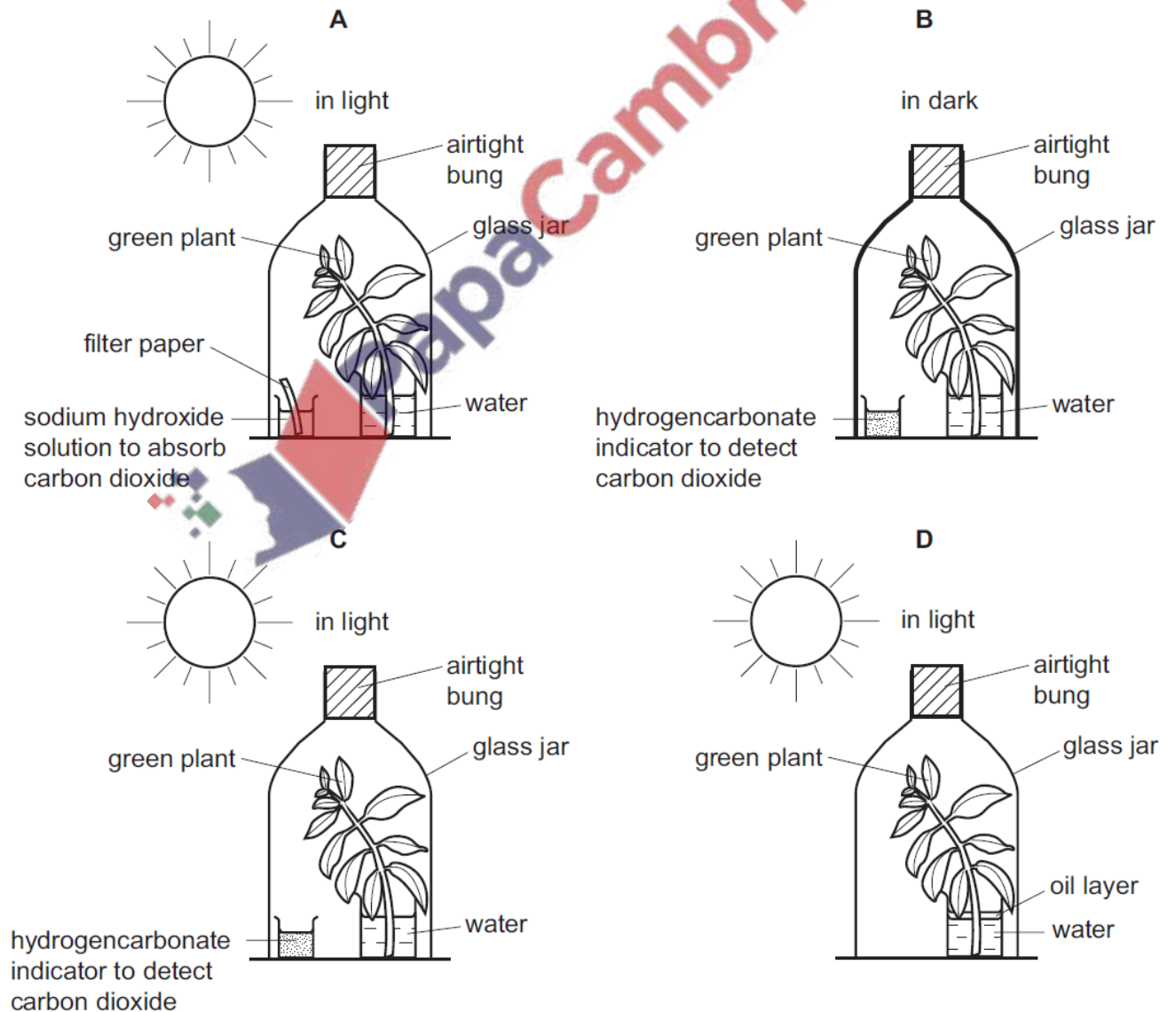
	1	2	3	4
A	gaseous exchange	transporting sucrose	transporting water	photosynthesis
B	gaseous exchange	transporting water	transporting sucrose	photosynthesis
C	photosynthesis	transporting sucrose	transporting water	gaseous exchange
D	photosynthesis	transporting water	transporting sucrose	gaseous exchange

13. Jun/2020/Paper_11/No.6

The diagram shows a green plant photosynthesising under a glass jar. This was used as a control experiment in a laboratory investigation.

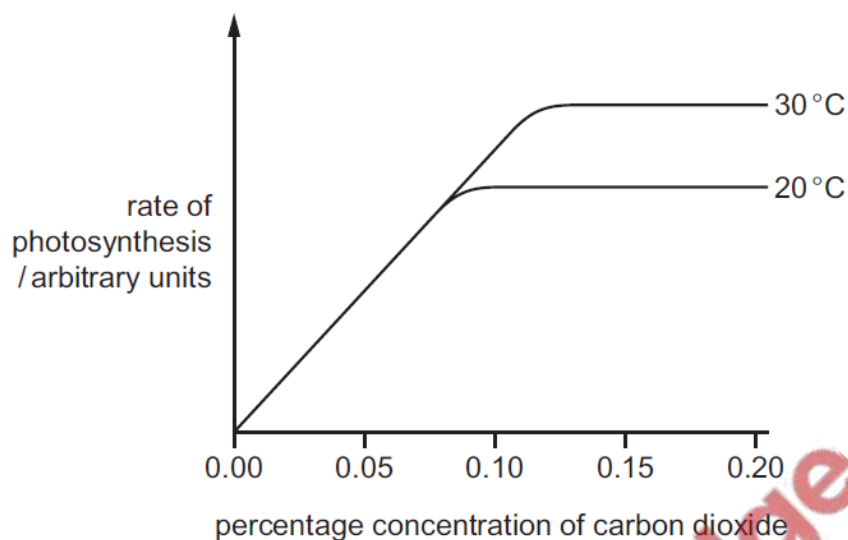


Which diagram shows the experiment carried out to investigate the need for carbon dioxide in photosynthesis?



14. Jun/2020/Paper_11/No.7

The graph shows the rate of photosynthesis in a plant in full sunlight at two different temperatures and different concentrations of carbon dioxide.



At normal atmospheric carbon dioxide concentrations, what limits the rate of photosynthesis?

- A carbon dioxide concentration
- B light intensity
- C temperature
- D water availability

15. Jun/2020/Paper_11/No.11

Which feature of root hairs suggests that they take up ions from the soil by active transport?

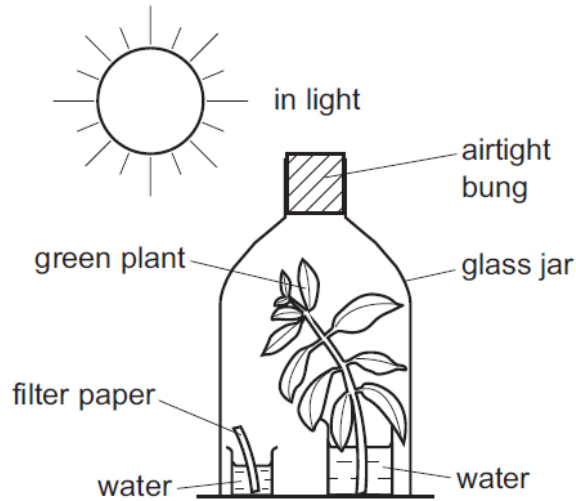
- A Their cell membranes are partially permeable.
- B They have a large surface area.
- C They have a lower water potential than the soil.
- D They take up ions more slowly in low oxygen concentrations.

16. Jun/2020/Paper_12/No.2

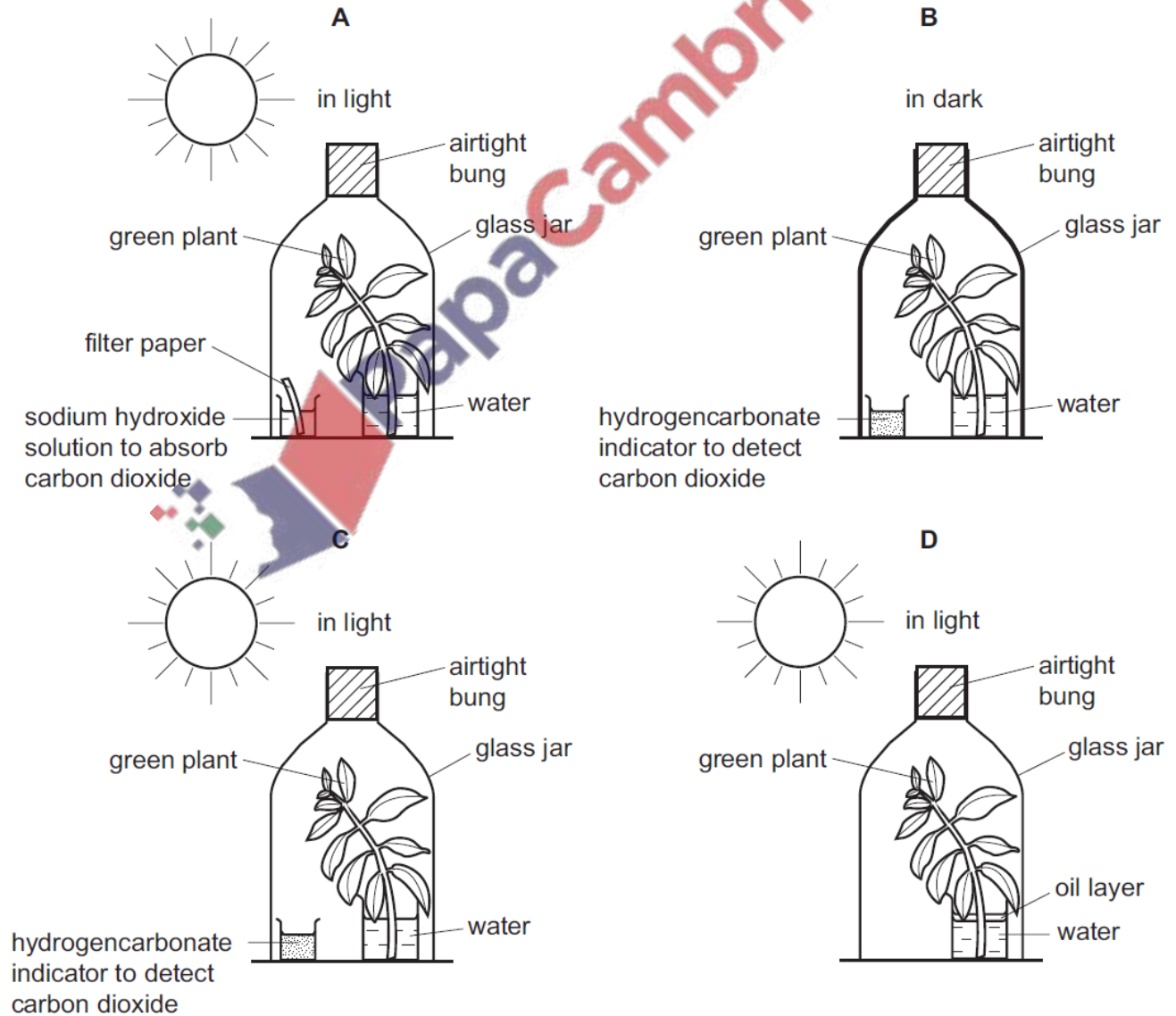
Which movement of a substance in plants is an energy-consuming process?

- A absorption of carbon dioxide by a palisade cell
- B absorption of oxygen by a mesophyll cell
- C nitrate uptake by root hair cells
- D transport of water up through the xylem

The diagram shows a green plant photosynthesising under a glass jar. This was used as a control experiment in a laboratory investigation.

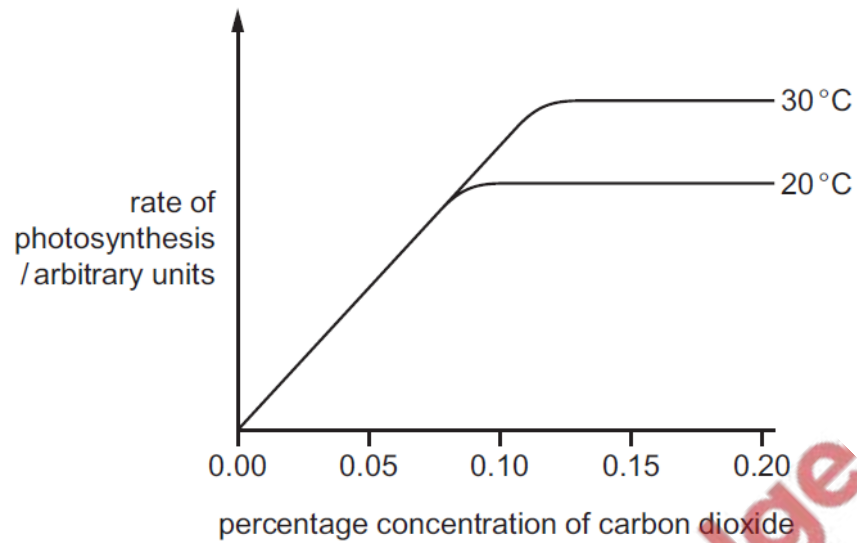


Which diagram shows the experiment carried out to investigate the need for carbon dioxide in photosynthesis?



18. Jun/2020/Paper_12/No.7

The graph shows the rate of photosynthesis in a plant in full sunlight at two different temperatures and different concentrations of carbon dioxide.



At normal atmospheric carbon dioxide concentrations, what limits the rate of photosynthesis?

- A carbon dioxide concentration
- B light intensity
- C temperature
- D water availability

