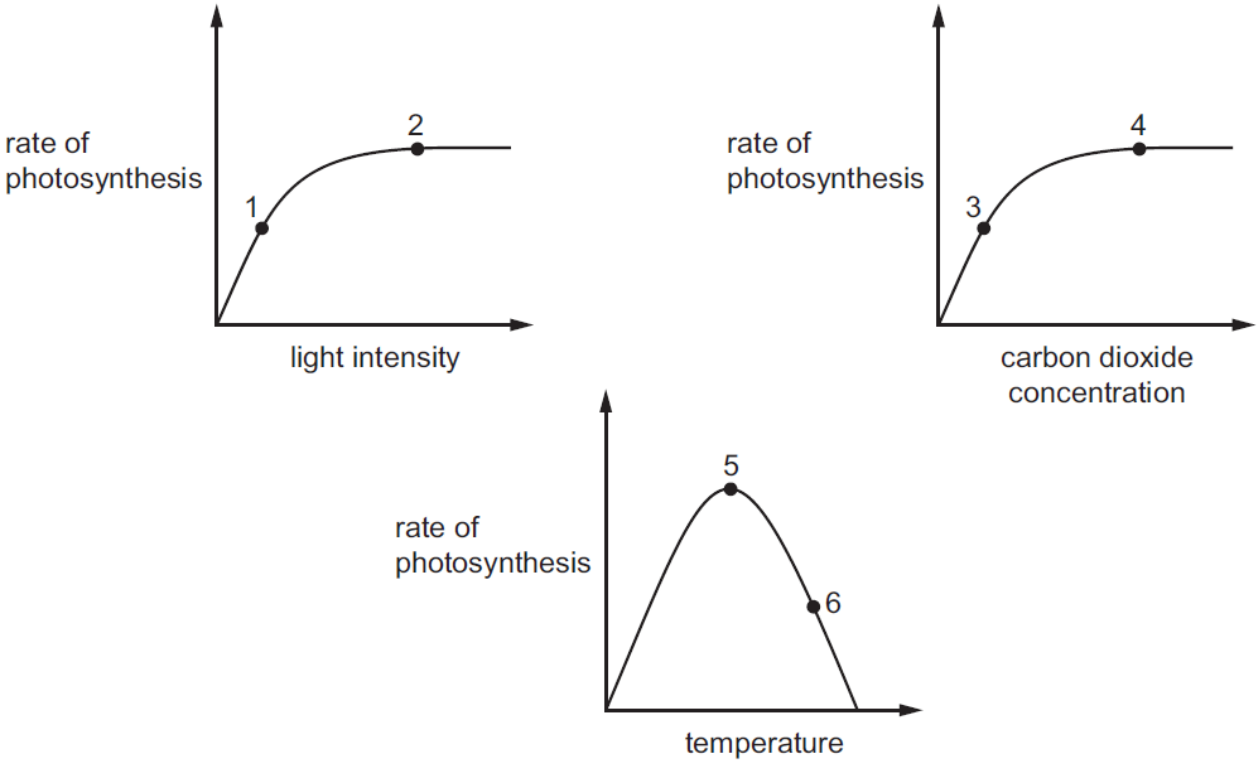
Plant nutrition – 2021 O Level 5090

1. Nov/2021/Paper_11/No.5

The graphs show factors affecting the rate of photosynthesis.



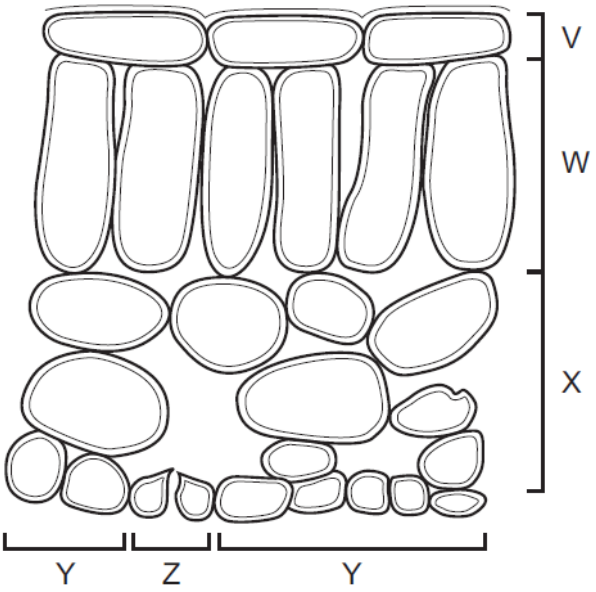
At which points on the graphs could the rate of photosynthesis be limited by light intensity?

A 1, 3 and 6 **B** 1, 4 and 5 **C** 2, 3 and 5 **D** 2, 4 and 6

2. Nov/2021/Paper_11/No.6

The diagram shows the arrangement of cells inside a green leaf. Different types of cells are indicated by the brackets.

No cell contents are shown.



Which types of cells contain chloroplasts?

A V, W and X **B** V, W and Y **C** W, X and Y **D** W, X and Z

3. Nov/2021/Paper_11/No.7

Why do newly germinated seeds fail to grow into healthy plants if they lack magnesium ions?

A Magnesium ions are a necessary component of all proteins.

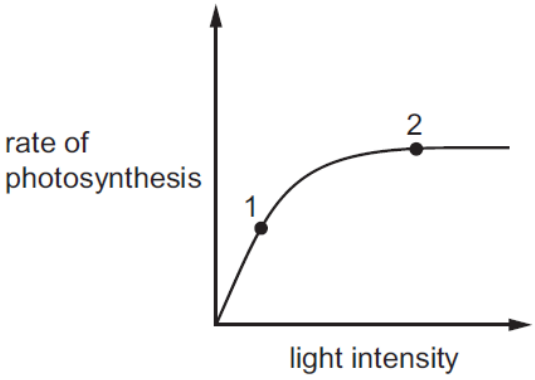
B Magnesium ions are needed to convert chlorophyll to starch.

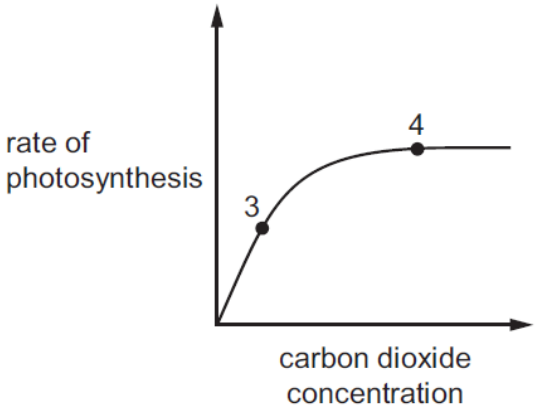
C Magnesium ions are needed to form cell walls.

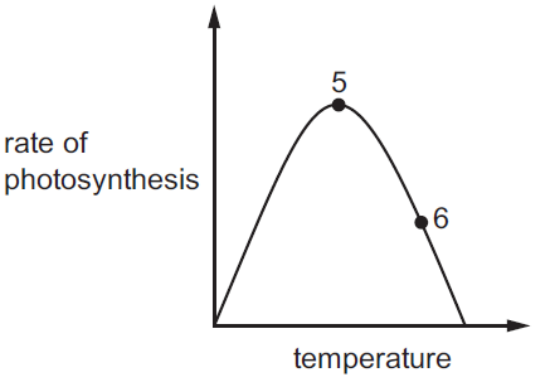
D Magnesium ions are needed to form chlorophyll molecules.

4. Nov/2021/Paper_12/No.5

The graphs show factors affecting the rate of photosynthesis.







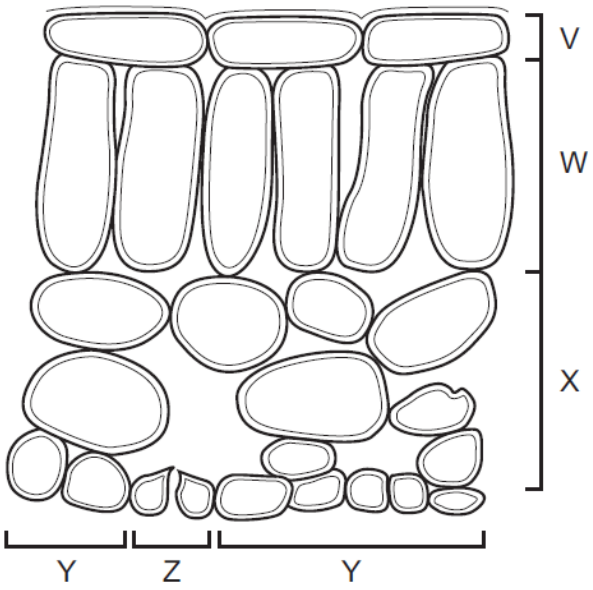
At which points on the graphs could the rate of photosynthesis be limited by carbon dioxide concentration?

A 1, 3 and 5 **B** 1, 4 and 6 **C** 2, 3 and 5 **D** 2, 4 and 6

5. Nov/2021/Paper_12/No.6

The diagram shows the arrangement of cells inside a green leaf. Different types of cells are indicated by the brackets.

No cell contents are shown.



Which types of cells contain chloroplasts?

A V, W and X **B** V, W and Y **C** W, X and Y **D** W, X and Z

6. Nov/2021/Paper_12/No.7

What will happen to a plant that does **not** receive enough magnesium ions from the soil?

A It will have elongated stems and yellow leaves.

B It will have elongated stems and green leaves.

C It will have stunted growth and yellow leaves.

D It will have stunted growth and green leaves.

7. Nov/2021/Paper_21/No.2

A farmer is growing a crop of tomato plants.

(a) The tomato plants carry out photosynthesis.

Describe the process of photosynthesis.

.....

.....

.....

.....

..... [3]

(b) The farmer grows the tomato plants in a glasshouse instead of in an open field.

(i) Suggest reasons why this is an advantage to the farmer.

.....

.....

.....

.....

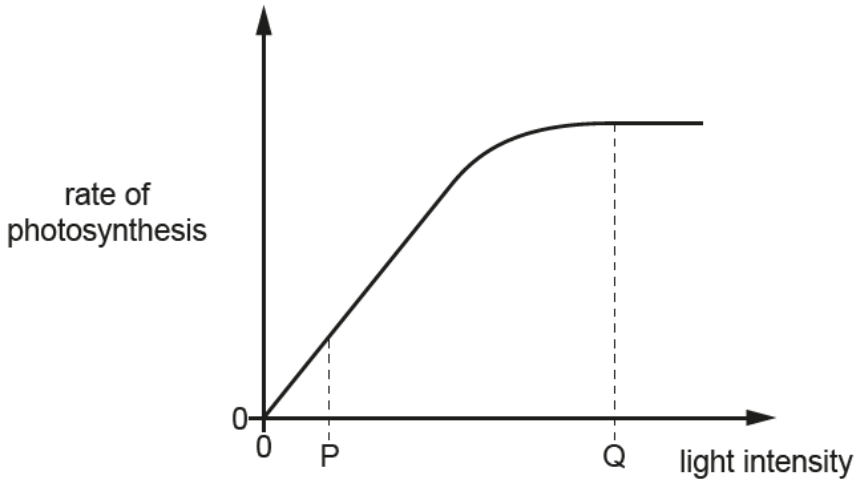
..... [3]

(ii) Suggest **one** disadvantage, other than cost, of growing plants in this way.

.....

..... [1]

(c) The graph shows how the rate of photosynthesis can vary with light intensity when all other environmental conditions are kept the same.



(i) Explain how this graph shows that light intensity is the limiting factor for photosynthesis at light intensity P but not at light intensity Q.

.....

.....

.....

..... [2]

(ii) Name **one** environmental condition that could be limiting photosynthesis at light intensity Q.

..... [1]

[Total: 10]

8. Jun/2021/Paper_11/No.7

Plants growing in soil lacking magnesium ions have poor growth.

What causes their poor growth?

A They cannot form cellulose for new cell walls.

B They cannot form chlorophyll for photosynthesis.

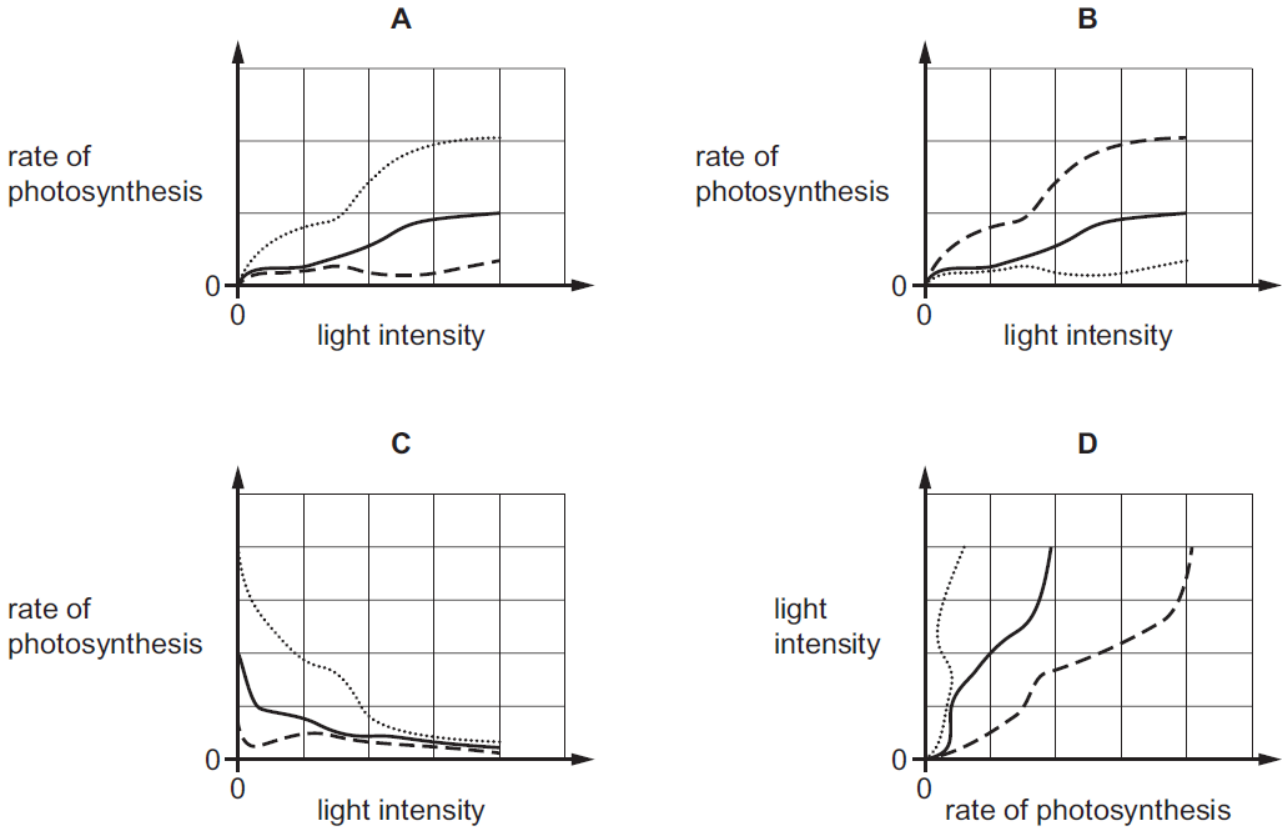
C They cannot produce amino acids to form proteins.

D They cannot take in mineral ions from the soil.

9. Jun/2021/Paper_11/No.5

An investigation was carried out into the effects of light intensity and carbon dioxide concentration on the rate of photosynthesis.

Which graph shows the results of this investigation?



10. Jun/2021/Paper_11/No.6

What describes the upper cuticle of a leaf?

A a permeable layer allowing water to enter the leaf

B a single layer of cells containing many chloroplasts

C a single layer of transparent cells allowing light to enter the leaf

D a thin non-cellular layer preventing water loss from the leaf