

6.1 Photosynthesis

Name: _____ Class: _____ Date: _____

Total: 9 marks

Objective

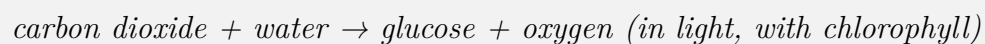
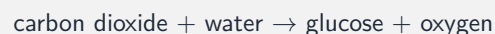
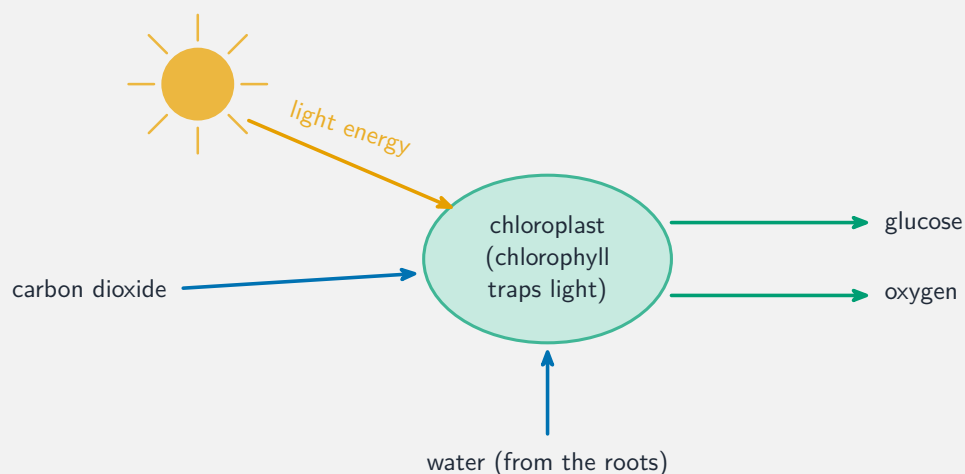
Build the skills to answer exam questions on **photosynthesis** 光合作用—the equation, the role of **chlorophyll** 叶绿素, uses of glucose, minerals, and **limiting factors** 限制因素.

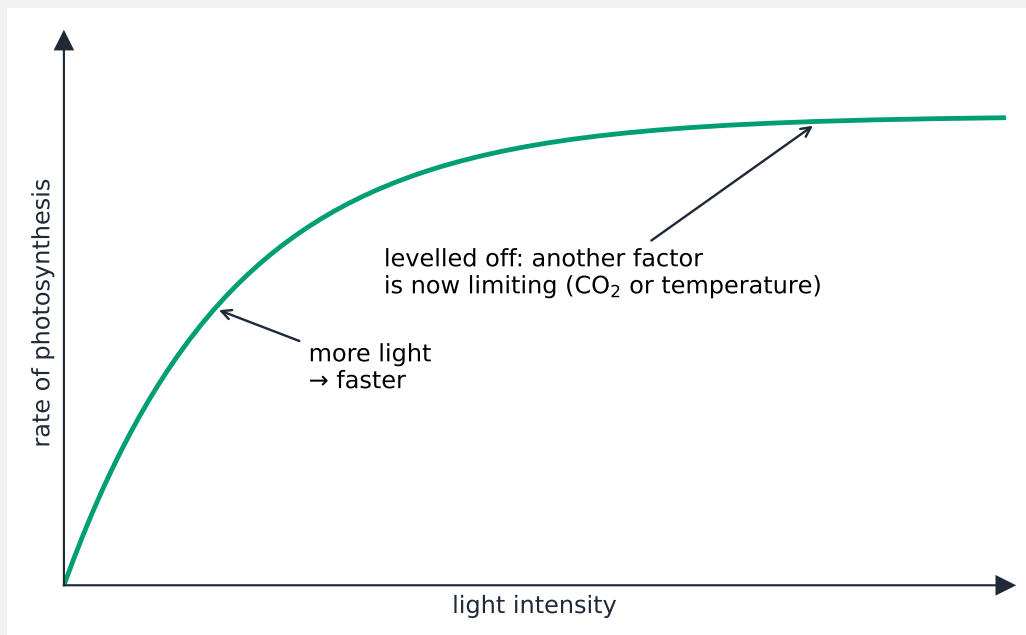
You must be able to:

- write the word (and balanced) equation for photosynthesis
- state the uses of glucose and the roles of nitrate and magnesium ions
- describe how light, CO₂ and temperature affect the rate

1 Worked examples

■ Equation and rate





More light → faster, until another factor becomes limiting

- glucose → starch (store), cellulose (walls), respiration, sucrose (transport).
- nitrate → amino acids; magnesium → chlorophyll.

2 Practice

2.1 Write the word equation for photosynthesis.

[2]

2.2 State the role of magnesium ions in a plant.

[1]

3 Exam-style questions

3.1 Photosynthesis can only take place where there is light and:

[1]

- A nitrate
- B chlorophyll
- C oxygen
- D protein

3.2 A graph shows photosynthesis rate rising with light intensity, then levelling off.

(a) Explain why the rate levels off at high light intensity. [2]

(b) Name one other factor that could then be limiting. [1]

3.3 State two uses a plant makes of the glucose produced in photosynthesis. [2]

4 Go further

You are now ready for the real exam questions on this subtopic. Open the **6.1 Photosynthesis** past-paper sheet in the Library, or try these in **Practice mode**:

- 0610/21 N25 —Q8 (photosynthesis)
- 0610/23 N25 —Q8 (rate / limiting factors)

Solutions

2.1 carbon dioxide + water → glucose + oxygen.

2.2 needed to make chlorophyll.

3.1 B. Photosynthesis needs chlorophyll (and light).

3.2 (a) another factor is now limiting; e.g. CO₂ concentration or temperature is in short supply.

(b) carbon dioxide concentration (or temperature).

3.3 any two of: stored as starch; made into cellulose; used in respiration; converted to sucrose for transport.