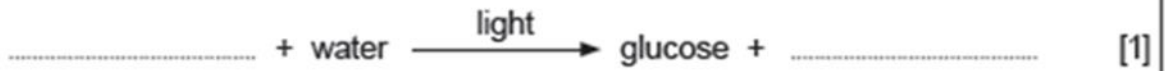


# Foundation tier Plants and photosynthesis

1 (a)

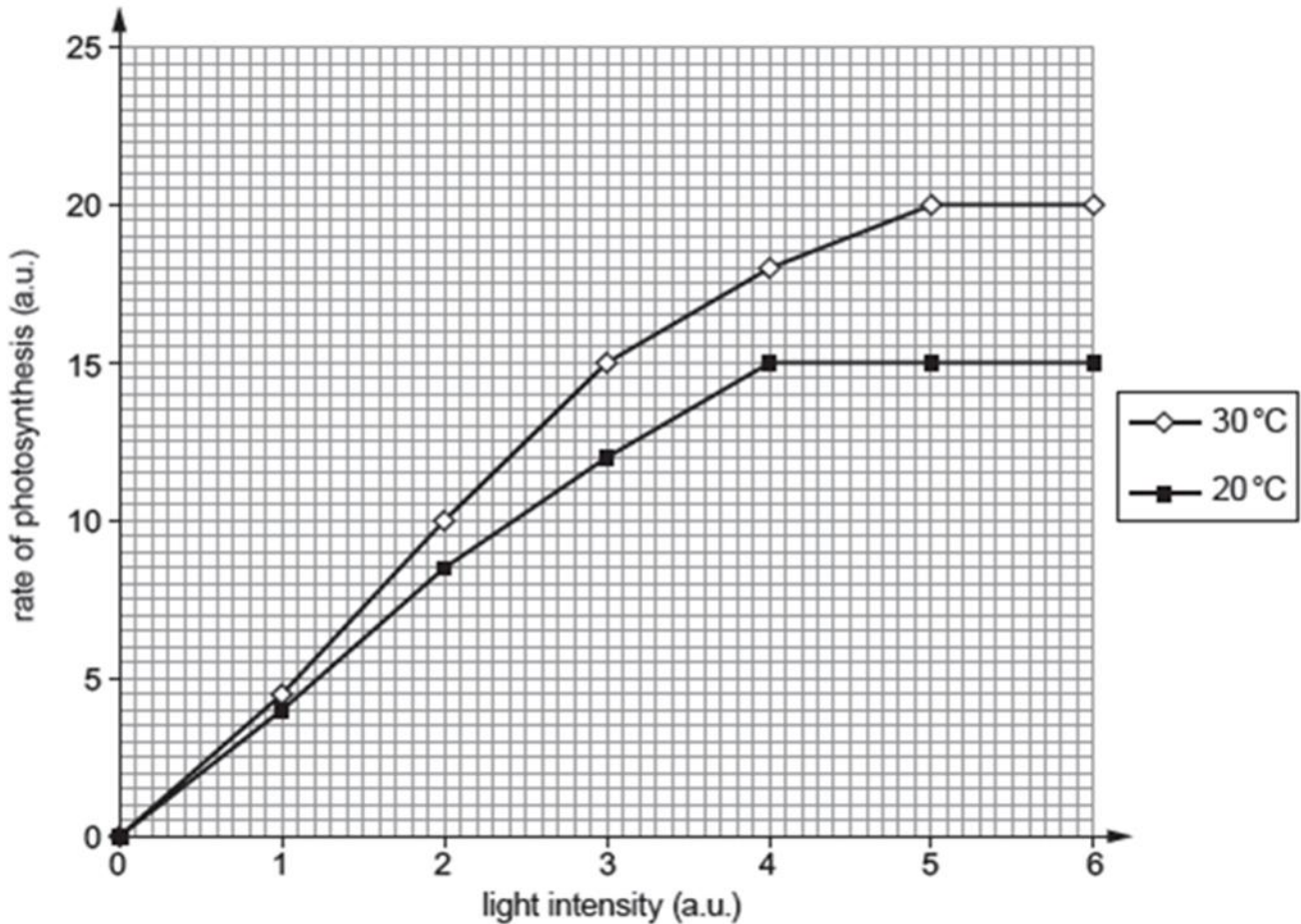
- (a) (i) Complete the following equation for photosynthesis in green plants.



- (ii) Name the chemical substance which absorbs the light needed for photosynthesis. [1]

.....

- (b) A scientist investigated the rate of photosynthesis at different light intensities and temperatures. The results are shown in the graph.



Use the graph to:

- (i) Describe in detail how light intensity affected the rate of photosynthesis at 20°C. [2]

.....  
.....

- (ii) Calculate the difference in the rate of photosynthesis between 20 °C and 30 °C at a light intensity of 3.5 a.u. [2]

only

difference in rate of photosynthesis ..... a.u.

- (iii) Name **one other** environmental factor which can affect the rate of photosynthesis. [1]

.....

- (c) Complete the table to show **two** ways in which plants use the glucose produced in photosynthesis. [2]

substance produced from glucose	how the substance is used in a green plant
.....	storage
cellulose	.....

- 2 A plant was destarched. A leaf on the plant was treated as shown in diagram M below. The plant was then placed in bright sunlight for 6 hours. The leaf was removed and tested for starch. The result is shown in diagram N.

Diagram M

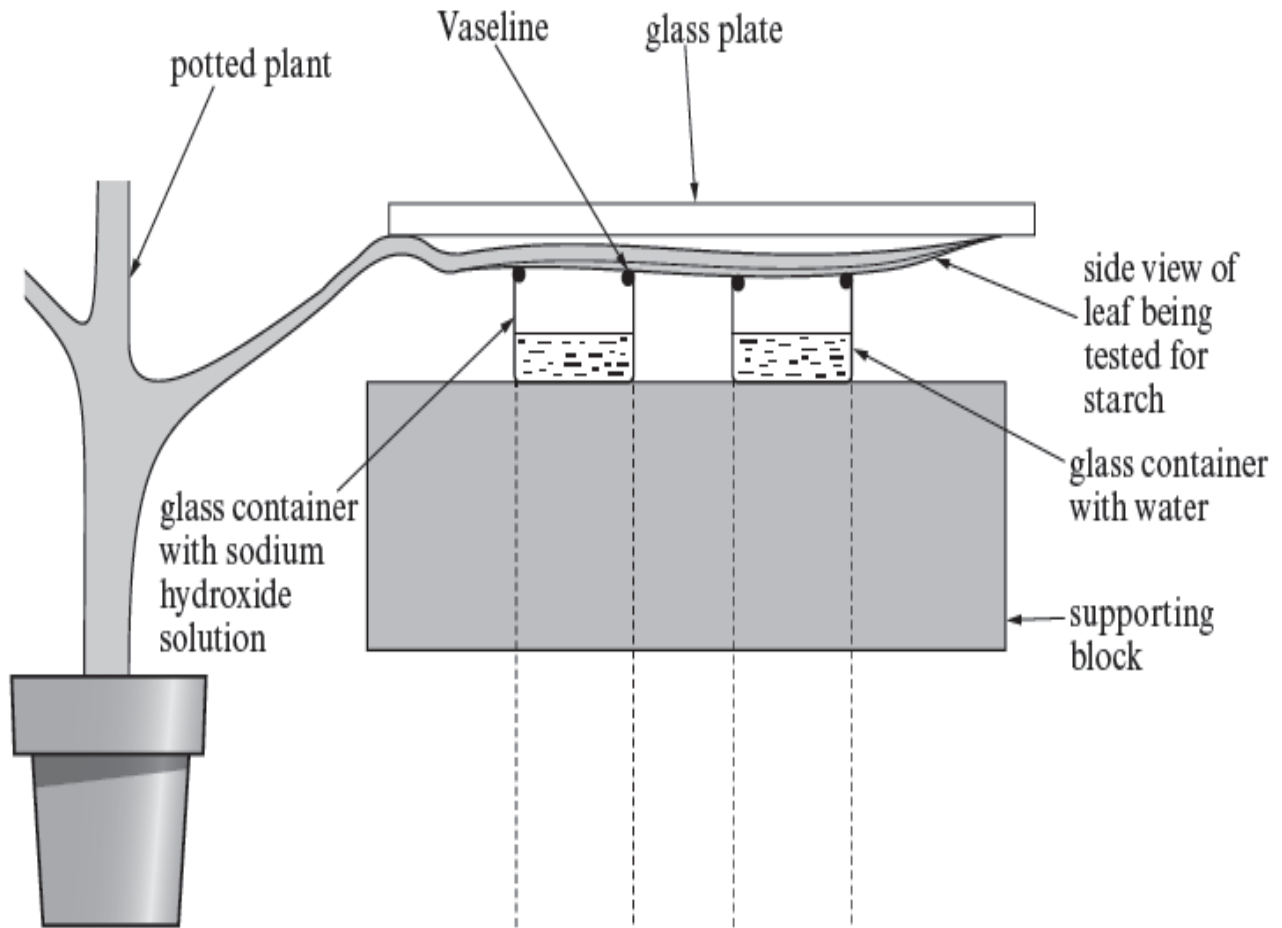
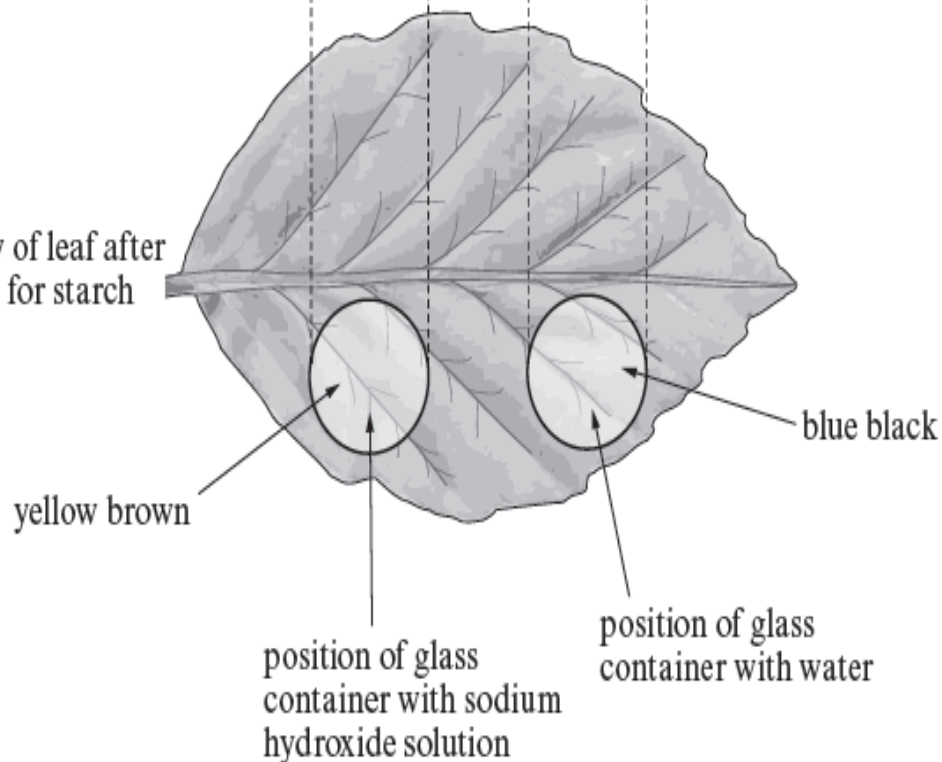


Diagram N

surface view of leaf after being tested for starch



(a) State what the investigation shown opposite demonstrates. [1]

.....

.....

(b) (i) How would you completely remove all the chlorophyll from the leaf before testing for starch? [1]

.....

.....

(ii) Name the chemical used to test for starch. [1]

.....

(iii) Explain why part of the leaf in diagram N is yellow-brown in colour. [3]

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(c) What was the purpose of the glass container with water? [1]

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(d) Why is it only possible to form a valid conclusion for this investigation if the glass plate and containers allow light through? [1]

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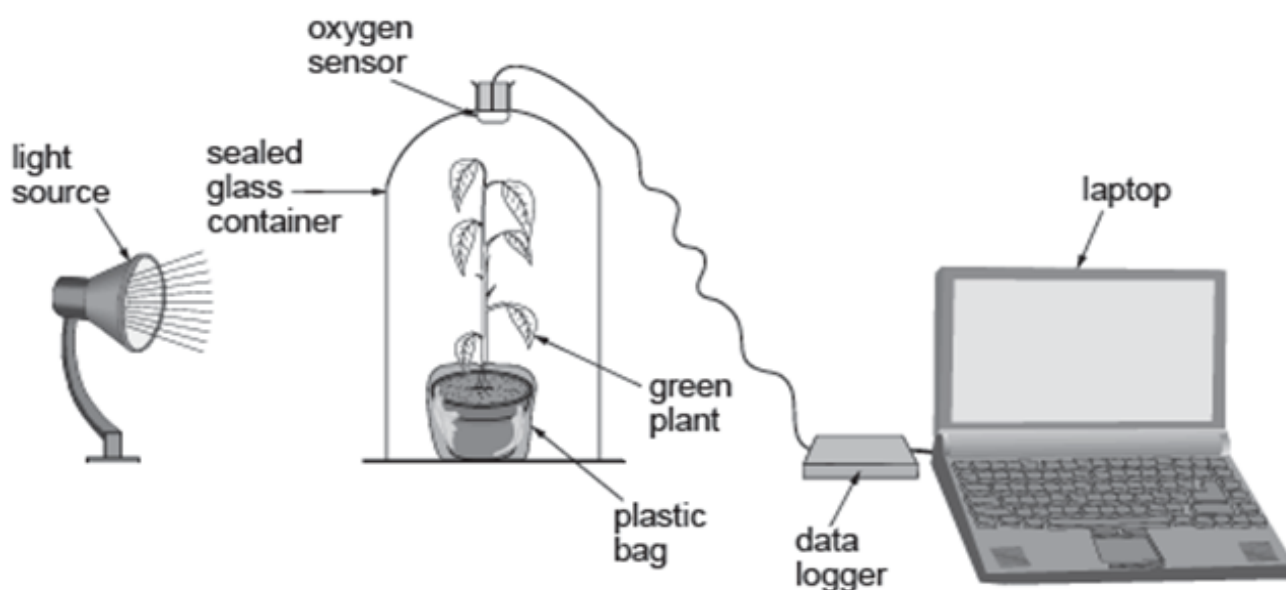
(a) (i) Complete the word equation for photosynthesis below.



(ii) Name the substance in plant cells which absorbs light. [1]

.....

(b) Students investigated photosynthesis in a plant. They used a data logger to monitor the oxygen given out by the plant at different light intensities, as shown in the diagram below. They used the same plant for the same time at each light intensity.

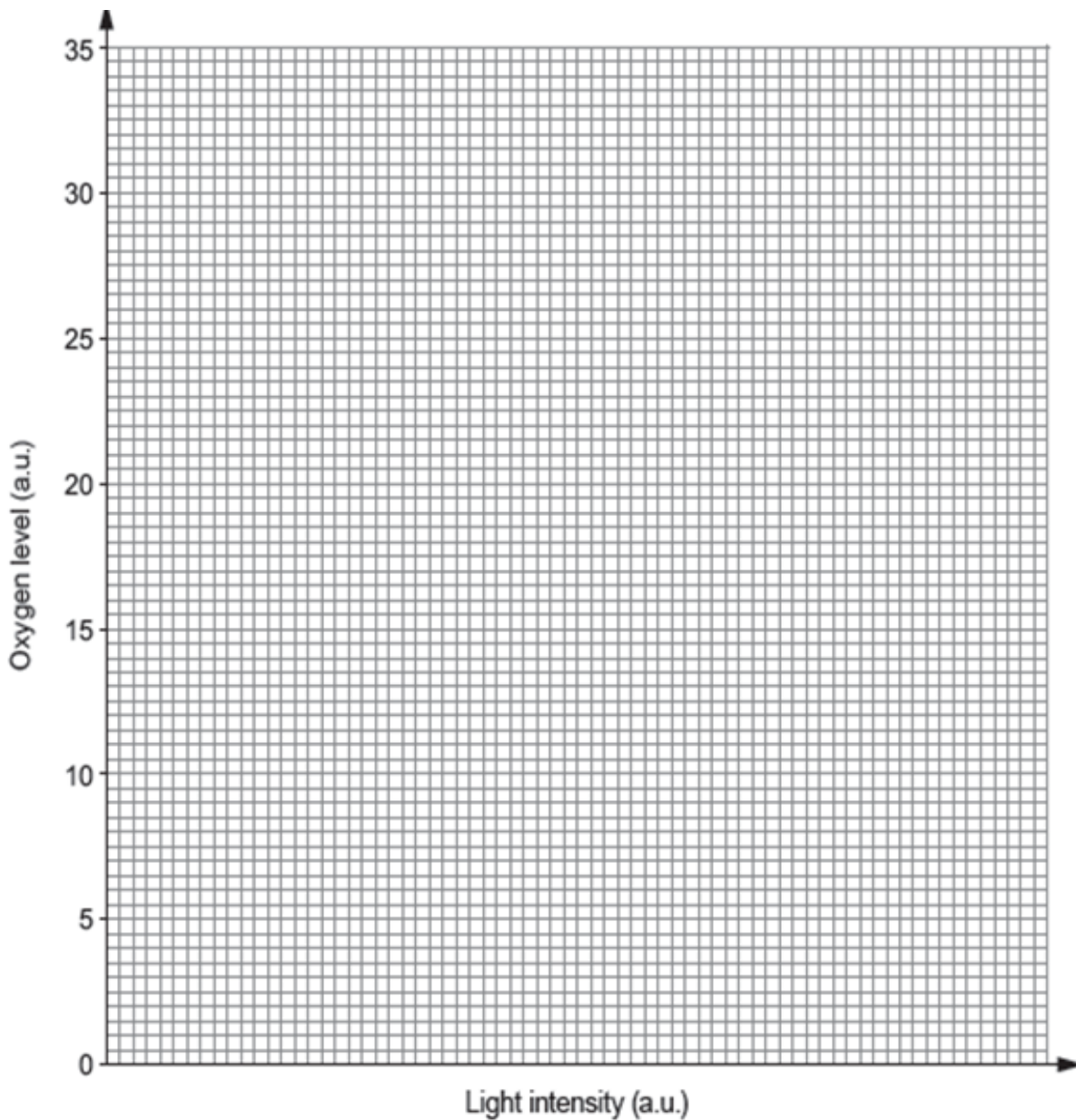


The results of the investigation are shown in the table below.

Light intensity (a.u.)	Oxygen level (a.u.)
10	5
15	7
20	11
25	20
30	29
35	34

(i) Draw a line graph of the data above on the grid opposite by:

- I. choosing a suitable scale for light intensity; [1]
- II. plotting the points shown above; [2]
- III. joining your plots, using a ruler. [1]



(ii) Use your graph to answer the following questions.

I. How does the concentration of oxygen change as light intensity increases? [1]

.....

II. Which change in light intensity shown below causes the greatest change in the oxygen concentration? Circle the correct answer. [1]

12 – 15 a.u.      22 – 25 a.u.      32 – 35 a.u.

(iii) State **one** way in which the students tried to make their investigation a fair test. [1]

.....

(c) State **one** way in which the glucose produced in photosynthesis is used in plant cells. [1]

.....

4 Describe the method involved in testing a leaf for the presence of starch.  
Each of the stages involved in the method should be described in sequence and the reason for carrying out each stage should be included.  
Your description must include reference to the colour changes shown by the leaf and what these changes indicate. [6 QWC]

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