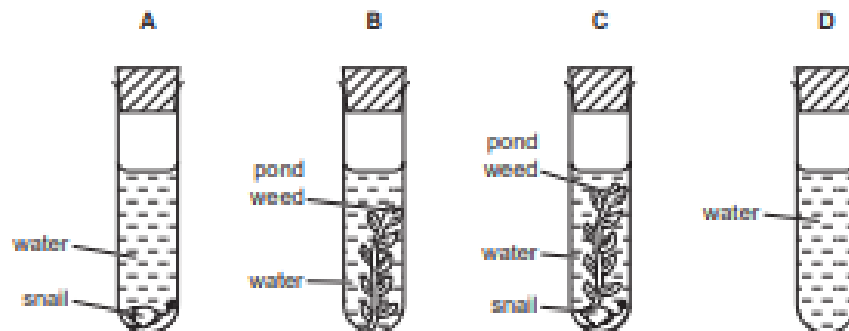


Plant Nutrition Test

MCQS (11)

4 Four test-tubes are set up as shown in the diagram and left in full sunlight.

After several hours, which test-tube contains the most dissolved oxygen?



5 Plants manufacture their own supplies of carbohydrate.

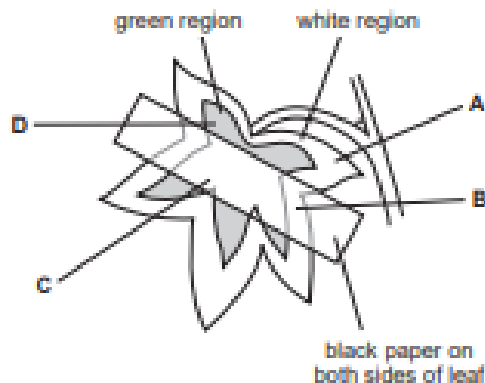
What are the raw materials and the waste product of this process?

	raw materials	waste product
A	carbon dioxide and chlorophyll	oxygen
B	carbon dioxide and water	oxygen
C	oxygen and chlorophyll	carbon dioxide
D	oxygen and water	carbon dioxide

6 A plant with variegated leaves has the starch removed from its leaves by placing it in a dark cupboard for 48 hours.

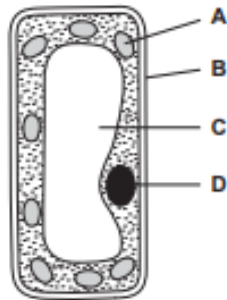
Black paper is then fixed on one leaf as shown and the plant is exposed to light.

After 24 hours, which part of the leaf contains starch?

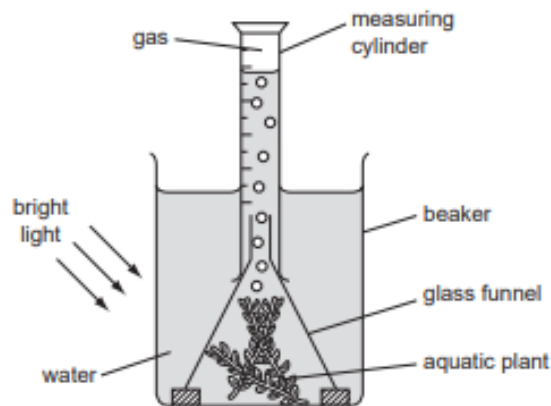


19 The diagram shows a palisade cell.

In which region is starch stored?



20 The diagram shows the apparatus used in an investigation to measure the rate of oxygen production during photosynthesis.



The investigation was repeated several times and the average amount of gas collected was calculated.

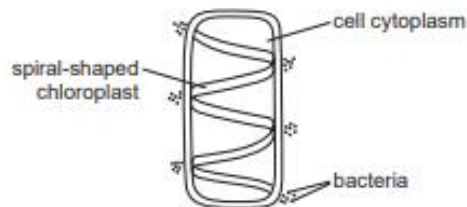
Which **two** factors must be kept constant during this investigation?

- A the amount of water in the beaker and the height of the measuring cylinder
- B the size of aquatic plant and the amount of gas in the measuring cylinder
- C the size of aquatic plant and the duration of exposure to light
- D the size of the beaker and the funnel

21 Which form of energy is stored within glucose molecules made during photosynthesis?

- A chemical
- B heat
- C light
- D mechanical

22 The diagram shows a cell with groups of bacteria around its edge.

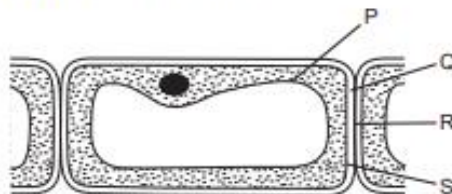


The bacteria move to areas of high oxygen concentration.

Which process in the cell causes the bacteria to form these groups?

- A digestion
- B photosynthesis
- C reproduction
- D respiration

23 The diagram shows cells from the epidermis of a leaf.



Which parts are partially permeable?

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

24 The roots of plants take up nitrates from the soil.

What are the nitrates used to make?

- A fat
- B glucose
- C protein
- D starch

25 Which process does **not** release carbon dioxide to the atmosphere?

- A decomposition of animals
- B photosynthesis of plants
- C respiration of animals
- D respiration of plants

26 What does photosynthesis form in a leaf first?

- A cellulose
- B protein
- C starch
- D sugar

COMPREHENSIVE QUESTIONS

1

In photosynthesis, how many glucose molecules can be made from 30 carbon dioxide molecules and 30 water molecules?

A 5

[1]

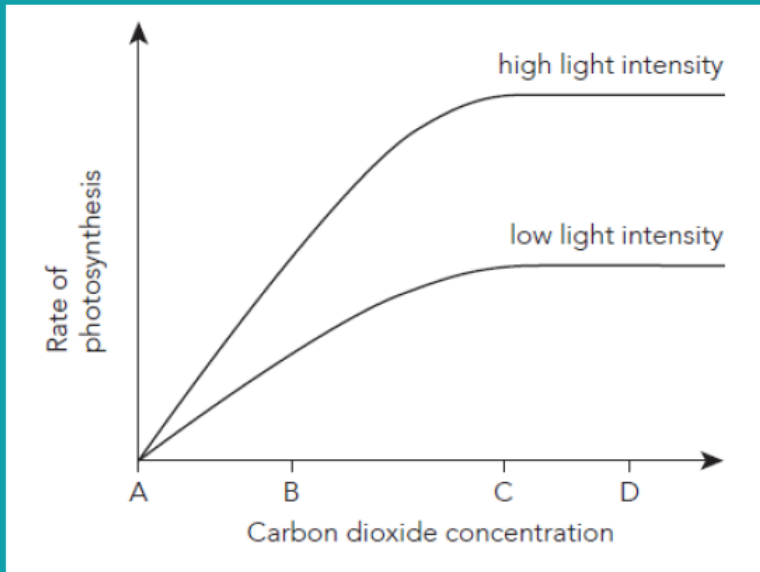
B 6

C 30

D 60

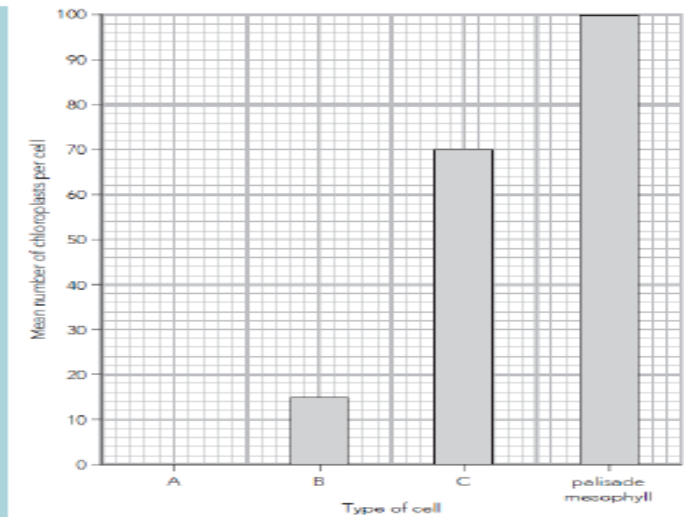
2

The graph shows how two variables affect the rate of photosynthesis in a plant. At which value of carbon dioxide concentration is carbon dioxide **not** a limiting factor? [1]



3

The bar chart shows the mean number of chloroplasts [Total: 10] in four different types of cell in a leaf.



- Explain** why palisade mesophyll cells have so many chloroplasts. [2]
- Which cell could be a cell in the upper epidermis? Explain your answer. [2]
- Guard cells contain chloroplasts, but not as many as spongy mesophyll cells. Which cell could be a guard cell? [1]
- Chloroplasts contain chlorophyll. Describe the [2]

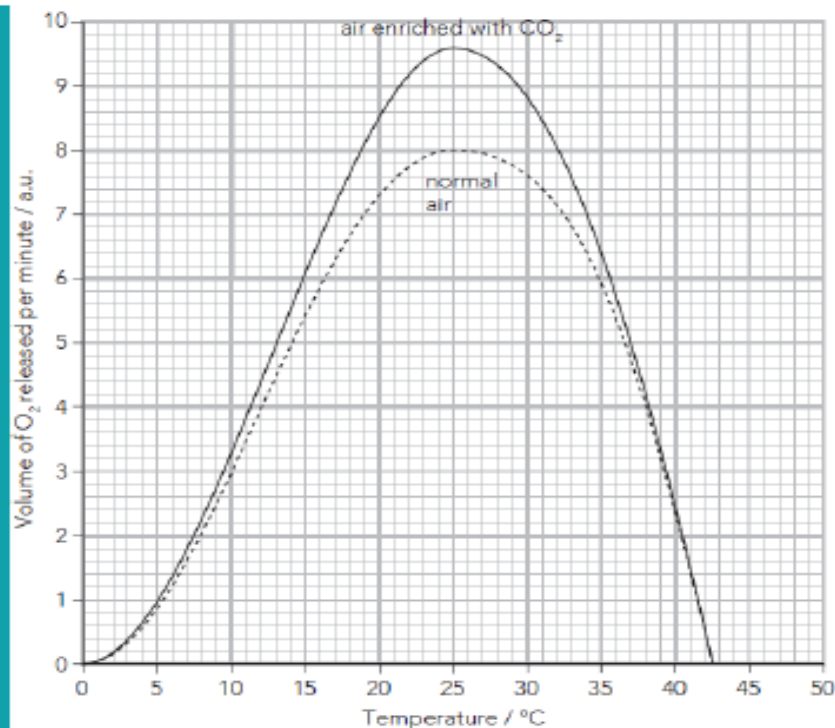
function of chlorophyll in photosynthesis.

[Total: 7]

4

An experiment was carried out to measure the rate of photosynthesis of a plant at different temperatures. The experiment was carried out first in normal air, and then in air enriched with carbon dioxide.

The results are shown in the graph.



- Use the graph to describe the effect of increasing temperature on the rate of photosynthesis in normal air. [4]
- Explain the differences between the two curves between a temperature of 0 °C and 25 °C. Use the term *limiting factor* in your explanation. [3]
- Suggest why the optimum temperature of 25 °C is the same for both curves. [2]
- Explain the shape of the curves above 25 °C. [3]

[Total: 12]

5

- a Describe how plants synthesise carbohydrates. [4]
- b Outline two subsequent uses of the carbohydrates made in photosynthesis. [4]

[Total: 8]