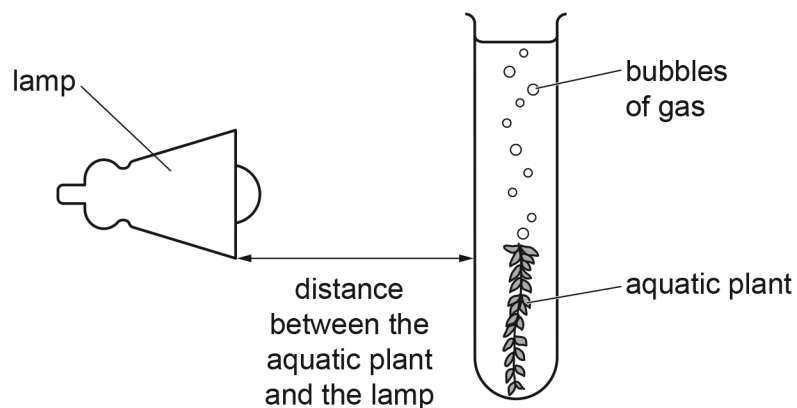


- 1 A group of students investigated the effect of light intensity on the rate of photosynthesis.

They used this method:

- An aquatic plant was placed in a test-tube containing water.
- A lamp was placed 10 cm from the aquatic plant.
- The number of bubbles of gas produced in one minute was counted and recorded in the table.
- The investigation was repeated with the lamp at different distances from the aquatic plant.

The diagram shows the equipment used.



The results are shown in the table.

distance from the aquatic plant / cm	number of bubbles produced in one minute
10	90
20	85
30	75
40	50
50	30

State the distance which gives the highest rate of photosynthesis.

..... cm [1]

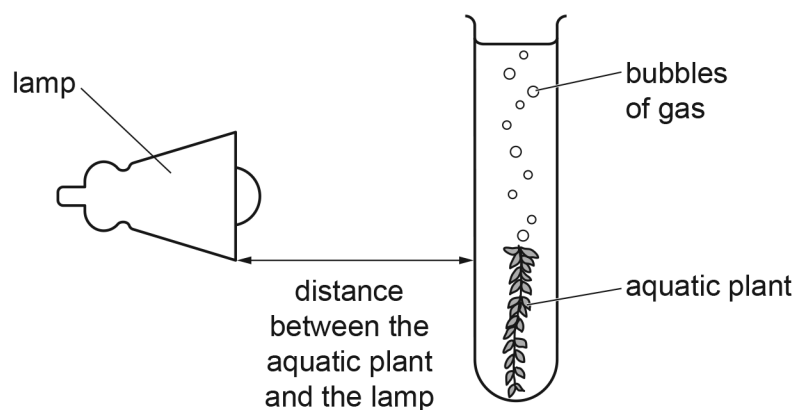
[Total: 1]

- 2 A group of students investigated the effect of light intensity on the rate of photosynthesis.

They used this method:

- An aquatic plant was placed in a test-tube containing water.
- A lamp was placed 10 cm from the aquatic plant.
- The number of bubbles of gas produced in one minute was counted and recorded in the table.
- The investigation was repeated with the lamp at different distances from the aquatic plant.

The diagram shows the equipment used.



The results are shown in the table.

distance from the aquatic plant / cm	number of bubbles produced in one minute
10	90
15	85
20	75
40	50
50	30

The student repeated the investigation but added a source of carbon dioxide to the water in the test-tube.

Suggest how this would affect the rate of photosynthesis.

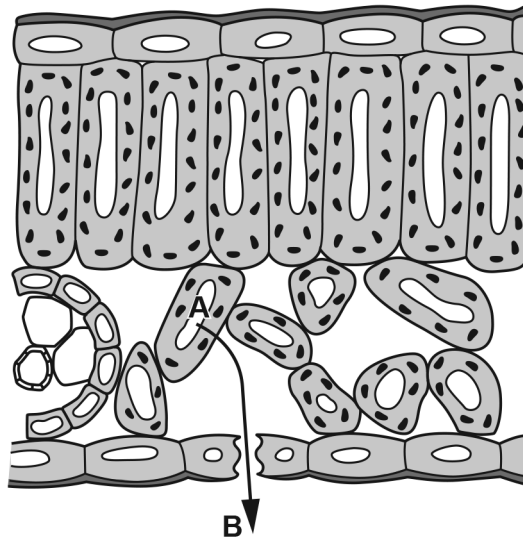
.....

.....

..... [1]

[Total: 1]

- 3 The diagram shows a section through a plant leaf.



Draw a label line and a label to identify:

- a palisade mesophyll cell
- a vacuole.

[2]

[Total: 2]

- 4 The photograph shows a variegated leaf which uses photosynthesis to make carbohydrates.

A variegated leaf has green parts that contain chlorophyll and white parts that do **not** contain chlorophyll.



The carbohydrate produced by photosynthesis can be stored as starch in the leaf.

A plant with variegated leaves used up its store of starch because it was placed in the dark.

Explain why the plant used up its store of starch when it was placed in the dark.

.....

.....

.....

.....

..... [2]

[Total: 2]

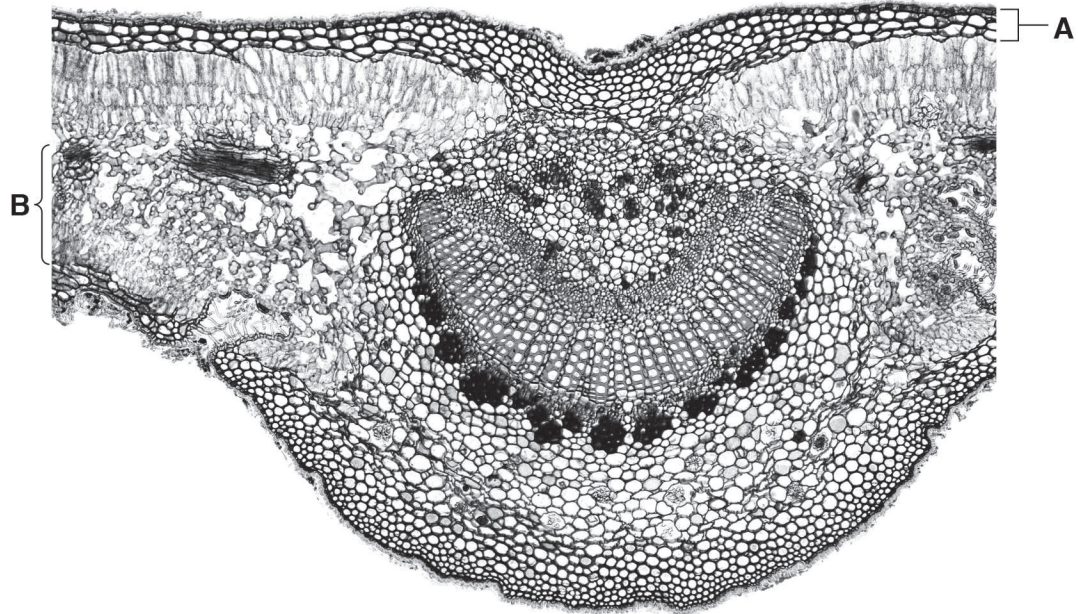
- 5 Plants absorb mineral ions from the soil.

State the name of the mineral ion that is used to make amino acids.

..... [1]

[Total: 1]

- 6 The photomicrograph is of a cross-section of part of a leaf.



Draw a circle around **one** vascular bundle on the photomicrograph.

[1]

[Total: 1]

- 7 The diagram is a photomicrograph of a cross-section of part of a leaf.



State the letter on the photomicrograph that identifies the part of the plant that transports water from the roots to the leaves **and** state its name.

.....

name [2]

[Total: 2]

- 8 Urine contains urea, excess water and excess ions.

The list shows some organs.

kidney

liver

ureter

urethra

vagina

State the name of the organ from the list that produces urea.

..... [1]

[Total: 1]

- 9** A scientist recorded the volume of urine released by different species of mammal during a 24-hour period.

The scientist collected urine from five individuals of each species of mammal.

The highest and lowest volumes of urine released were recorded to give a range for each species of mammal.

The table shows the results.

species of mammal	range of volumes of urine released in 24 hours / dm ³
A	2.10 — 12.60
B	15.30 — 40.50
C	0.08 — 0.16
D	1.00 — 2.00
E	0.60 — 2.40

State the species of mammal that has the largest range shown in the table.

..... [1]

[Total: 1]

- 10** Excretion is the removal of toxic substances or substances in excess, from the body.

Excess water is excreted from the lungs and the kidneys.

State the name of **one other** substance that is excreted from

the lungs

the kidneys..... [2]

[Total: 2]

- 11** The volume and concentration of urine varies with changing conditions.

The table below shows three changing conditions.

Write **increase** or **decrease** in each of the boxes in the table to show how each change affects the volume and the concentration of urine.

changing condition	volume of urine	concentration of urine
increase in water intake		
increase in temperature		
increase in exercise		

[3]

[Total: 3]

- 12** A student wrote an incorrect definition of the term hormone.

The student's incorrect definition is :

A hormone is an electrical substance, produced by a gland and carried by the neurones, which alters the activity of one or more specific target organs.

Identify the **two** incorrect words in the student's definition.

1

2 [2]

[Total: 2]

- 13** The table shows the names of some hormones and the glands where they are secreted.

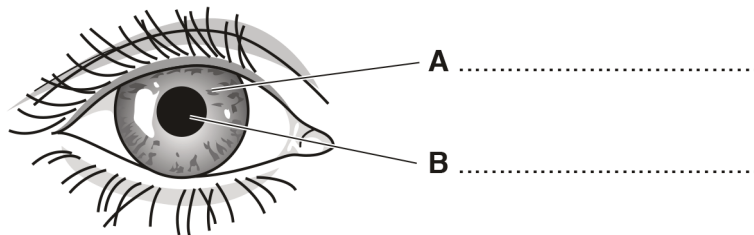
Complete the table.

hormone	gland
	adrenal
insulin	
oestrogen	
	testes

[4]

[Total: 4]

- 14** The diagram shows an eye.



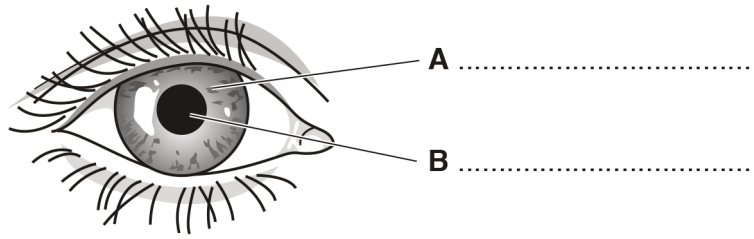
Describe how **B** will change when a bright light shines on it.

.....

..... [1]

[Total: 1]

15 The diagram shows an eye.



Structure **B** changes when a bright light shines on it.

Suggest how this change protects the eye.

.....

.....

.....

.....

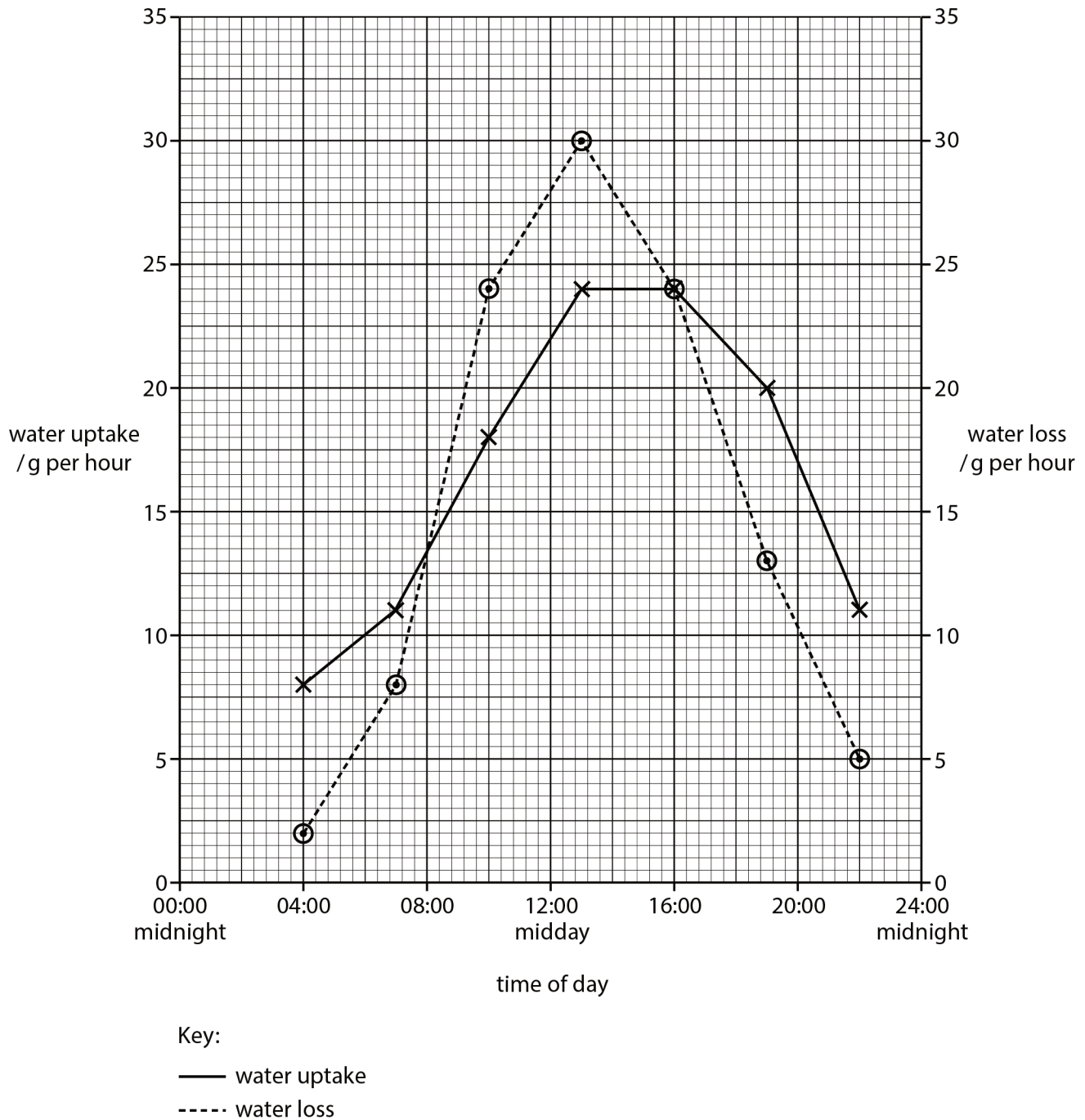
[2]

[Total: 2]

- 16** In an investigation, the uptake of water into a plant and the loss of water from the same plant were measured.

Measurements were taken over an 18-hour period.

The results are shown in the graph.



Use the information in the graph to state the rate of water uptake at 12:00 (midday).

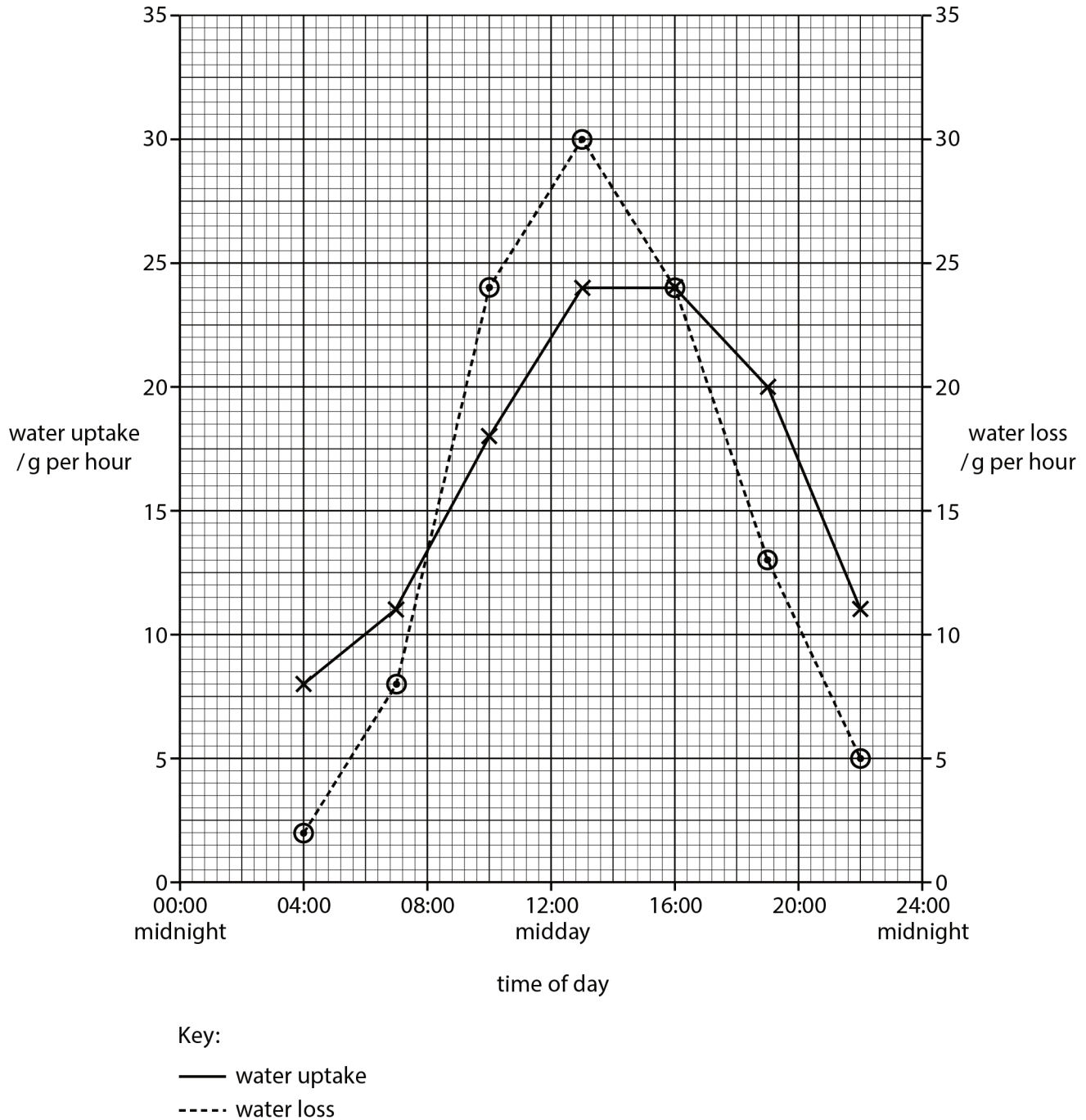
..... g per hour [1]

[Total: 1]

- 17 In an investigation, the uptake of water into a plant and the loss of water from the same plant were measured.

Measurements were taken over an 18-hour period.

The results are shown in the graph.



Use the information in the graph to state the time when the water uptake was 10 g per hour.

..... [1]

[Total: 1]

- 18** A gardener grew tomato seedlings from tomato seeds.

State **three** conditions that are required for the germination of seeds.

1

2

3 [3]

[Total: 3]

- 19** Sexual reproduction in plants results in seeds being formed.

State **three** conditions needed for the germination of seeds.

1

2

3 [3]

[Total: 3]

- 20** Reaction time is defined as the time taken to respond to a stimulus.

During a swimming relay race, the reaction times of four swimmers in two teams, **A** and **B**, were recorded.

In each team, swimmer **1** responded to the sound of the start gun; swimmers **2**, **3** and **4** responded to seeing the previous swimmer touch the swimming pool wall.

The table below shows the reaction times for the swimming relay teams.

swimmer	reaction time / s	
	team A	team B
1	0.81	0.75
2	0.48	0.40
3	0.58	0.06
4	0.31	0.35

Compare the reaction time of swimmer **1** in each team with the reaction times of the other swimmers in each team. Use the information in the table above to support your answer.

.....

.....

.....

.....

.....

.....

.....

[3]

[Total: 3]

- 21** State the name given to the junction between two neurones.

.....

[1]

[Total: 1]

22 Read the information about a reflex action.

A person touches a hot pan.

Electrical impulses travel to the central nervous system which coordinates a response.

The muscles in the arm contract quickly.

State the names of the **two** parts of the central nervous system.

1

2 [2]

[Total: 2]