Cambridge Assessment International Education
Cambridge International General Certificate of Secondary Education

CANDIDATE NAME

CENTRE NUMBER

CANDIDATE NUMBER

5063024256

BIOLOGY **0610/32**

Paper 3 Theory (Core) **October/November 2019**

1 hour 15 minutes

Candidates answer on the Question Paper.

No Additional Materials are required.

READ THESE INSTRUCTIONS FIRST

Write your centre number, candidate number and name on all the work you hand in.
Write in dark blue or black pen.
You may use an HB pencil for any diagrams or graphs.
Do not use staples, paper clips, glue or correction fluid.
DO **NOT** WRITE IN ANY BARCODES.

Answer **all** questions.

Electronic calculators may be used.
You may lose marks if you do not show your working or if you do not use appropriate units.

At the end of the examination, fasten all your work securely together.
The number of marks is given in brackets [ ] at the end of each question or part question.

This syllabus is regulated for use in England, Wales and Northern Ireland as a Cambridge International Level 1/Level 2 Certificate.

This document consists of **18** printed pages and **2** blank pages.

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1 Complete the sentences about food and digestion using words from the list.

Each word may be used once, more than once, or not at all.

absorbed	**antibodies**	**bacteria**	**duodenum**	
egested	**enzymes**	**fat**	**stomach**	**water**

The ..... secretes hydrochloric acid. One function of this acid in the body is to kill ..... in the food. Most food that is eaten has to be digested before it can be ..... by the body. Most chemical digestion is carried out by special proteins called ..... . One component of the diet that does not need to be digested is ..... . [5]

2 Table 2.1 lists some descriptions of meiosis and mitosis.

Complete Table 2.1 by placing a tick (✓) in each box that is correct.

Table 2.1

description of process	meiosis	mitosis
can result in growth		
is a nuclear division		
occurs in asexual reproduction		
produces egg cells		
replaces damaged cells		

[5]

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3 **(a)** Fig. 3.1 shows a cross-section of a vein and Fig. 3.2 shows a longitudinal section of the vein.

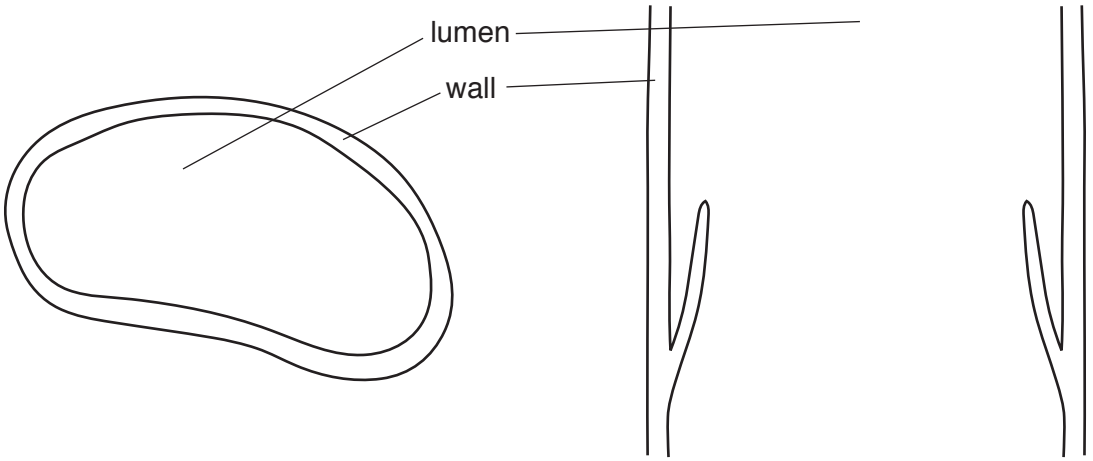


Fig. 3.1 **Fig. 3.2**

(i) Describe **two** features, visible in Fig. 3.1 and Fig. 3.2, which show that this blood vessel is a vein.

1 .....

.....

2 .....

.....

[2]

(ii) Draw an arrow on Fig. 3.2 to show the direction of blood flow in this vein. [1]

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(b) Two groups of students, **A** and **B**, investigated how running affected their pulse rates.

There were three students, **1**, **2** and **3**, in each group.

They measured their pulse rates when at rest, then all ran the same distance and immediately measured their pulse rates again.

The results are shown in Fig. 3.3.

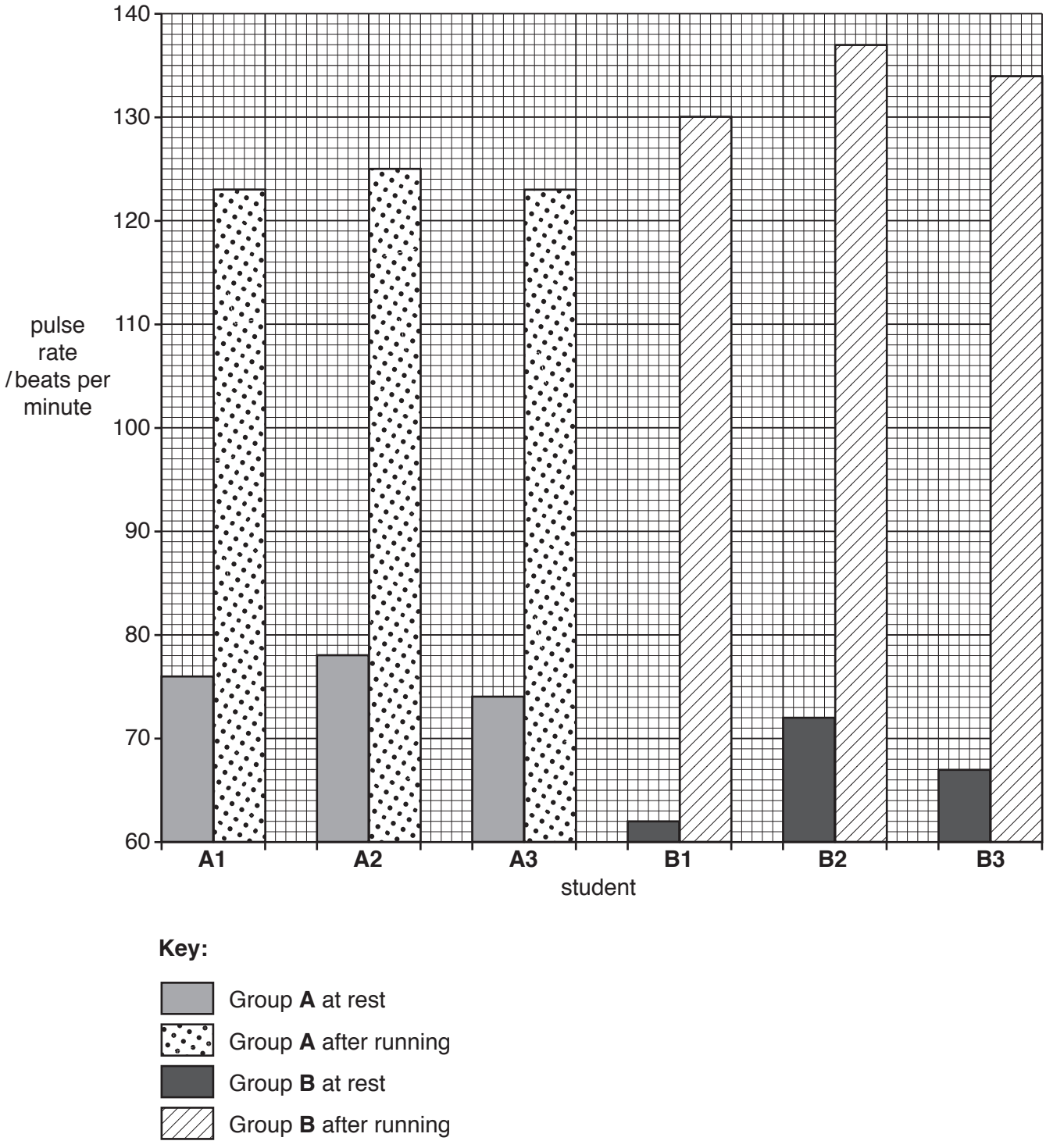


Fig. 3.3

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(i) Suggest a method the students could use to measure their pulse rates.

.....

.....

..... [2]

(ii) Calculate the average pulse rate for the three students in group **A** when at rest.

..... beats per minute [1]

(iii) State the effect of running on the pulse rate using the information in Fig. 3.3.

.....

..... [1]

(iv) State which student had the greatest change in pulse rate after running.

..... [1]

(v) Describe **two** differences in the data between group **A** and group **B** in Fig. 3.3.

1 .....

.....

2 .....

.....

[2]

(c) Predict and describe the changes that would occur in the students' breathing during the investigation.

.....

.....

.....

.....

..... [2]

[Total: 12]

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[Turn over

4 The boxes on the left contain the functions of some plant cell structures.

The boxes on the right contain the names of structures found in plant cells.

Draw **one** straight line from each box on the left to a box on the right to link the plant cell function to the correct plant cell structure.

Draw **four** lines.

plant cell function	**plant cell structure**
	cell membrane
controls cell activities	
	cell wall
controls movement of chemicals into and out of cells	
	chloroplast
makes glucose	
	nucleus
prevents cell from bursting	
	vacuole

[4]

5 **(a)** Fig. 5.1 shows a seed that has germinated.

It is growing on damp cotton wool in the dark in a vertical position.

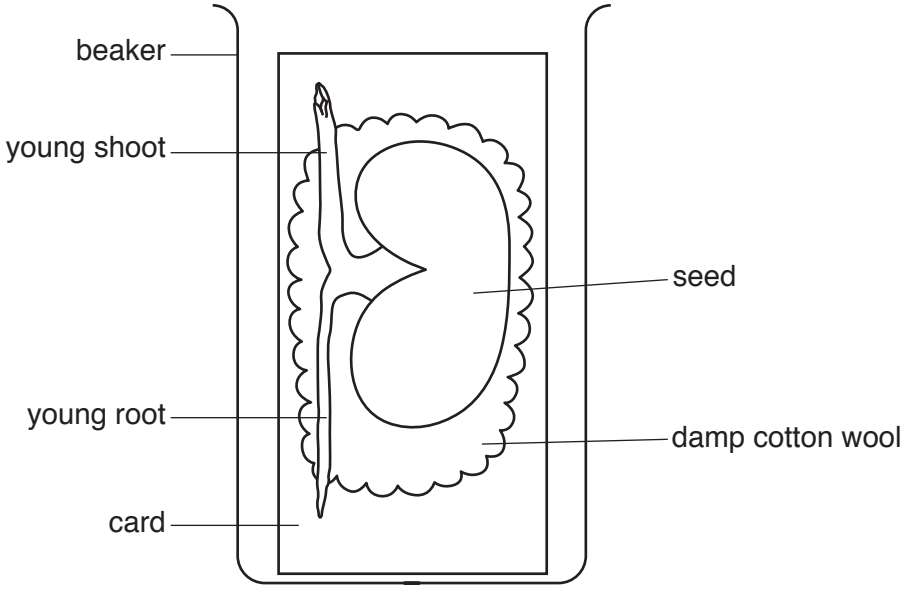


Fig. 5.1

The seedling was then rotated to a horizontal position and kept in the dark as shown in Fig. 5.2.

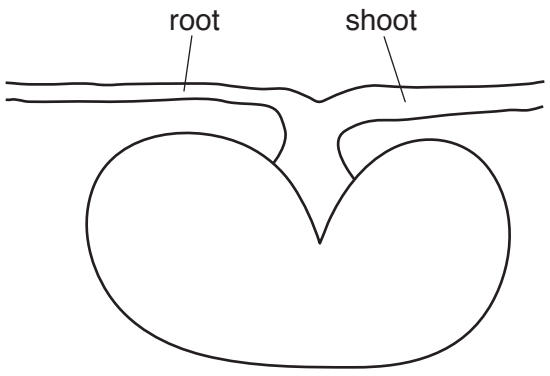


Fig. 5.2

(i) Complete Fig. 5.2 by drawing the expected appearance of the root and the shoot after five days in the dark. [2]

(ii) State the name of the response shown in Fig. 5.2.

..... [1]

(b) (i) The leaves of a seedling photosynthesise.

State the word equation for photosynthesis.

..... [2]

(ii) Chlorophyll has to be present for photosynthesis to take place.

State the name of the mineral ion that plants need to make chlorophyll.

..... [1]

(iii) State the name of **one** type of cell that carries out photosynthesis.

..... [1]

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(c) The rate of photosynthesis can be measured using the apparatus shown in Fig. 5.3.

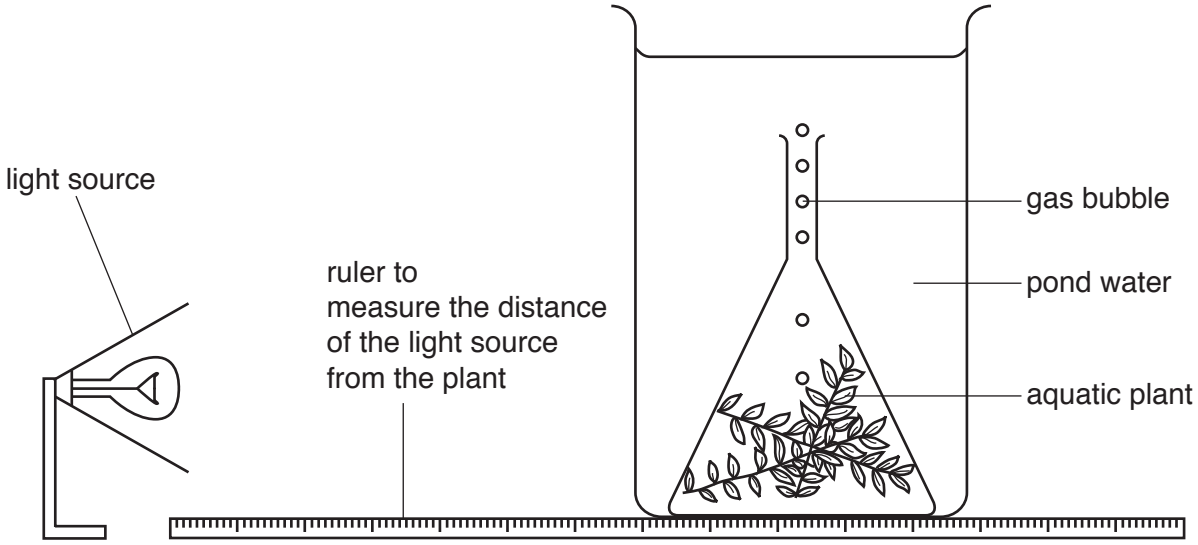


Fig. 5.3

The faster the rate of photosynthesis, the more gas bubbles are produced.

Table 5.1 shows the results from an investigation using this apparatus.

Table 5.1

distance of light source from plant / cm	number of bubbles produced in 5 minutes
5	74
10	75
20	35
30	15
40	5
50	1
60	0

(i) Describe the relationship between light and the rate of photosynthesis shown in Table 5.1.

.....

.....

.....

..... [2]

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[Turn over

(ii) State **two** factors, other than light, that will affect the rate of photosynthesis in this investigation.

1 .....

2 .....
[2]

(d) Suggest **one** use of glucose in a plant.

.....

..... [1]

[Total: 12]

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6 Fig. 6.1 shows part of the human gas exchange system.

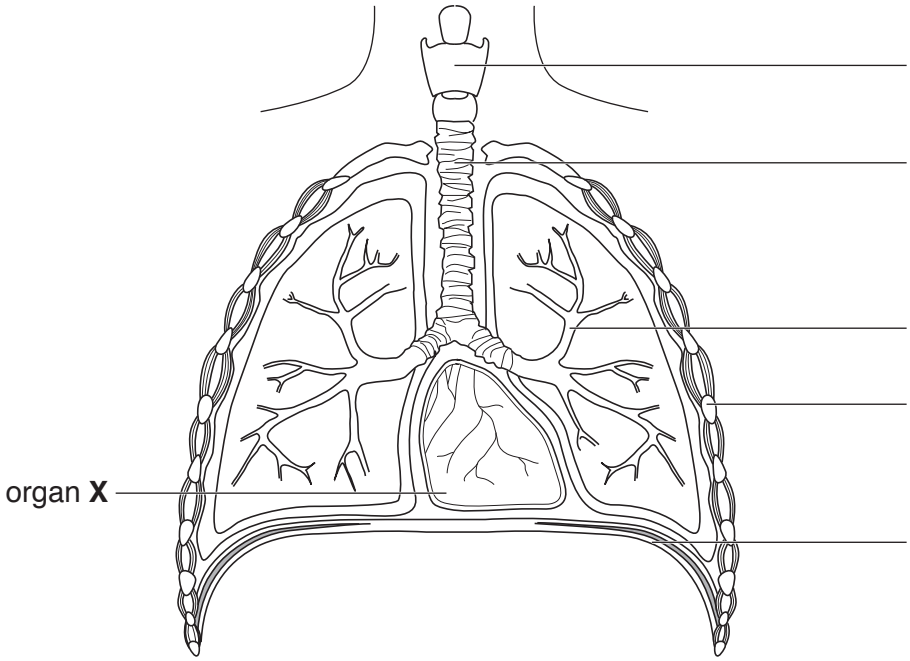


Fig. 6.1

(a) (i) Label the structures on Fig. 6.1 using words from the list:

- **bronchiole**
- **diaphragm**
- **larynx**
- **rib**
- **trachea.**

[5]

(ii) Organ **X** on Fig. 6.1 is not part of the gas exchange system.

State the name of the organ system to which organ **X** belongs.

..... [1]

(b) State **three** features of an efficient gas exchange surface.

1 .....

.....

2 .....

.....

3 .....

.....

[3]

(c) Describe the harmful effects of tobacco smoke on the body.

.....

.....

.....

.....

.....

.....

.....

.....

..... [4]

[Total: 13]

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7 **(a)** Table 7.1 contains the definitions of terms used in genetics.

Complete Table 7.1 by writing the term for each definition.

Table 7.1

definition	term
A thread-like structure of DNA, carrying genetic information in the form of genes.	
A length of DNA that codes for a protein.	
The observable features of an organism.	
The transmission of genetic information from generation to generation.	

[4]

(b) Fig. 7.1 shows a photomicrograph of the chromosomes present in the body cells of a human.

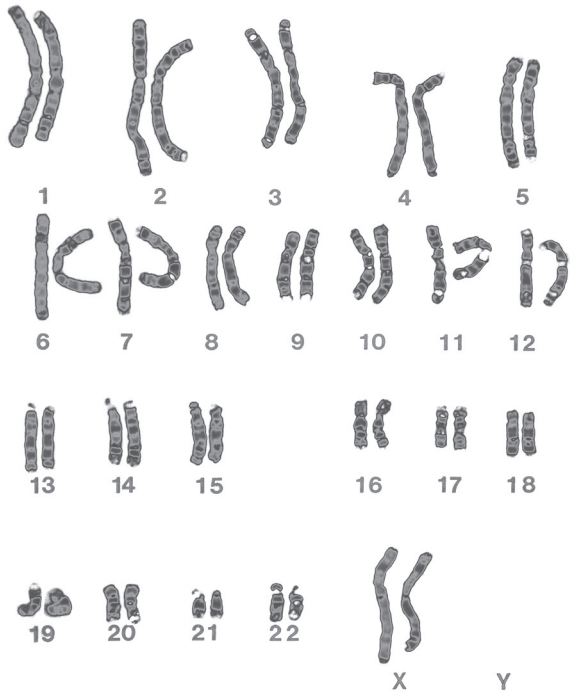


Fig. 7.1

(i) State the number of chromosomes present in human body cells.

..... [1]

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(ii) The individual in Fig. 7.1 is female.

Describe the evidence from Fig. 7.1 that supports this statement.

.....

.....

..... [1]

(iii) Sometimes a genetic change occurs which results in a condition called Down's syndrome.

Fig. 7.2 shows the chromosomes from a body cell of a person with Down's syndrome.

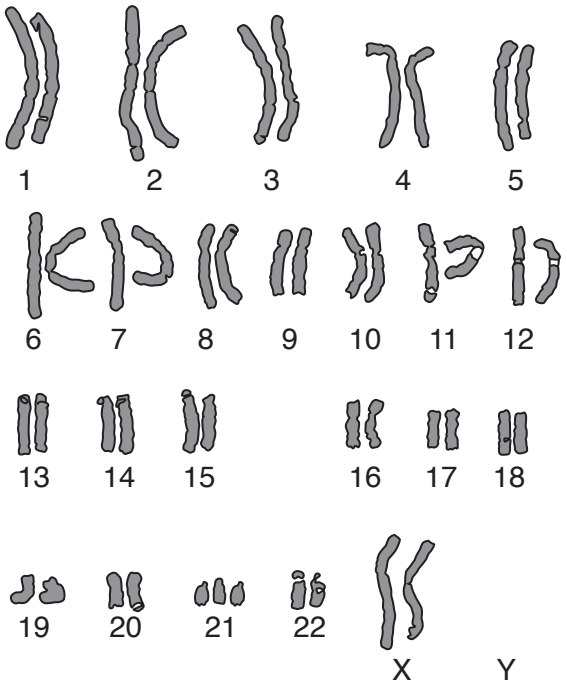


Fig. 7.2

Describe the genetic change that produces Down's syndrome using the information in Fig. 7.1 and Fig. 7.2.

.....

.....

..... [1]

[Total: 7]

8 **(a)** Table 8.1 contains three descriptions of nervous system terms.

Complete Table 8.1 by stating the name of the terms described.

Table 8.1

description of the term	name of the term
neurone that is connected to a muscle	
electrical signal that passes along a neurone	
junction between two neurones	

[3]

(b) The nervous system contains sense organs that detect changes in the external environment.

List **three** stimuli that are detected by sense organs.

1 .....

2 .....

3 .....

[3]

(c) Describe a simple reflex arc.

.....

.....

.....

.....

.....

.....

.....

.....

..... [4]

[Total: 10]

9 All organisms must maintain a balance between water gain and water loss.

(a) **(i)** State the name of the type of cell which absorbs water into a plant.

..... [1]

(ii) State the name of the tissue in a plant that transports water.

..... [1]

(iii) State the name of the organ in a plant where most water loss occurs.

..... [1]

(b) State **three** ways in which the human body may lose water.

1 .....

2 .....

3 .....

[3]

[Total: 6]

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[Turn over

10 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 Fig. 10.1.

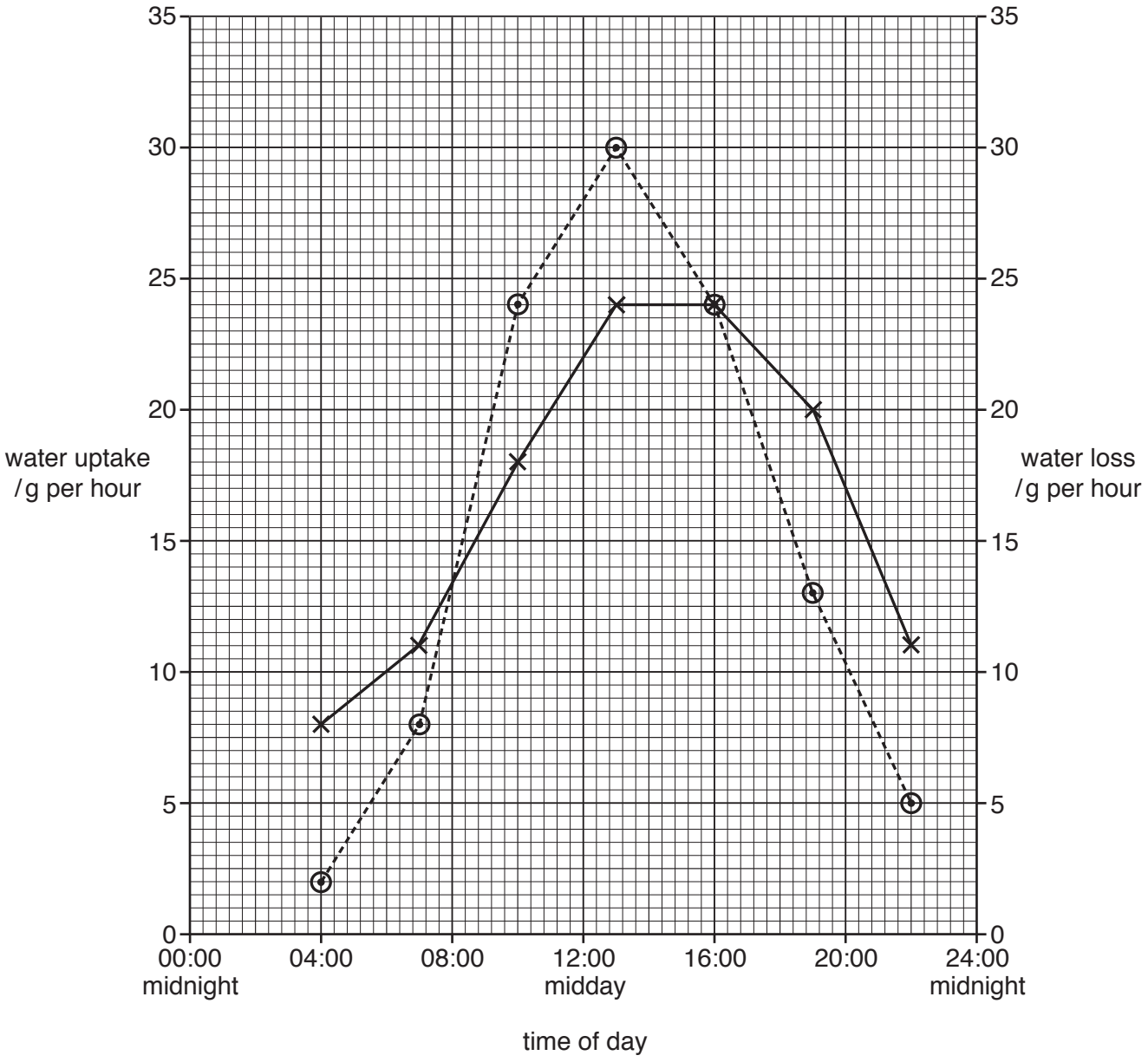


Fig. 10.1

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(a) Use the information in Fig. 10.1 to answer these questions:

(i) State the rate of water uptake at 12:00 (midday).

..... g per hour [1]

(ii) State the time when the water uptake was 10 g per hour.

..... [1]

(iii) State **one** time during the day when the water uptake and the water loss were equal.

..... [1]

(b) Describe how changes in temperature and changes in humidity affect the rate of water loss in a plant.

.....

.....

.....

.....

..... [2]

(c) State the name of the process that results in water loss from plants.

..... [1]

[Total: 6]

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