Cambridge IGCSE

Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

CANDIDATE NAME	
CENTRE NUMBER	
CANDIDATE NUMBER	

BIOLOGY **0610/32**

Paper 3 Theory (Core) **October/November 2016**

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.

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

This document consists of **16** printed pages and **4** blank pages.

1 Fig. 1.1 shows a diagram of an arthropod.

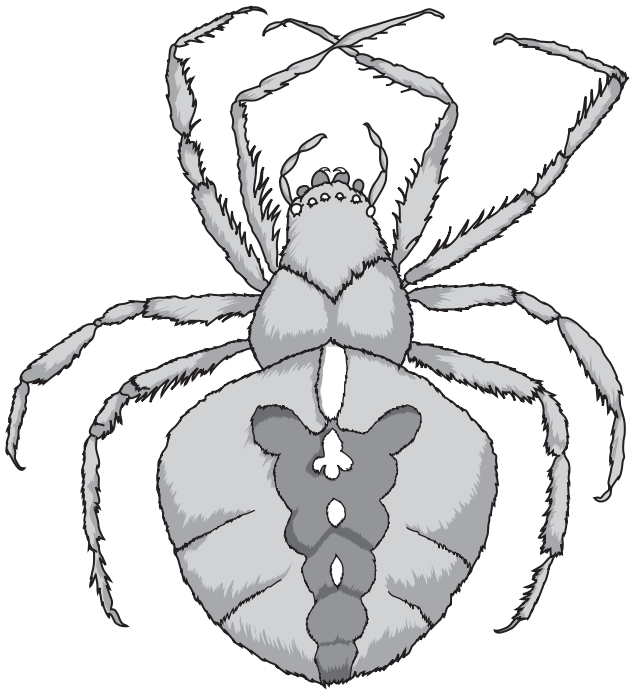

Fig. 1.1

(a) (i) Name the arthropod group this animal belongs to.

.....[1]

(ii) Give **two** reasons for your answer.

1 .....

.....

2 .....

.....

[2]

(b) State the names of **two** other arthropod groups.

1 .....

2 .....

[2]

[Total: 5]

2 A pathogen is a disease-causing organism.
Pathogens are transmitted from one host to another.

(a) Describe and explain **two** ways in which a pathogen can be transmitted from one host to another.

1 .....

.....

.....

.....

2 .....

.....

.....

.....

.....

[4]

(b) **(i)** Outline **two** natural body defences that prevent pathogens entering the body.

1 .....

.....

2 .....

.....

[2]

(ii) Describe **two** hygienic food preparation practices that can stop the spread of diseases caused by pathogens.

1 .....

.....

2 .....

.....

[2]

(iii) State **one** other method that has been developed by humans to prevent the spread of diseases caused by pathogens.

.....

.....[1]

[Total: 9]

[Turn over

3 Table 3.1 shows the names of some specialised cells, each matched with a letter.

Table 3.1

specialised cell	letter
cell in the retina	A
liver cell	B
neurone	C
palisade mesophyll cell	D
root hair cell	E
red blood cell	F
sperm cell	G
white blood cell	H

Table 3.2 shows eight functions carried out by specialised cells.

Complete Table 3.2 by writing in the letter of the cell from Table 3.1 responsible for the function.

You may use each letter once, more than once or not at all. An example has been done for you.

Table 3.2

cell function	letter of cell responsible
detection of light	A
formation of urea	
antibody formation	
conduction of nerve impulses	
fertilisation of an egg cell	
glucose production	
oxygen transport	
phagocytosis	

[7]

[Total: 7]

4 (a) (i) Define the term *sustainable resource.*

.....

.....

.....

.....[2]

(ii) State **one** example of a sustainable resource and **one** example of a resource that is not sustainable.

resource that is sustainable .....

.....

resource that is not sustainable .....

.....
[2]

(b) Outline how sewage is treated to make the water it contains safe for reuse.

.....

.....

.....

.....

.....

.....[3]

[Total: 7]

5 **(a)** Fig. 5.1 shows the human breathing system.

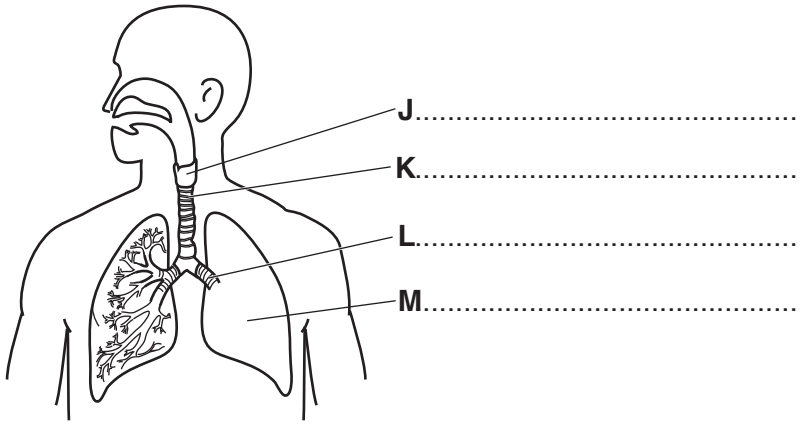

Fig. 5.1

Name the structures labelled **J**, **K**, **L** and **M**.

Write your answers on Fig. 5.1. [4]

(b) Fig. 5.2 shows four sections through groups of alveoli and their blood capillaries.

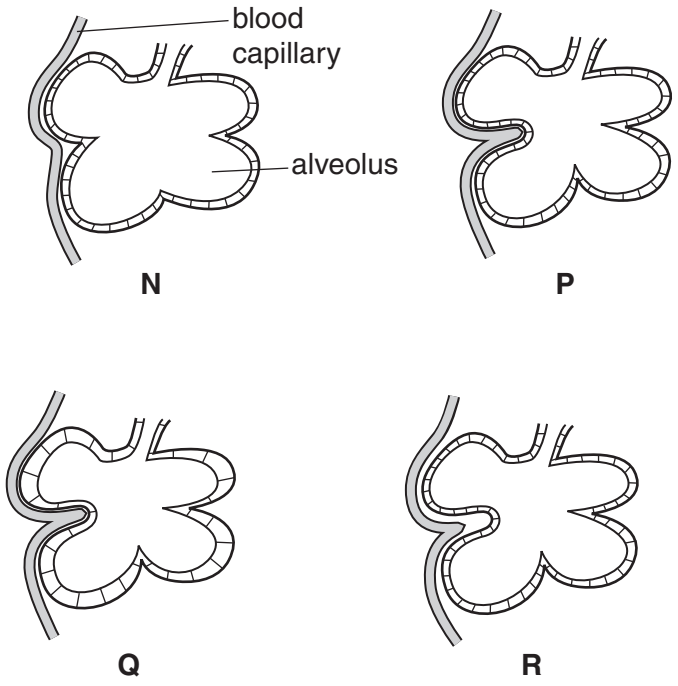

Fig. 5.2

State which diagram, **N**, **P**, **Q** or **R**, shows the most efficient gas exchange surface.

Give **one** reason for your answer.

most efficient gas exchange surface .....

reason .....

.....

[2]

(c) (i) State the word equation for aerobic respiration in cells.

..... + ... → ..... + ...

[2]

(ii) Respiration releases energy.

Outline **three** uses of this energy in the human body.

1 .....

.....

2 .....

.....

3 .....

.....

[3]

[Total: 11]

6 **(a)** Describe *osmosis.*

.....

.....

.....

.....

.....

.....[3]

(b) Fig. 6.1 shows a plant cell.

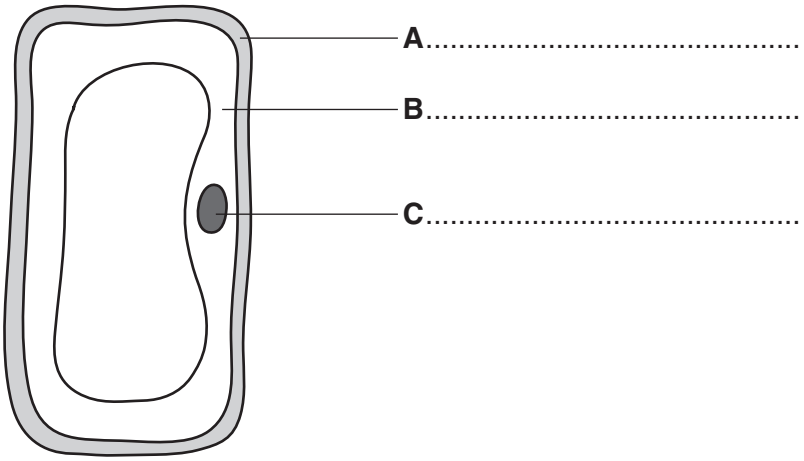

Fig. 6.1

(i) Name the structures labelled **A**, **B** and **C**.

Write your answers on Fig. 6.1. [3]

(ii) On Fig 6.1, draw a label line **D** to show the position of the vacuole. [1]

(c) Fig. 6.2 shows the same cell in pure water.
It is left there for 30 minutes.

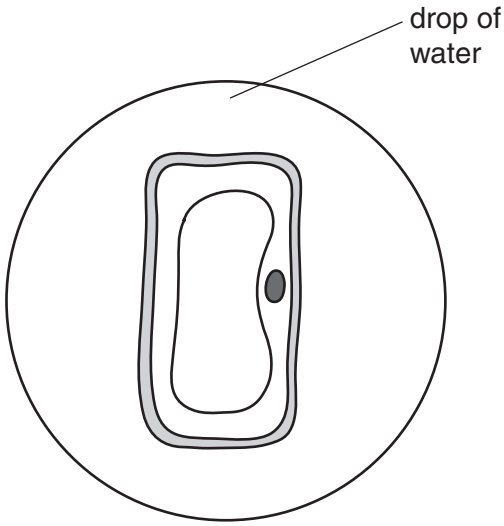

Fig. 6.2

Describe the changes that will occur in the cell during the 30 minutes it is in pure water.

.....

.....

.....

.....

.....

.....[3]

[Total: 10]

[Turn over

7 The boxes on the left contain the names of biological terms.
The boxes on the right contain the definitions of these biological terms.
Draw **one** straight line from each biological term to the box containing the correct definition.

An example has been done for you.

biological term	**definition**
assimilation	transmission of genetic information from generation to generation
inheritance	groups of receptor cells responding to specific stimuli
sense organ	the movement of digested food molecules into the cells of the body where they are used, becoming part of the cell
tissue	a group of cells with similar structures working together to perform a shared function
active transport	an animal that gets its energy by eating plants
herbivore	a protein that functions as a biological catalyst
enzyme	movement of particles through a cell membrane from a region of lower concentration to a region of higher concentration using energy from respiration

[5]

[Total: 5]

8 **(a)** The body loses water all the time.

One of the ways in which water is lost is by sweating.

State **two** other ways in which water is lost from the body.

1 .....

2 .....

[2]

(b) Fig. 8.1 shows a section through the skin.

Sweat is produced to prevent the body temperature from rising above normal.

Describe how sweat production lowers the body temperature.

Use Fig. 8.1 to help with your explanation.

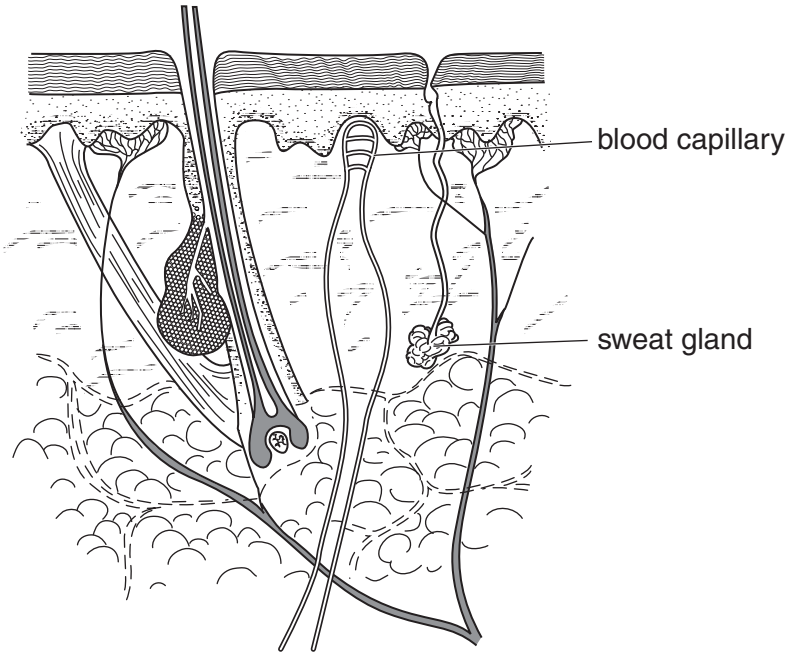

Fig. 8.1

.....

.....

.....

.....

.....

.....

.....

.....[4]

(c) Fig. 8.2 shows the results of an investigation into the volume of sweat produced by a student running at 12 km per hour.

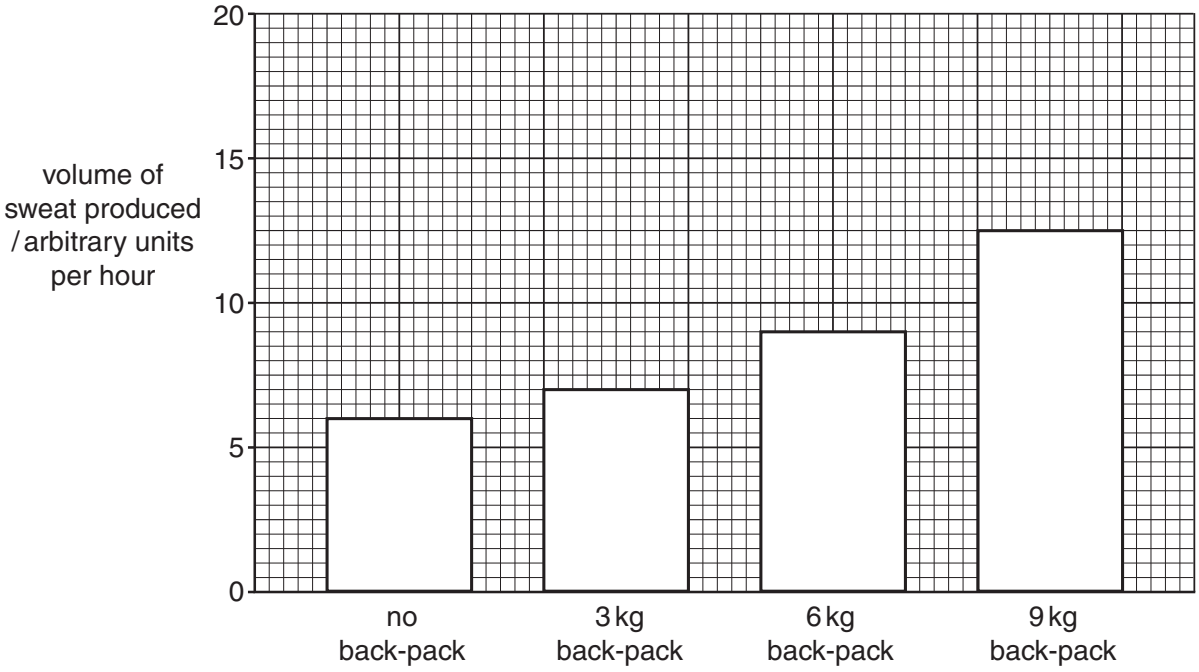

Fig. 8.2

(i) State the volume of sweat produced by the student carrying a 6 kg back-pack.

..... arbitrary units per hour [1]

(ii) State **two** conclusions that can be made about the relationship between the volume of sweat produced and the load carried when exercising.

Use information from Fig. 8.2.

1 .....

.....

2 .....

.....

[2]

(d) The student in the investigation put on a thick track suit, as shown in Fig. 8.3.

He ran at 12 km per hour carrying a 9 kg back-pack.

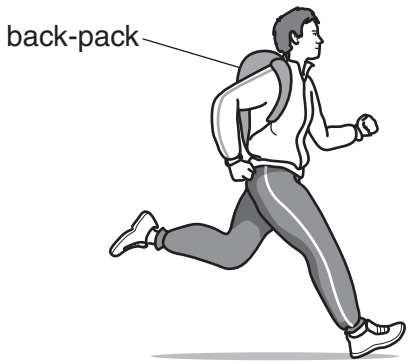

Fig. 8.3

His sweat production increased from 12.5 to 24.0 arbitrary units per hour.

(i) Calculate the percentage increase in sweat production caused by wearing a thick track suit.

Show your working.

..... % [2]

(ii) Suggest why wearing a thick track suit increased the volume of sweat produced.

.....

.....

.....

.....

.....[2]

[Total: 13]

9 This question is about photosynthesis.

Complete the sentences using words from the list.

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

chlorophyll	**chloroplast**	**epidermis**	**glucose**
glycogen	**membrane**	**palisade**	**starch**
stigma	**stomata**		

When plants carry out photosynthesis the chemical called ..... traps light energy.

The energy is used to combine raw materials to make ..... .

This process mainly happens in the ..... layer of the leaf.

The gas needed for photosynthesis enters the leaf through the ..... .

These are found in the ..... of the leaf.

Leaves appear green because they contain the chemical called ..... .

[6]

[Total: 6]

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10 **(a)** Name the plant cell that is specialised to absorb water from the soil.

.....[1]

(b) Fig. 10.1 shows a section through a plant root and a plant stem.

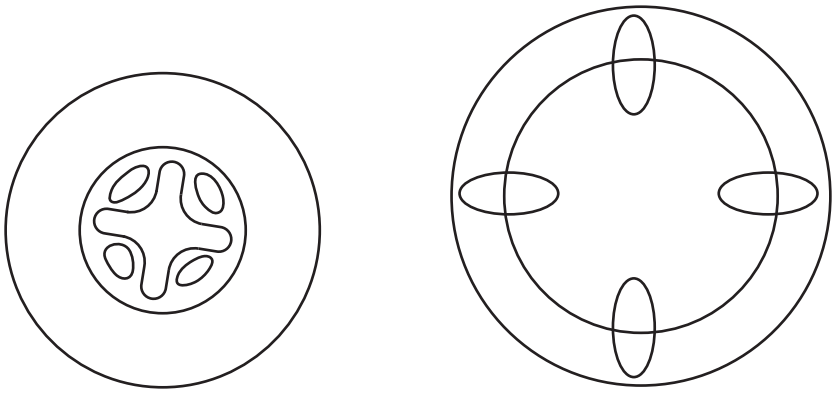

Fig. 10.1

Label the xylem tissue in the root and the stem on Fig. 10.1.

Use label lines and the letter **F**. [2]

(c) A student carried out an investigation into the rate of transpiration.

Fig. 10.2 shows three identical shoots and the way the leaves were treated in the investigation.

Petroleum jelly is greasy and waterproof.

All three shoots were kept in the same conditions for one hour.

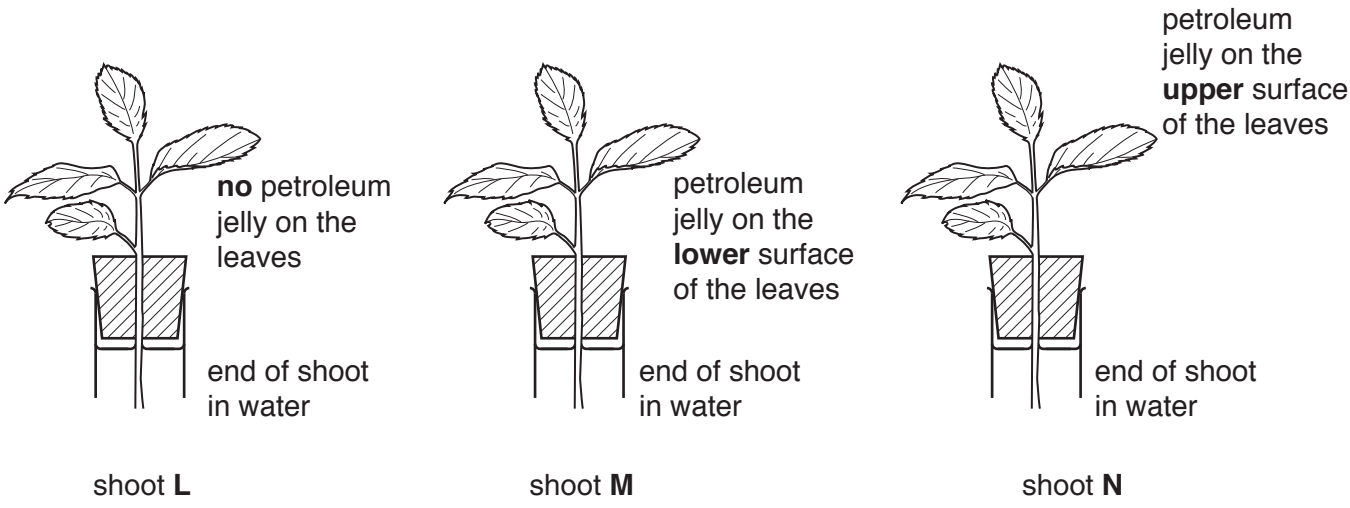

Fig. 10.2

Table 10.1 shows the results of the investigation.

Table 10.1

shoot	rate of transpiration / arbitrary units per hour
L	16
M	2
N	14

(i) Suggest why shoot **M** lost water (transpired) more slowly than shoot **L**.

.....

.....

.....

.....[2]

(ii) Suggest why the rate of water loss was similar for shoots **L** and **N**.

.....

.....

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.....[2]

[Total: 7]

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