Cambridge IGCSE

Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER			

BIOLOGY **0610/22**

Paper 2 Core **October/November 2014**

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 **17** printed pages and **3** blank pages.

© UCLES 2014

CAMBRIDGE International Examinations

1 Fig. 1.1 shows five invertebrates that can harm humans.

View solution

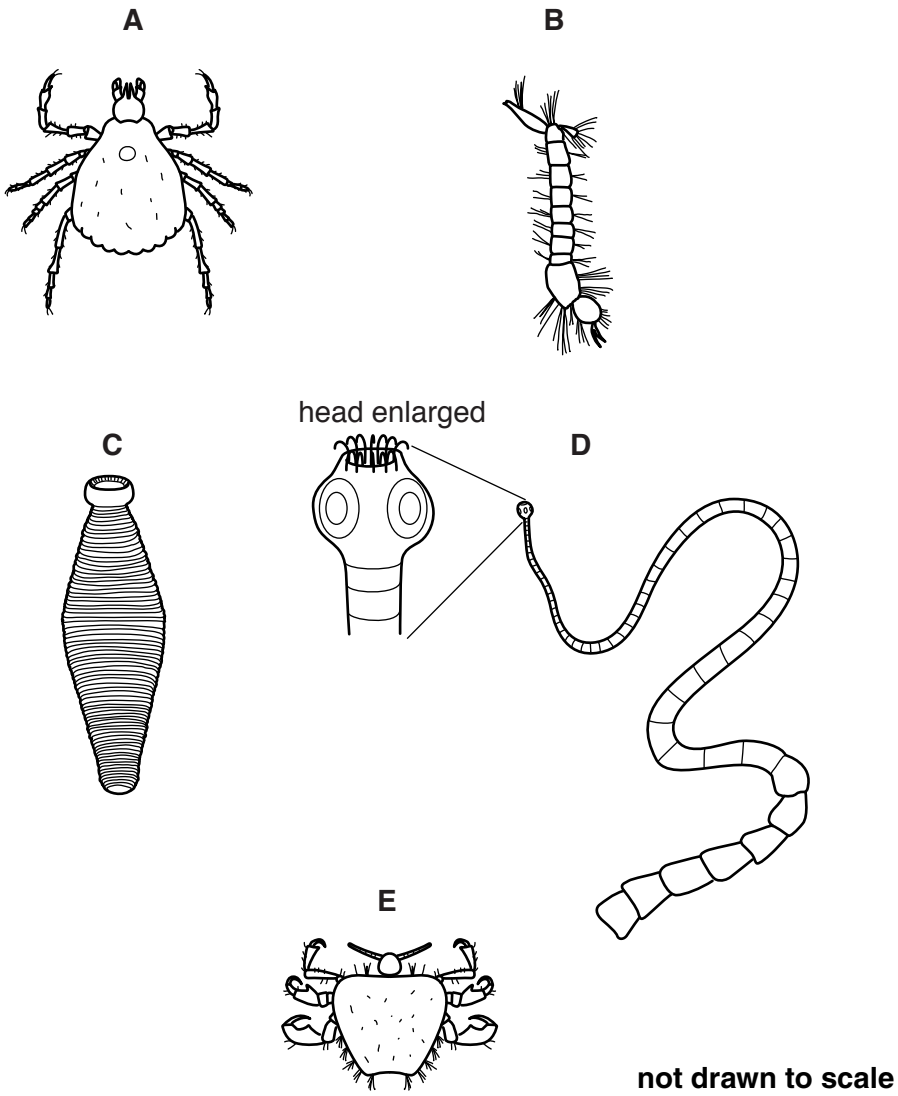

Fig. 1.1

Use the key to identify the invertebrates shown in Fig. 1.1.

Write the letter for each organism in the key.

© UCLES 2014

Key

description		name of organism	letter
1	(a) body divided into visible segments	go to 3	
	(b) body not divided into visible segments	go to 2	
2	(a) four pairs of legs present	*Amblyomma americanum*	
	(b) three pairs of legs present	*Pthirus pubis*	
3	(a) bristles present on body	*Aedes aegypti*	
	(b) no bristles present on body	go to 4	
4	(a) hooks on head	*Taenia solium*	
	(b) no hooks on head	*Hirudo medicinalis*	

[4]

[Total: 4]

© UCLES 2014

2 **(a)** Fig. 2.1 shows the relationship between body height and body mass in humans.
People can be placed into categories according to this relationship, as shown in Fig. 2.1.

View solution

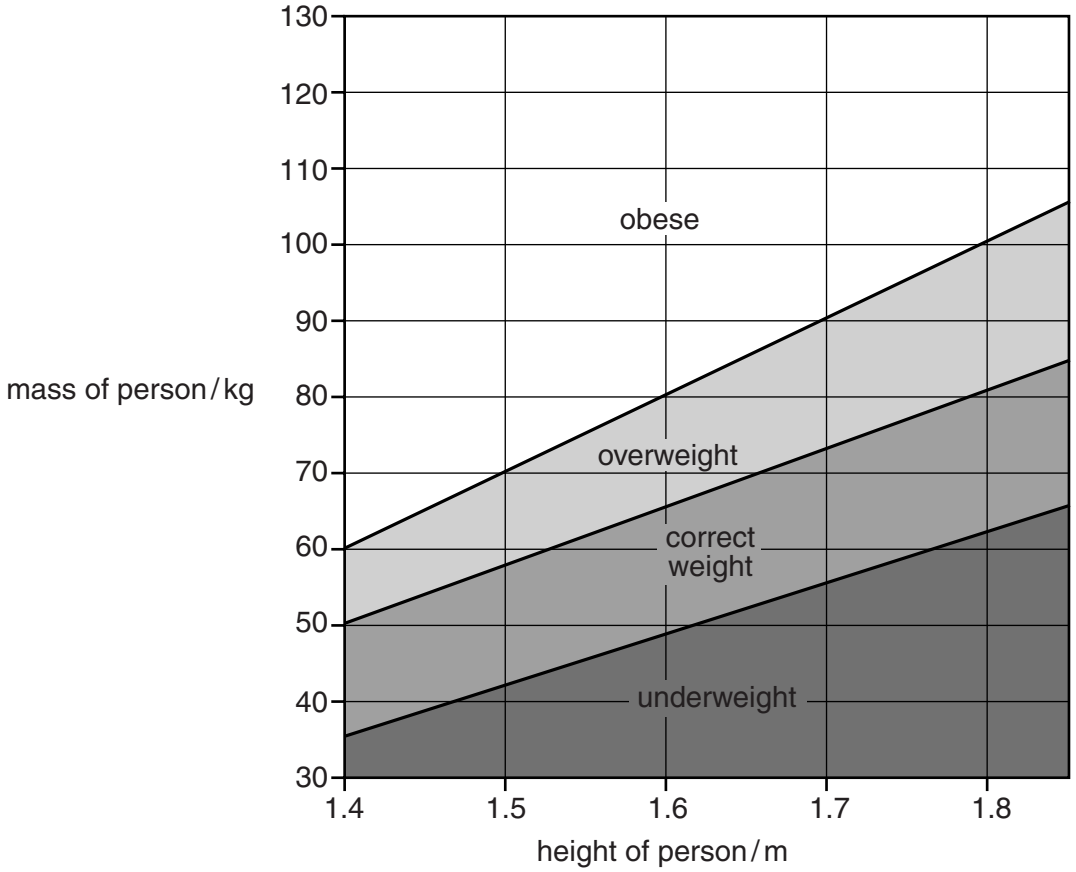

Fig. 2.1

(i) Table 2.1 gives the height and mass of four students.
Use the information in Fig. 2.1 to complete the last column in Table 2.1.

Table 2.1

student	height / m	mass / kg	category
G	1.5	73	
H	1.7	65	
J	1.8	55	
K	1.8	85	

[2]

(ii) Suggest **two** ways in which Fig. 2.1 could be improved to make it apply to everyone.

View solution

1 .....

.....

2 .....

.....[2]

© UCLES 2014

(b) An obese student wishes to lose weight.

(i) Name **two** classes of food that need to be reduced in the diet of an obese person to help lose weight.

1 .....

2 .....[2]

(ii) People who are trying to lose weight are also advised to take more exercise. Explain how this would help them lose weight.

.....

.....

.....

.....

.....

.....[3]

(iii) People who are obese are more likely to develop certain diseases than people who are the correct weight.

Name a disease that is linked to obesity.

View solution

.....[1]

(c) A balanced diet includes food that provides fibre (roughage).

Name a food that is a good source of fibre and explain why it is important to include fibre in the diet.

source .....

importance .....

.....

.....

.....

.....

.....[4]

[Total: 14]

View solution

© UCLES 2014

3 **(a)** Fig. 3.1 shows the female reproductive system.

View solution

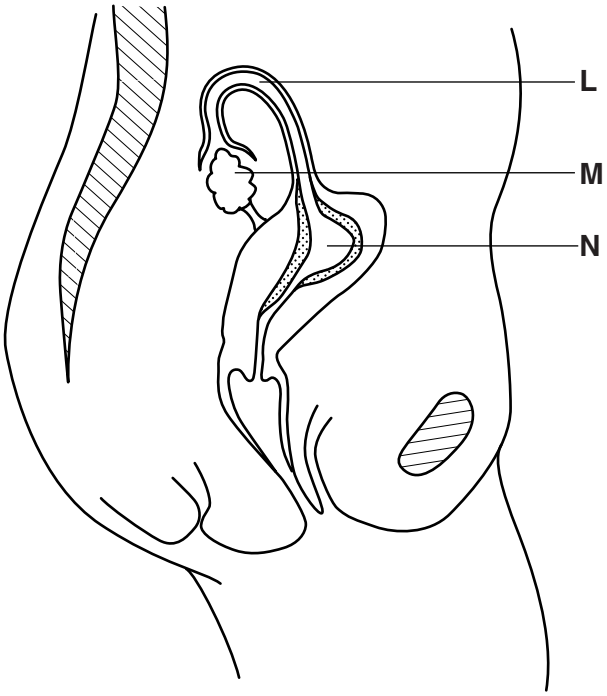

Fig. 3.1

State the names of the structures labelled **L**, **M** and **N** and give a function for each structure. Write your answers in Table 3.1.

Table 3.1

letter	name of structure	function of structure
L		
M		
N		

[6]

© UCLES 2014

(b) Inheritance of sex in humans is controlled by two chromosomes which are given the symbols X and Y.

View solution

Fig. 3.2 is a flow diagram showing how two parents can produce a **female** baby.

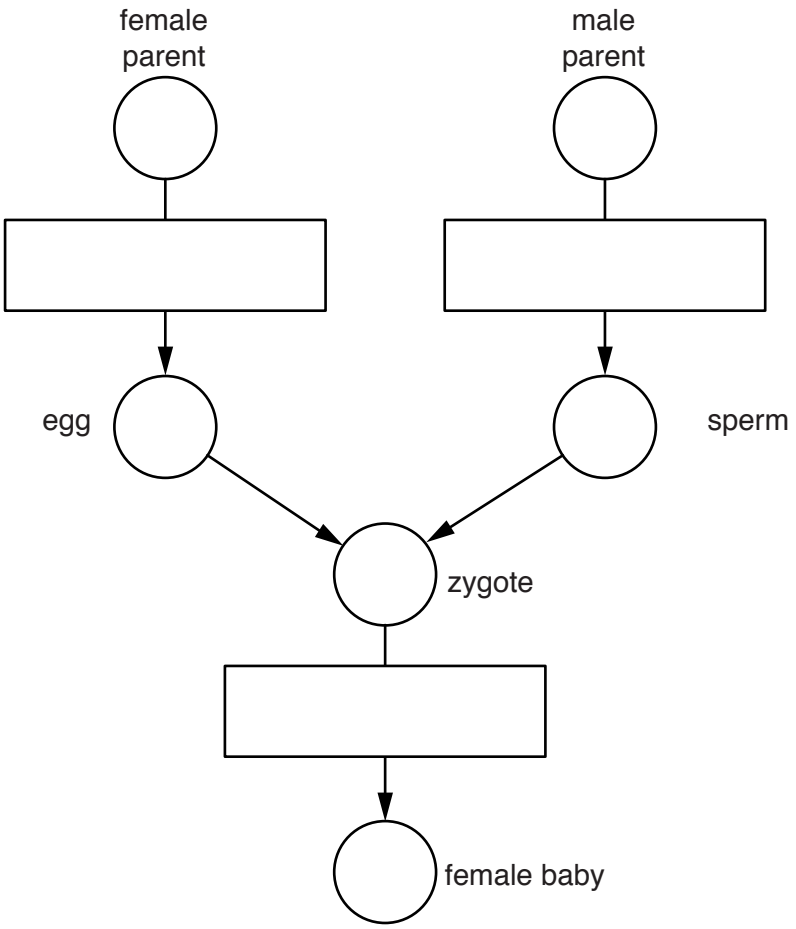

Fig. 3.2

Complete Fig. 3.2 by:

- writing in each **circle** on Fig. 3.2, the symbols for the sex chromosomes that are present
- writing in each **box** on Fig. 3.2, the name of the type of cell division that occurs.

[6]

[Total: 12]

© UCLES 2014

4 **(a)** Fig. 4.1 shows a section through an insect-pollinated flower.
The structures in the flower are labelled by letters.

View solution

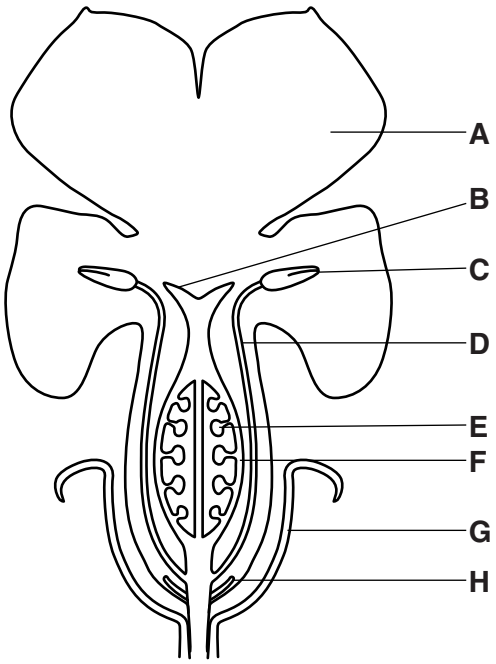

Fig. 4.1

Table 4.1 describes the functions of **four** of the flower parts.

Complete Table 4.1 by writing the letter that identifies the flower part that carries out each function.

Table 4.1

function of flower part	letter
forms the seed	
produces pollen	
protects the flower bud	
receives the pollen	

[4]

© UCLES 2014

(b) Insect-pollinated flowers and wind-pollinated flowers are different in structure.

View solution

Complete Table 4.2 by:

- stating how the stamens and pollen of wind-pollinated flowers are different from those of insect-pollinated flowers
- giving a reason for each of the differences.

An example for the petal has been completed for you.

Table 4.2

flower part	difference	reason for the difference
petal	wind-pollinated flowers have small petals that are not brightly coloured	wind-pollinated flowers do not need to attract insects
stamen		
pollen		

[4]

[Total: 8]

© UCLES 2014

BLANK PAGE

5 Fig. 5.1 shows the water cycle.
Letters have been used to represent **different** processes that take place in the cycle.

View solution

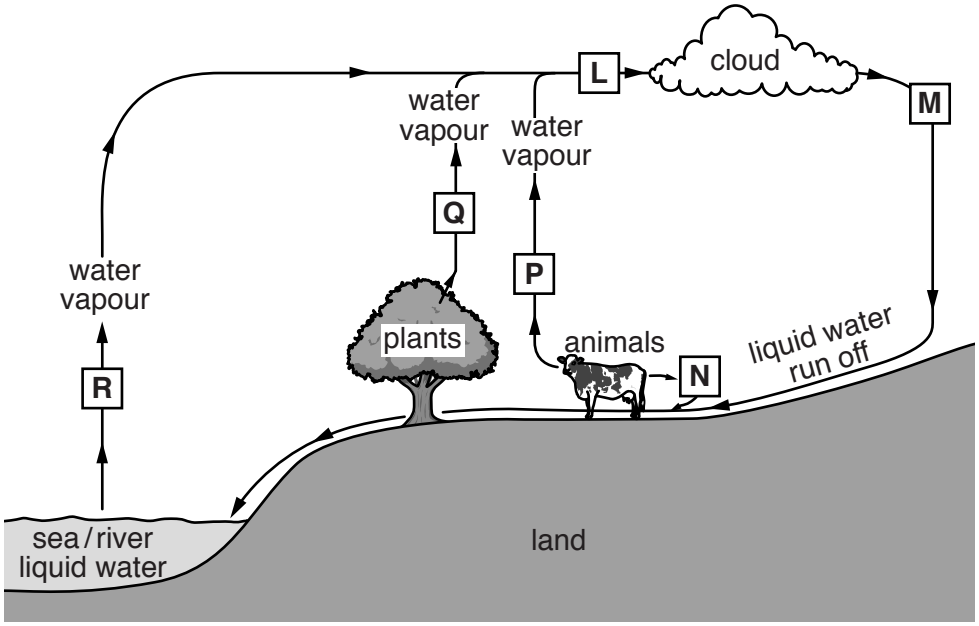

Fig. 5.1

Identify the **different** processes represented by letters **L**, **M**, **N**, **P**, **Q** and **R** and name them in Table 5.1.

Table 5.1

letter representing the process	name of process in the water cycle
L	
M	
N	
P	
Q	
R	

[6]

[Total: 6]

6 **(a)** The list states some of the roles of organisms in a food chain.

View solution

carnivore **decomposer** **herbivore** **primary consumer**

producer **secondary consumer** **tertiary consumer**

In each box on Fig. 6.1, use **two** terms from the list to describe the roles of the organisms in food chain **A** and food chain **B**.
Each term may be used once, more than once, or not at all.

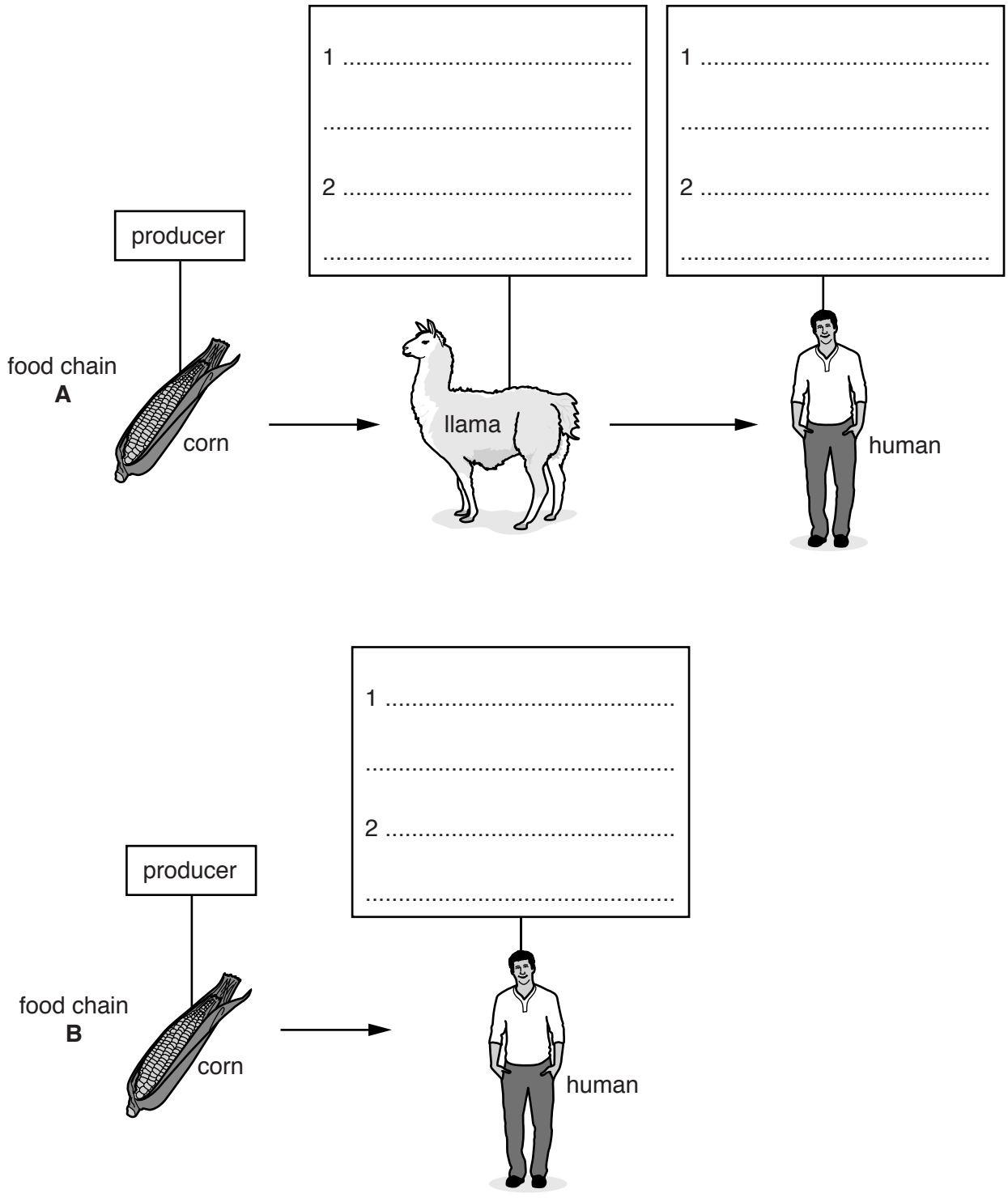

Fig. 6.1

[6]

(b) Define the term *trophic level*.

View solution

.....

.....

.....

.....[2]

(c) A student described a food chain found in his garden.

View solution

- One bush has hundreds of aphids on it.
  The aphids suck liquid from the phloem of the bush to get their food.
- The aphids are eaten by large beetles.
- All the beetles have many parasites on their bodies.
  The parasites suck liquids from the bodies of the beetles for their food.

Fig. 6.2 shows part of the pyramid of numbers for this food chain.

Complete Fig. 6.2 by:

- sketching in the **two** missing boxes
- labelling the **four** boxes with the names of the organisms.

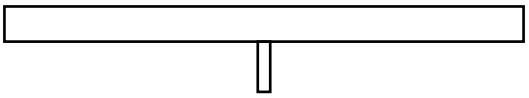

Fig. 6.2

[2]

[Total: 10]

7 Humans carry out aerobic and anaerobic respiration.

View solution

(a) Compare the two types of respiration by completing Table 7.1.

Place a tick (✓) to show which statements are correct for each type of respiration in humans.

Table 7.1

statement	aerobic respiration	anaerobic respiration
produces lactic acid		
releases carbon dioxide		
uses glucose		
uses oxygen		

[4]

(b) Athletes compete in races of different distances.

Fig. 7.1 shows the percentage of energy released by aerobic and anaerobic respiration during these races.

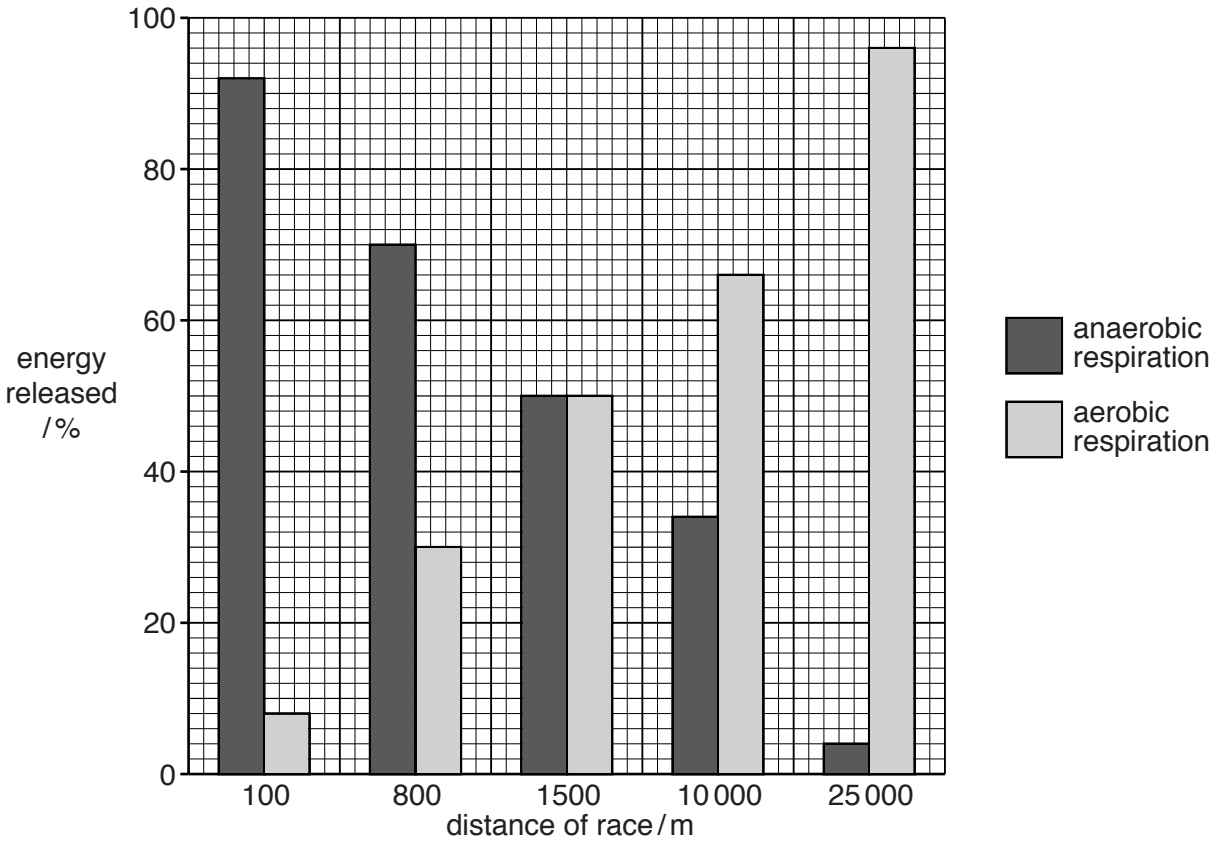

Fig. 7.1

© UCLES 2014

Use Fig. 7.1 to:

(i) state the percentage of energy that is provided by anaerobic respiration in a 100m race

View solution ..... % [1]

(ii) state the length of race in which 96% of the energy is provided by aerobic respiration

.....m [1]

(iii) state the length of race where the total energy released by each type of respiration is equal.

.....m [1]

(c) State **two** conclusions that can be made from the data shown in Fig. 7.1.

View solution

1 .....

.....

2 .....

.....[2]

[Total: 9]

8 Fig. 8.1 shows a section through a leaf. The leaf is adapted to carry out photosynthesis in the plant.

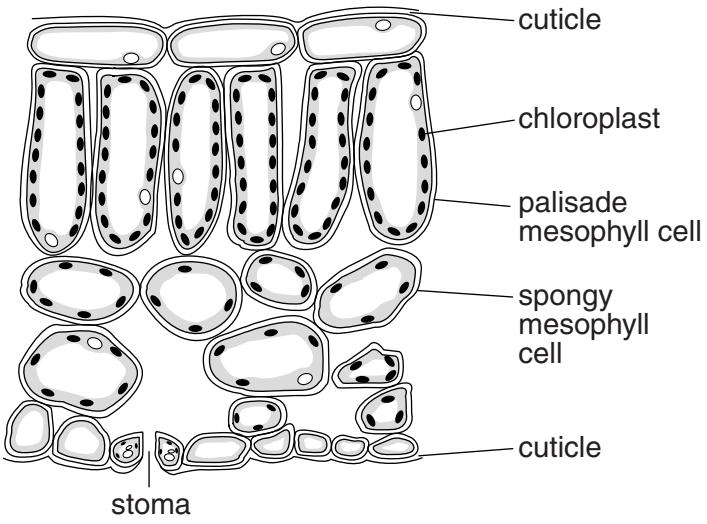

Fig. 8.1

(a) (i) Give the word equation for photosynthesis.

View solution

.....

.....[2]

(ii) State the function of the chloroplasts in photosynthesis.

View solution

.....

.....[2]

(iii) Describe how the chloroplasts are distributed in the mesophyll layers of the leaf and explain how this distribution is important for efficient photosynthesis.

description .....

.....

explanation .....

.....[2]

View solution

(b) (i) Explain the role of stomata in the process of photosynthesis.

View solution

.....

.....

.....

.....[2]

(ii) Explain the function of the cuticle in a leaf.

View solution

.....

.....

.....

.....[2]

(c) To grow, a plant needs a supply of nitrate ions.

View solution

Explain the reason for this.

.....

.....

.....

.....[2]

[Total: 12]

9 Fig. 9.1 shows processes that are carried out by organs in the human body.

View solution

Draw **one** line from each process to the organ where the process takes place.

You will need to draw **five** lines.

process	**organ**
breaks down alcohol	kidney
destroys hormones	liver
eliminates excess water	lung
excretes carbon dioxide	
forms urea	

[5]

Fig. 9.1

[Total: 5]

BLANK PAGE

BLANK PAGE

Permission to reproduce items where third-party owned material protected by copyright is included has been sought and cleared where possible. Every reasonable effort has been made by the publisher (UCLES) to trace copyright holders, but if any items requiring clearance have unwittingly been included, the publisher will be pleased to make amends at the earliest possible opportunity.

Cambridge International Examinations is part of the Cambridge Assessment Group. Cambridge Assessment is the brand name of University of Cambridge Local Examinations Syndicate (UCLES), which is itself a department of the University of Cambridge.