Cambridge IGCSE

Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

CANDIDATE NAME	
CENTRE NUMBER	
CANDIDATE NUMBER	

BIOLOGY **0610/23**

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.

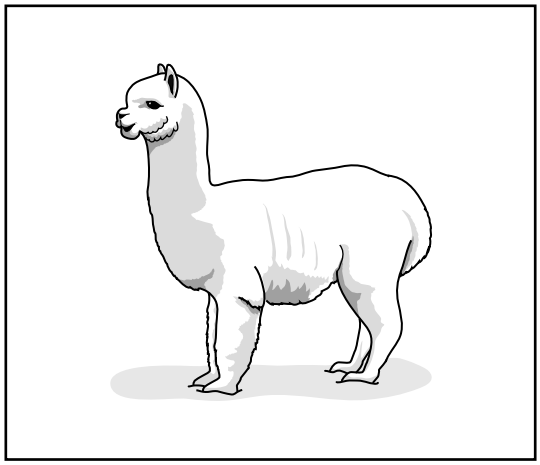
The syllabus is approved for use in England, Wales and Northern Ireland as a Cambridge International Level 1/Level 2 Certificate.

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

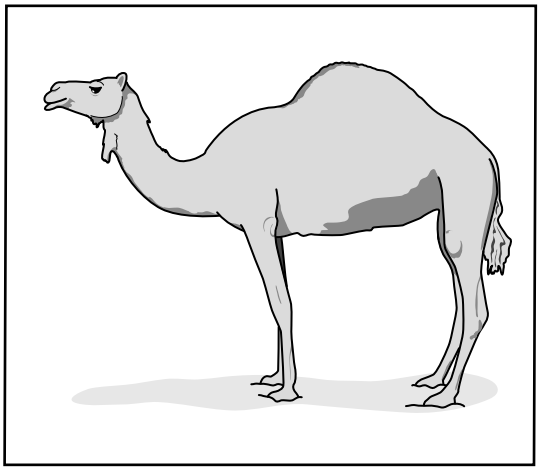
CAMBRIDGE International Examinations

[Turn over

1 Fig. 1.1 shows five different mammals.



A



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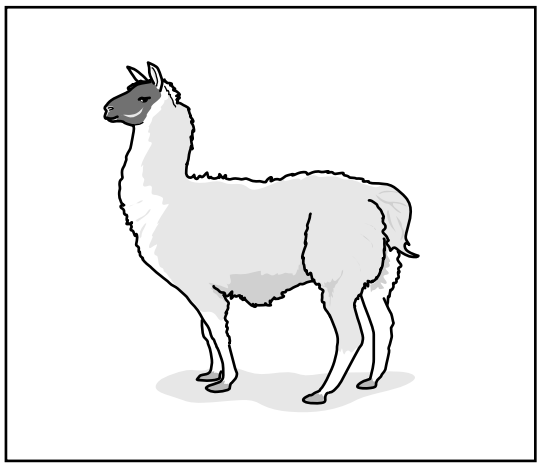

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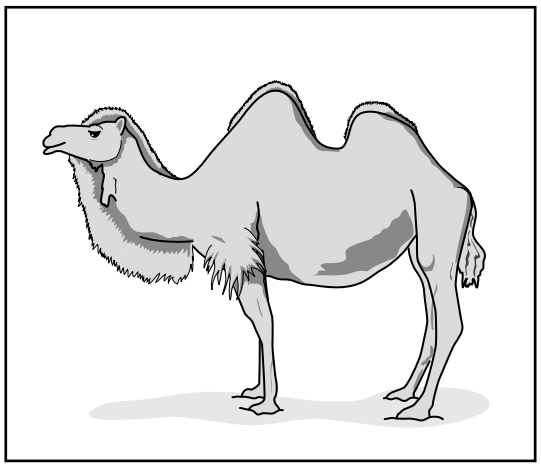
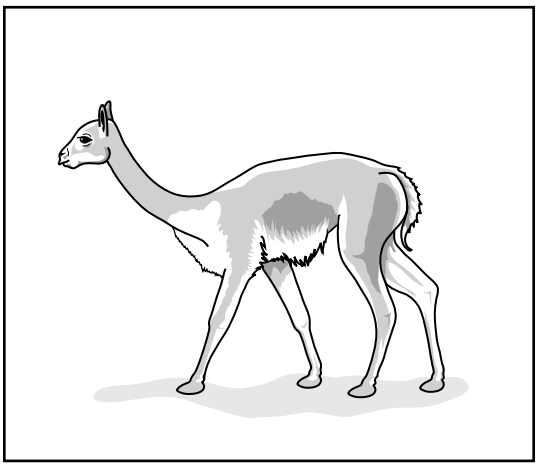


D



E

Fig. 1.1

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

Write the letter of each species (**A** to **E**) in the correct box beside the key.

Key

		name of mammal	letter
1	(a) has a humped back	go to 2	
	(b) back is level with no hump	go to 3	
2	(a) has one hump on its back	*Camelus dromedarius*	
	(b) has two humps on its back	*Camelus ferus*	
3	(a) has black fur on its face	*Lama glama*	
	(b) fur on face is not black	go to 4	
4	(a) neck and legs long and thin	*Vicugna vicugna*	
	(b) neck and legs short and thick	*Vicugna pacos*	

[Total: 4]

[Turn over

2 **(a)** **(i)** State the word equation for aerobic respiration.

[ ] + [ ] → [ ] + [ ] [2]

(ii) Organisms carry out aerobic respiration to release the energy they need to stay alive.

State **three** processes that humans carry out using this released energy.

1 .....

2 .....

3 .....[3]

(b) An investigation was carried out on two students.

Each student breathed out as much air as possible, as quickly as possible.

The volume of expired (exhaled) air and the time taken were measured.

Fig. 2.1 shows the results of the investigation.

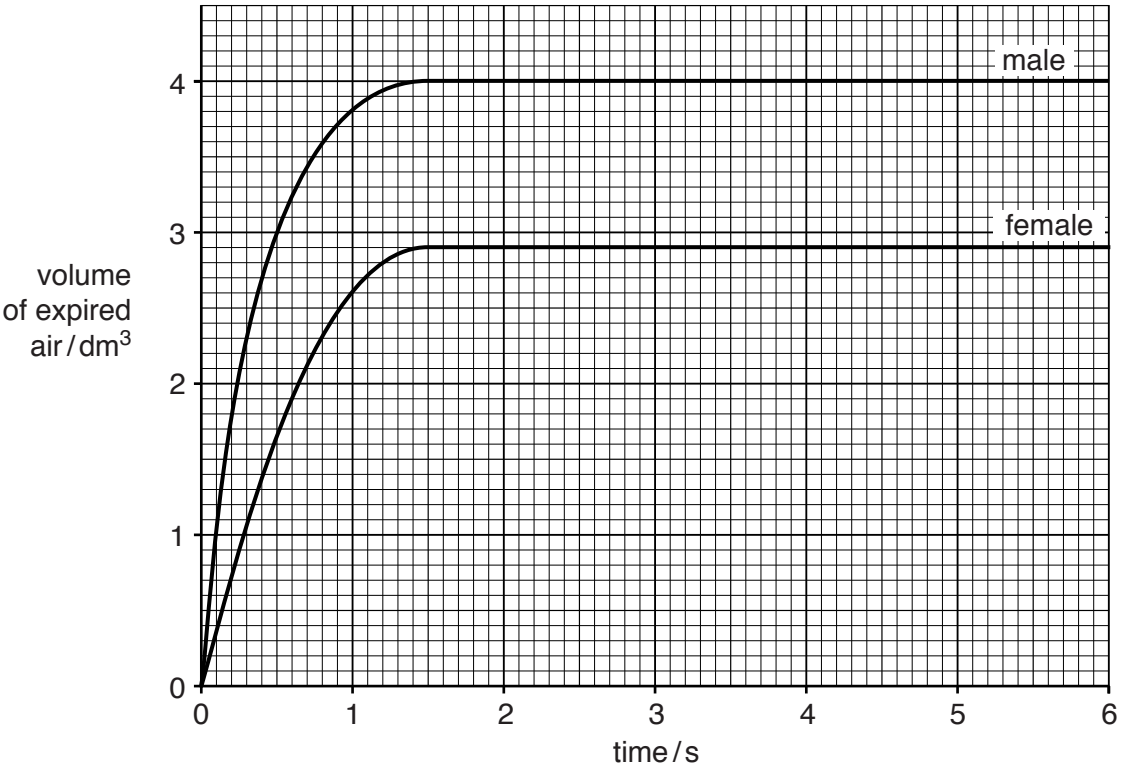


Fig. 2.1

(i) State the volume of air expired by the female student **and** the amount of time she took to breathe out as much air as possible.

volume ..... dm^3

time taken ..... s [2]

(ii) State **one** difference and **one** similarity shown in Fig. 2.1 between the results for the male and female students.

difference .....

.....

similarity .....

.....[2]

(iii) This investigation was also carried out on another male student who had smoked cigarettes each day for the last four years.

Suggest **one** way in which the results for this student would be different to those of the male student who did not smoke.

.....

.....[1]

(c) State **two** components of tobacco smoke that can damage the body.

1 .....

2 .....[2]

(d) **(i)** Complete Table 2.1 by stating **three** ways in which anaerobic respiration is different to aerobic respiration in animal cells.

Table 2.1

	way in which anaerobic respiration is different to aerobic respiration in animal cells
1	
2	
3	

[3]

(ii) Yeasts carry out anaerobic respiration.

State **two** ways in which humans make use of this process.

1 .....

2 .....[2]

[Total: 17]

3 Choose words from the list to complete the spaces in the sentences.

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

diploid embryo haploid ovary oviduct semen

sperm testis ureter urethra zygote

In humans, the female gamete is the egg and the male gamete is the ..... .

Both gametes are ..... cells.

An egg is produced by an ..... and passes along an ..... to reach the uterus.

When humans reproduce, their gametes fuse to form a cell called the ..... .

[Total: 5]

4 Explain why it is important for humans to carry out conservation of fossil fuels and water supplies.

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.....

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.....[4]

[Total: 4]

5 Fig. 5.1 shows a photograph of some red blood cells, taken through a microscope.

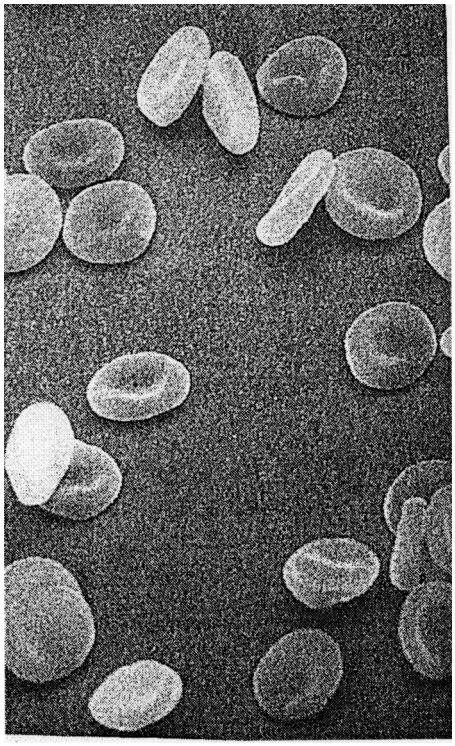

Fig. 5.1

(a) Explain how the features of a red blood cell given in Table 5.1 are important to its function.

Write your answers in Table 5.1.

Table 5.1

feature of red blood cell	explanation of importance
contains haemoglobin	
no nucleus present	
very tiny cell	

[3]

(b) Blood is made up of four major components. Two of these components are plasma and red blood cells.

Name the **two** other major components of blood and state their function.

name .....

function .....

.....

name .....

function .....

.....[4]

[Total: 7]

6 Plants carry out translocation and transpiration to move substances.

Complete Table 6.1 to give a comparison between translocation and transpiration.

Table 6.1

point of comparison	translocation	transpiration
example of substance moved		
direction of movement of substance	*from* ..... *to*	*from* ..... *to* .....
tissue where process takes place		

[Total: 6]

7 The boxes on the left contain biological terms.

The boxes on the right contain definitions of these biological terms.

Draw **one** straight line to link each term with its correct definition.

One has been done for you.

term	definition
trophic level	unit containing all of the organisms and their environment, interacting together in a given area
ecosystem	diagram showing the flow of energy from one organism to another
food chain	position of an organism in, for example, a pyramid of numbers
herbivore	organism that gets its energy from eating plants
carnivore	organism that gets its energy from dead or waste organic matter
decomposer	organism that gets its energy from eating other animals

[4]

[Total: 4]

Question 8 begins on page 12.

8 **(a)** Fig. 8.1 shows part of the carbon cycle.

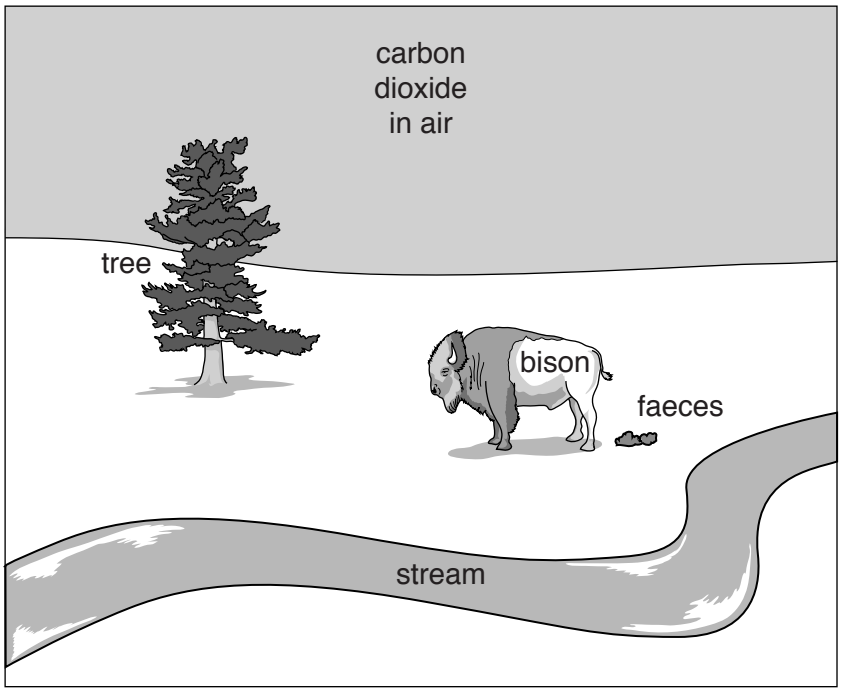

Fig. 8.1

On Fig. 8.1 draw **four** labelled arrows to represent the following processes:

- **one** arrow to represent photosynthesis, labelled **P**
- **one** arrow to represent decay, labelled **D**
- **two** arrows to represent respiration, each labelled **R**.

[4]

(b) Fig. 8.2 shows part of the water cycle.

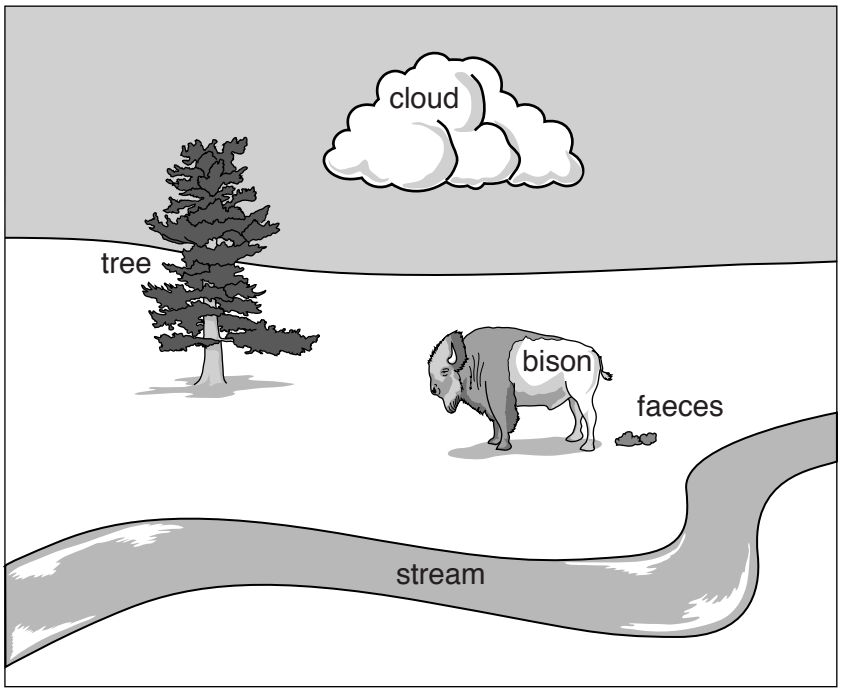

Fig. 8.2

On Fig. 8.2 draw **two** labelled arrows to represent the following processes:

- **one** arrow to represent precipitation, labelled **K**
- **one** arrow to represent evaporation, labelled **E**.

[2]

[Total: 6]

9 **(a)** Humans need fibre (roughage) and mineral ions as part of a balanced diet.

Name **four** other food groups that form part of a balanced diet.

1 .....

2 .....

3 .....

4 .....[4]

(b) Explain the importance of including fibre in the diet.

.....

.....

.....

.....

.....

.....[3]

(c) Greater food production has helped the human population of the world to increase.

Explain **two** different ways in which modern technology has resulted in greater food production.

.....

.....

.....

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.....

.....

.....

.....[4]

[Total: 11]

Question 10 begins on page 16.

10 Fig. 10.1 shows a diagram of the reproductive organs of a wind-pollinated flower.

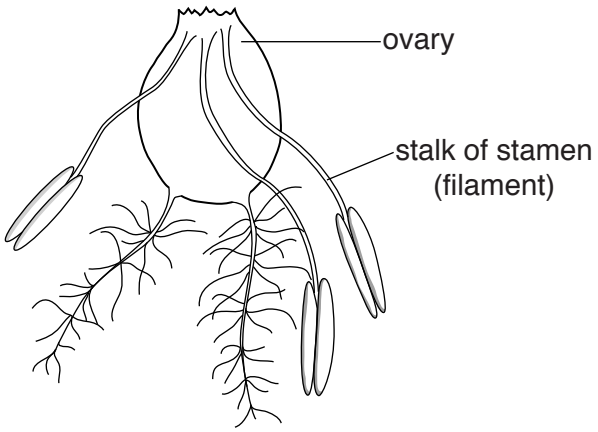


Fig. 10.1

(a) State **three** ways in which the reproductive structures of this flower are different to those of an insect-pollinated flower.

Write your answers in Table 10.1.

Table 10.1

structure	wind-pollinated flower	insect-pollinated flower
anther		
stalk of stamen (filament)		
stigma		

[3]

(b) State **three** ways in which an insect-pollinated flower attracts insects.

1 .....

2 .....

3 .....[3]

(c) The pollen grains of wind-pollinated flowers and insect-pollinated flowers are different.

Suggest **one** feature that would help pollen grains be dispersed by wind.

.....

.....[1]

[Total: 7]

11 (a) Define these genetic terms:

(i) *meiosis* .....

.....

.....[2]

(ii) *chromosome.* .....

.....

.....[2]

(b) The petal colour in a species of plant can be blue or white.

The allele for blue petals is dominant to the allele for white petals.

The allele for blue petals is represented by **B** and the allele for white petals is represented by **b**.

Two **heterozygous** blue plants were crossed.

Complete Fig. 11.1 to show the results of this cross.

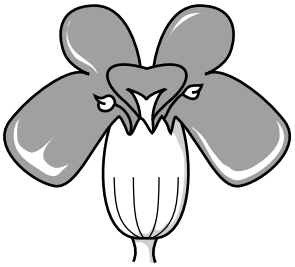
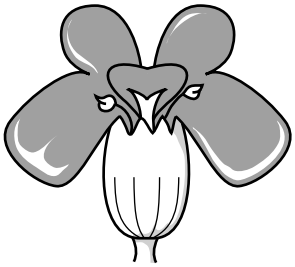
	blue petals	blue petals
parental phenotype		
parental genotype	.....	.....
gametes	◯ ◯	◯ ◯
offspring genotype	....	....
offspring phenotype	....	....
ratio	.....blue :	.....white

Fig. 11.1

[5]

[Total: 9]

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