Centre Number	Candidate Number	Name

CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

BIOLOGY **0610/02**

Paper 2

May/June 2003

1 hour

Candidates answer on the Question Paper.
No additional materials are required.

READ THESE INSTRUCTIONS FIRST

Write your name, Centre number and candidate number in the spaces at the top of this page.
Write in dark blue or black pen in the spaces provided on the Question Paper.
You may use a soft pencil for any diagrams, graphs or rough working.
Do not use staples, paper clips, highlighters, glue or correction fluid.

Answer **all** questions.
The number of marks is given in brackets [ ] at the end of each question or part question.

If you have been given a label, look at the details. If any details are incorrect or missing, please fill in your correct details in the space given at the top of this page.

Stick your personal label here, if provided.

For Examiner's Use	
1	
2	
3	
4	
5	
6	
7	
8	
9	
Total	

This document consists of **14** printed pages and **2** blank pages.

UNIVERSITY of CAMBRIDGE
Local Examinations Syndicate
[Turn over

1 Respiration is a characteristic of living organisms.

(a) State three other characteristics of living organisms.

1. .....

2. .....

3. .....[3]

(b) A remote control deep-sea probe collected mud from the seabed at a depth of 8000 m. The mud was thought to contain living microorganisms.

Suggest an investigation you might carry out which would indicate whether respiring microorganisms are present in a sample of the mud.

.....

.....

.....

.....

.....

.....[4]

[Total : 7]

2 **(a)** Fig. 2.1 shows a sugar cane flower that is wind pollinated.

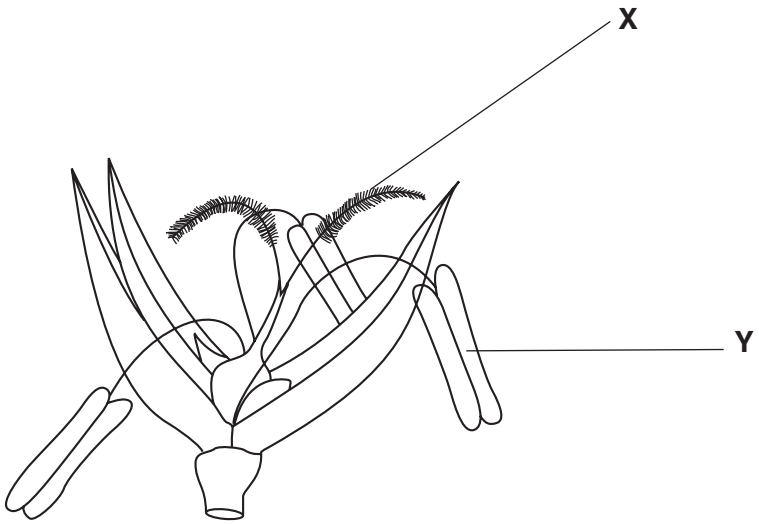

Fig. 2.1

(i) Name structures **X** and **Y**.

X .....

Y .....[2]

(ii) Explain how a feature, visible in Fig. 2.1, suggests that this flower is wind pollinated.

.....

.....

.....[2]

(iii) Suggest two other features in which the sugar cane flower might be different from an insect-pollinated flower.

1. .....

2. .....[2]

[Turn over

(b) Fig. 2.2 shows the dispersal of winged fruits around a tree in open grassland. Samples were taken along straight lines at 5 metre intervals.

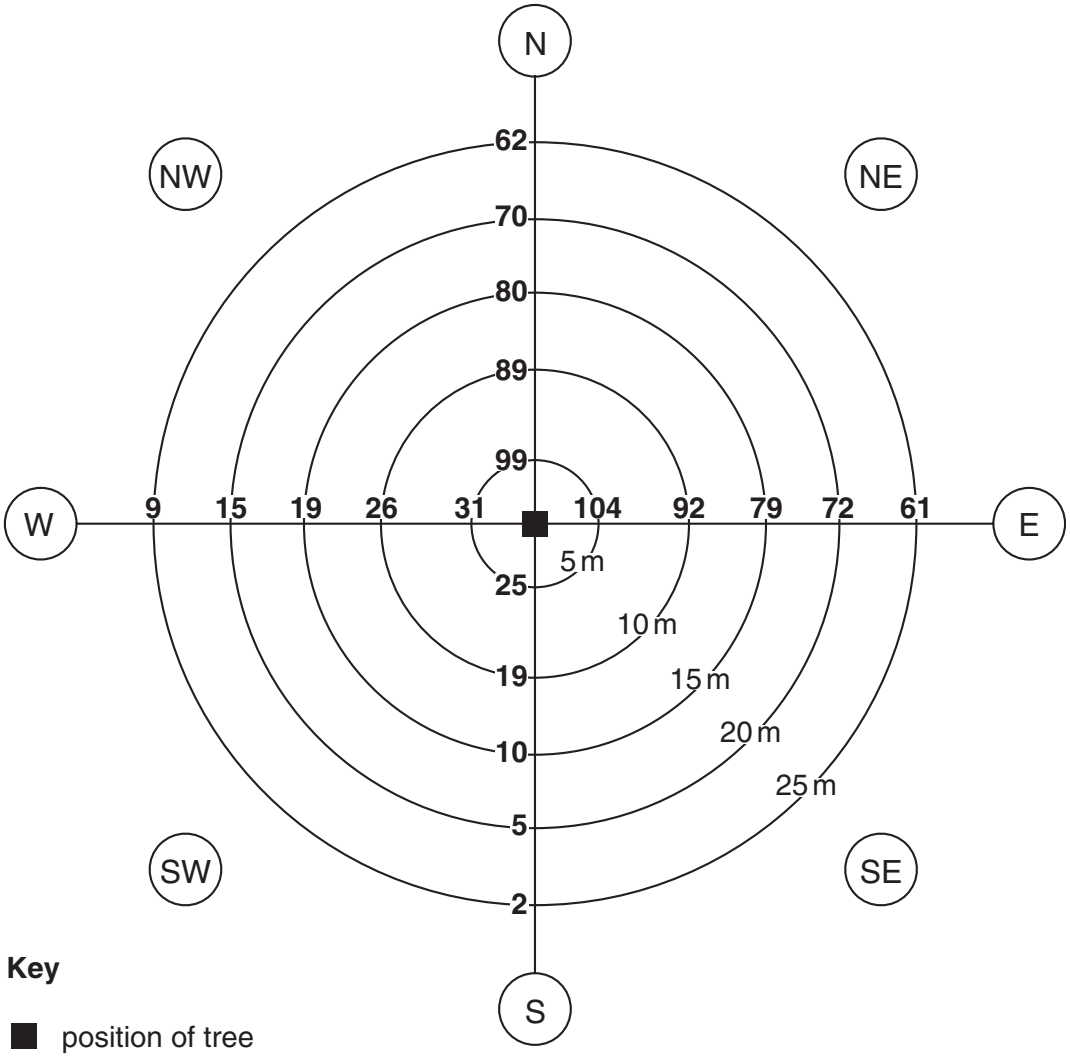

Fig. 2.2

(i) From which direction does the wind usually blow?

.....[1]

(ii) Explain how you arrived at your answer.

.....

.....[1]

(iii) Suggest a reason, other than the wind, that might affect the distribution of these fruits.

.....

.....[1]

[Total : 9]

3 Fig. 3.1 shows the carbon cycle.

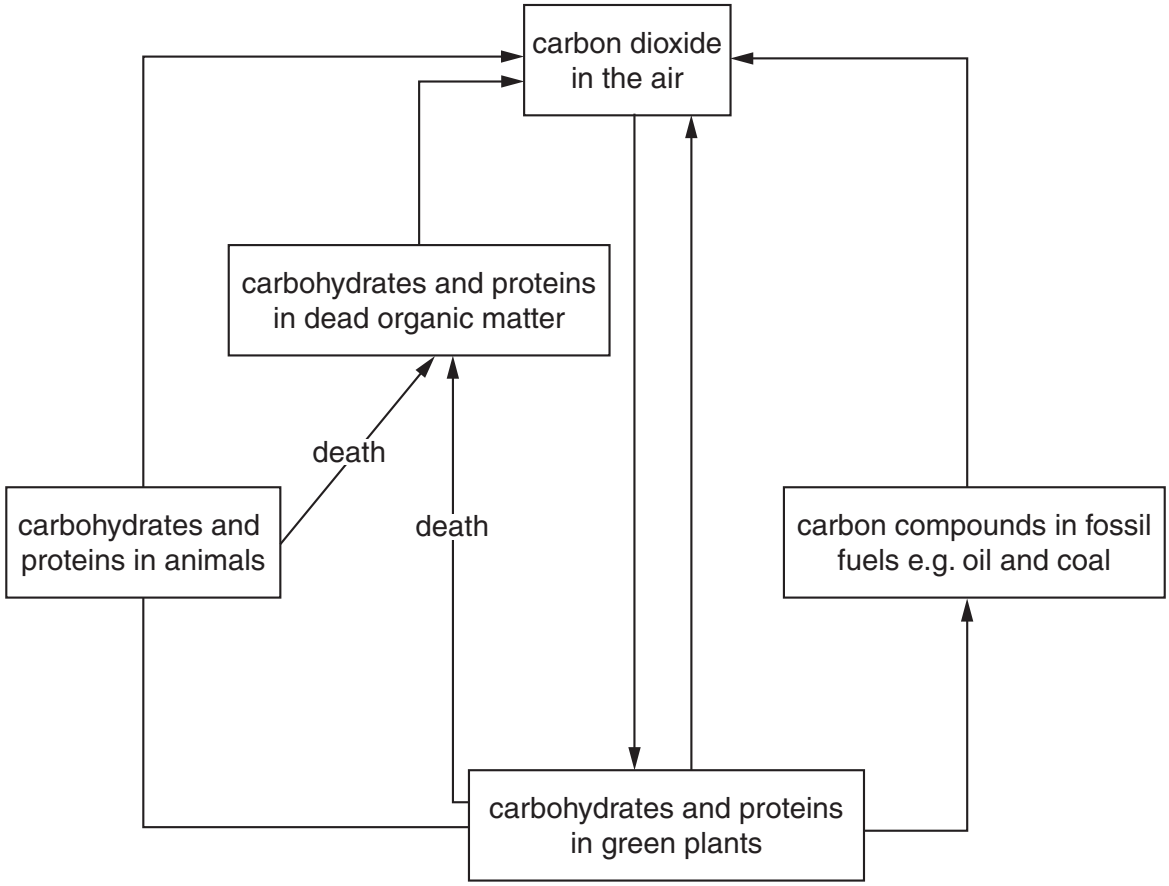

Fig. 3.1

(a) Label one arrow in each case to show where each of the following processes occur in the carbon cycle.

(i) Combustion – using the letter **C** [1]

(ii) Decomposition – using the letter **D** [1]

(iii) Photosynthesis – using the letter **P** [1]

(iv) Respiration – using the letter **R** [1]

(b) Many environmentalists are concerned by the extent of deforestation that is happening throughout the world.

Suggest how deforestation might affect

(i) the carbon cycle;

.....

.....

.....[2]

(ii) the water cycle.

.....

.....

.....[2]

[Total : 8]

4 Fig. 4.1 shows a typical animal cell and a typical plant cell.

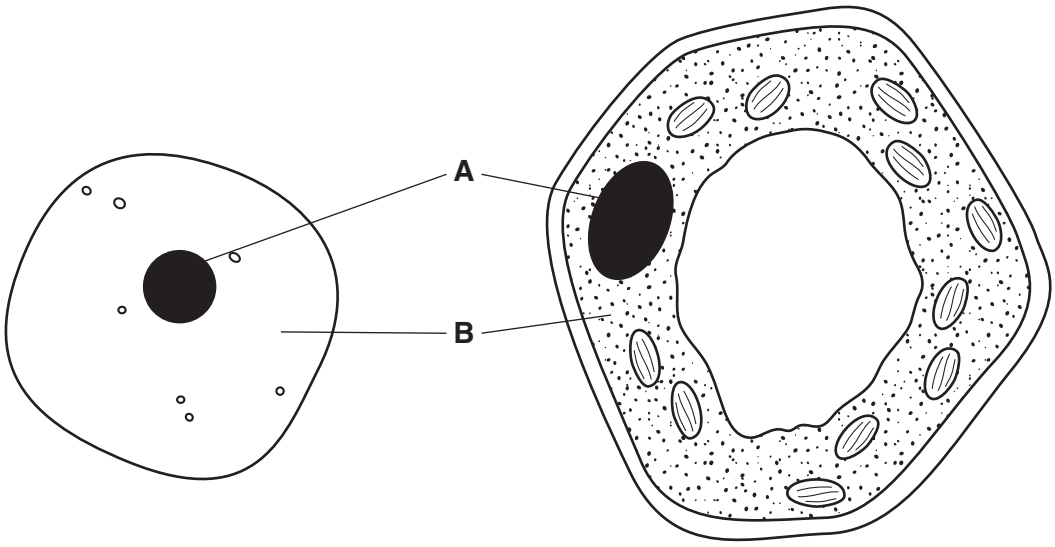

Fig. 4.1

(a) (i) Name the parts of the cells labelled **A** and **B**.

A .....

B .....[2]

(ii) Label on the diagram, with a letter **C**, another structure that occurs in both cells. [1]

(b) For each of the following types of cell, state **one** way in which it is different from the animal cell in Fig. 4.1. State the function of each type of cell.

(i) cell lining the trachea (windpipe)

difference .....

.....

function .....

.....[2]

(ii) red blood cell

difference .....

.....

function .....

.....[2]

(c) Materials can enter the cells shown in Fig. 4.1 by diffusion and osmosis.

(i) Define *diffusion*.

.....

.....

.....[2]

(ii) Describe how osmosis differs from diffusion.

.....

.....

.....

.....[2]

[Total : 11]

5 **(a)** Complete the following passage using **only** words from the list below.

diploid gametes haploid meiosis mitosis red blood cells

The transfer of inherited characteristics to new cells and new individuals depends on two types of cell division.

During ....., the chromosomes are duplicated exactly and ..... cells are produced.

However, during ....., the chromosome sets are first duplicated and then halved producing ..... cells. These cells will become ..... .

[5]

(b) Using a labelled, genetic diagram, explain the inheritance of the sex of an individual.

[4]

[Total : 9]

6 **(a)** Using a single line in each case, link each definition to the correct process.

definition	process
getting rid of fibre (roughage) from an animal	digestion
large food molecules broken down into simple substances	egestion
taking in food into an animal's alimentary canal	excretion
	ingestion

[3]

(b) Fig. 6.1 shows the alimentary canal and associated organs.

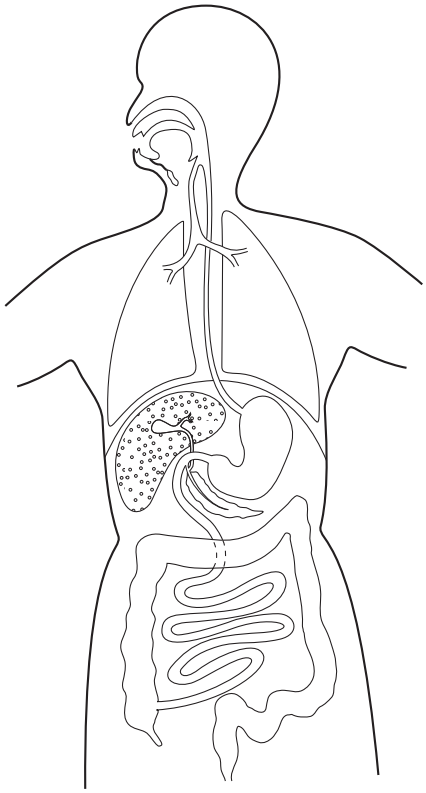

Fig. 6.1

On Fig. 6.1, label the sites of each of the following processes.

(i) absorption of water [1]

(ii) bile production [1]

(iii) glycogen storage [1]

(iv) lipase production [1]

[Total : 7]

7 Fig. 7.1 shows the eye in section.

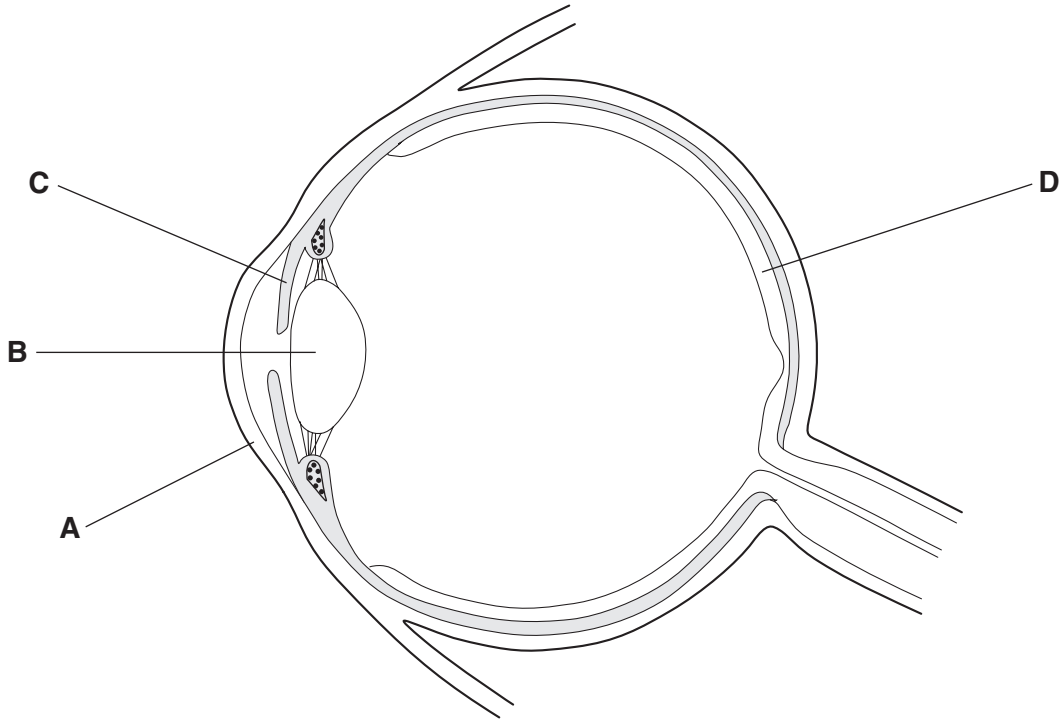

Fig. 7.1

(a) State the function of each of the labelled parts of the eye.

A .....

.....

B .....

.....

C .....

.....

D .....

.....[4]

(b) Fig. 7.2 shows two external views of the eye.

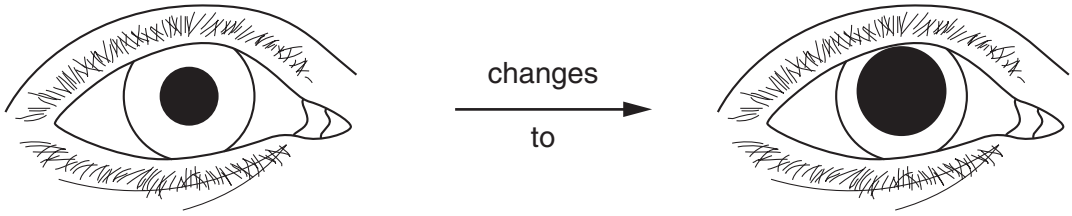

Fig. 7.2

The change shown in Fig. 7.2 happens when certain drugs are present in the blood.

Suggest how this could affect a person's vision.

.....

.....

.....

.....[2]

[Total : 6]

8 **(a)** Translocation and transpiration are processes that occur in plants.

Describe each of these processes.

translocation .....

.....

.....

.....

transpiration .....

.....

.....

.....[4]

(b) Fig. 8.1 shows an investigation that was set up and left for 30 hours.

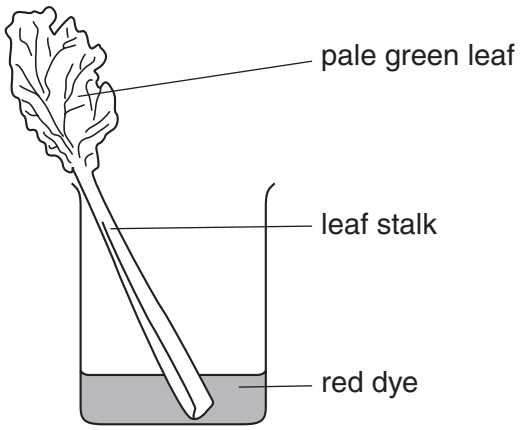

Fig. 8.1

At the end of this time, the leaf had become red.

Suggest an explanation for this result.

.....

.....

.....

.....

.....

.....[4]

[Total : 8]

[Turn over

9 Fig. 9.1 shows some parts of an ecosystem.

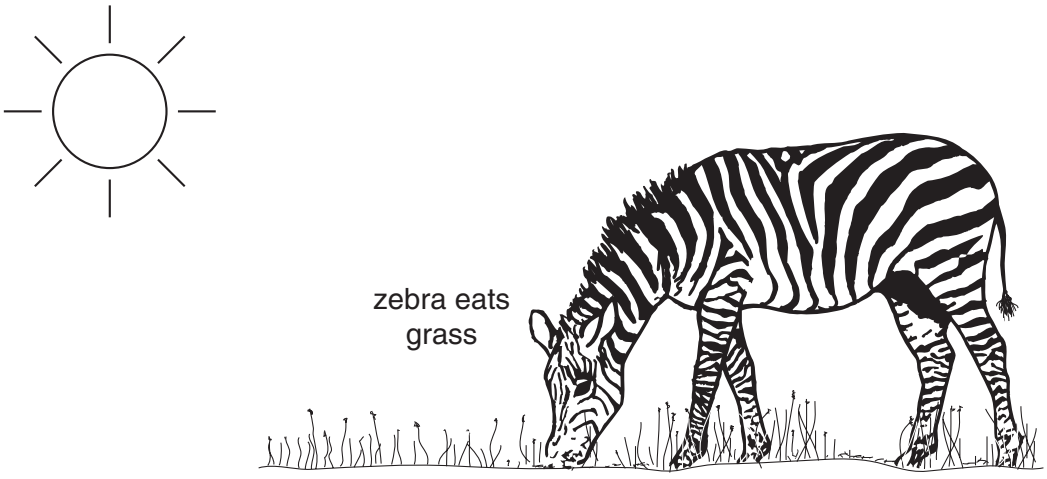

Fig. 9.1

(a) **(i)** In what form is energy passed from the Sun to the grass?

.....[1]

(ii) In what form is energy passed from the grass to the zebra?

.....[1]

(b) When the zebra dies, the energy in its body is released by decomposers.

(i) Name **one** group of microorganisms involved in this process.

.....[1]

(ii) Suggest in what form most of the energy is finally passed to the environment.

.....[1]

(c) Why is the movement of energy in an ecosystem described as a flow and not as a cycle?

.....

.....[1]

[Total : 5]

BLANK PAGE

BLANK PAGE