UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

BIOLOGY

Paper 2

0610/02

October/November 2006

Candidates answer on the Question Paper.
No Additional Materials are required

1 hour 15 minutes

Candidate Name

Centre Number

Candidate Number

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 a pencil for any diagrams or graphs.
Do not use staples, paper clips, highlighters, glue or correction fluid.
DO **NOT** WRITE IN THE BARCODE.
DO **NOT** WRITE IN THE GREY AREAS BETWEEN THE PAGES.

Answer **all** questions.

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.

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

This document consists of **17** printed pages and **3** blank pages.

1 Four of the classes of vertebrates and five possible descriptions of these classes are shown below.

For Examiner's Use

Draw a straight line to match each class of vertebrate to its description.

class of vertebrate	description
bird	body with naked skin, two pairs of limbs
fish	body with hair, two pairs of limbs
mammal	body with feathers, one pair of wings
reptile	body with scales, with fins
	body with scaly skin, two pairs of limbs or no limbs

Fig. 1.1

[Total: 4]

For Examiner's Use

2 **(a)** Many communities treat their sewage and release non-polluting water into a local river.

What is meant by the term *sewage*?

.....

.....

..... [2]

(b) Sometimes the sewage treatment works cannot deal with all of the sewage and untreated material is released into the river.

Suggest the likely effects of releasing untreated sewage into a river.

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..... [4]

[Total: 6]

3 Fig. 3.1 shows a food web from the African grasslands.

For Examiner's Use

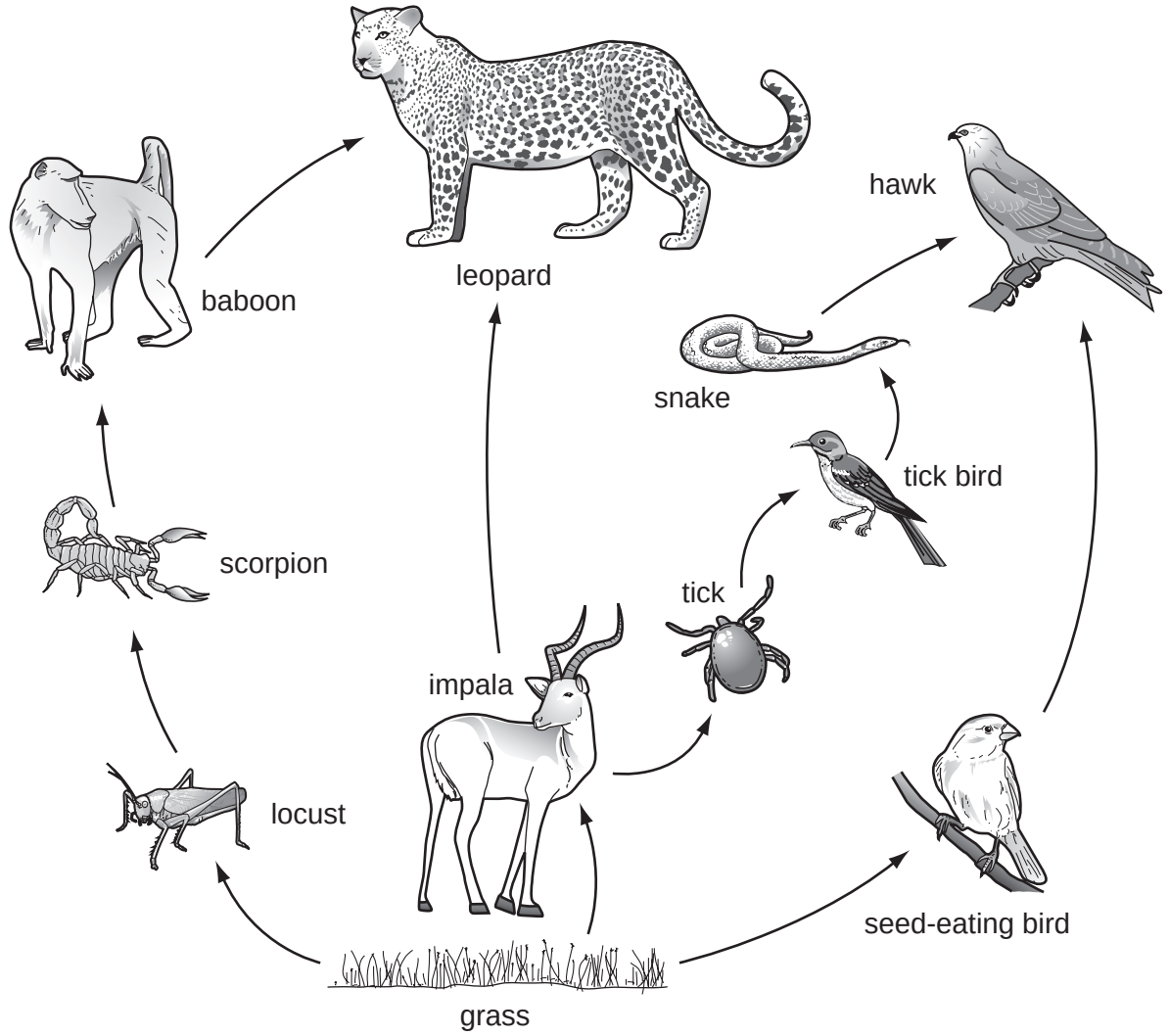


Fig. 3.1

(a) (i) Name an organism from this food web that is a

primary consumer ..... [1]

tertiary (third level) consumer ..... [1]

producer ..... [1]

(ii) Using information only from Fig. 3.1, complete the food chain.

..... → ..... → ..... → ..... → leopard [1]

(b) Fig. 3.2 shows a pyramid of numbers for a food chain from this food web.

For Examiner's Use

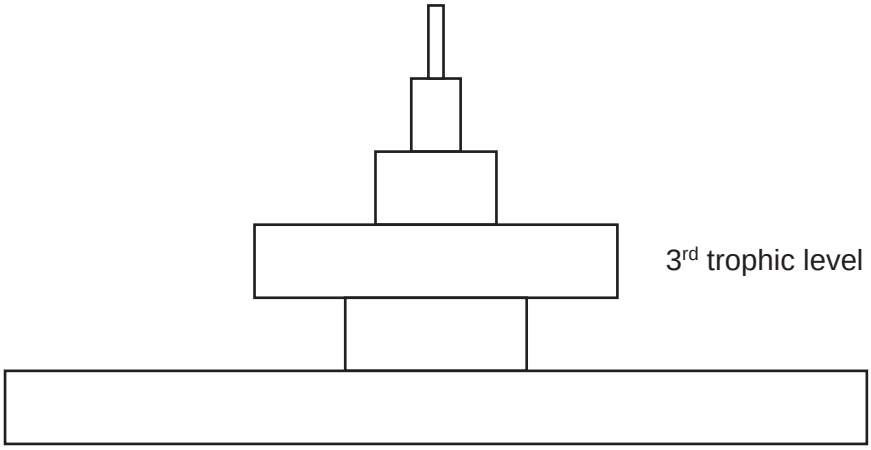


Fig. 3.2

Which organism in the food web would occupy the 3rd trophic level in this pyramid of numbers?

..... [1]

(c) In some years a plague of locusts occurs.

Predict and explain what could happen to the population of baboons when this occurs.

.....

.....

.....

.....

.....

..... [4]

[Total: 9]

4 A survey of berries from a number of bushes of one species in a school grounds showed variation in their mass. Berries were collected at random and 50 had their mass determined. Table 4.1 shows the results of their investigation.

For Examiner's Use

Table 4.1

mass of berry / g				
1.3	0.6	1.6	1.3	1.2
1.0	1.3	1.2	0.4	1.1
1.3	0.9	0.4	1.4	1.2
1.0	1.0	0.6	1.5	1.2
1.1	0.5	1.1	1.3	1.1
0.3	1.3	0.5	1.2	0.5
1.1	1.3	1.0	0.6	1.4
1.4	1.2	1.4	1.2	1.3
0.6	1.3	1.2	0.7	1.2
0.5	0.6	1.3	1.3	1.4

(a) (i) Complete Table 4.2 for the number of berries of mass 1.2 g and 1.3 g.

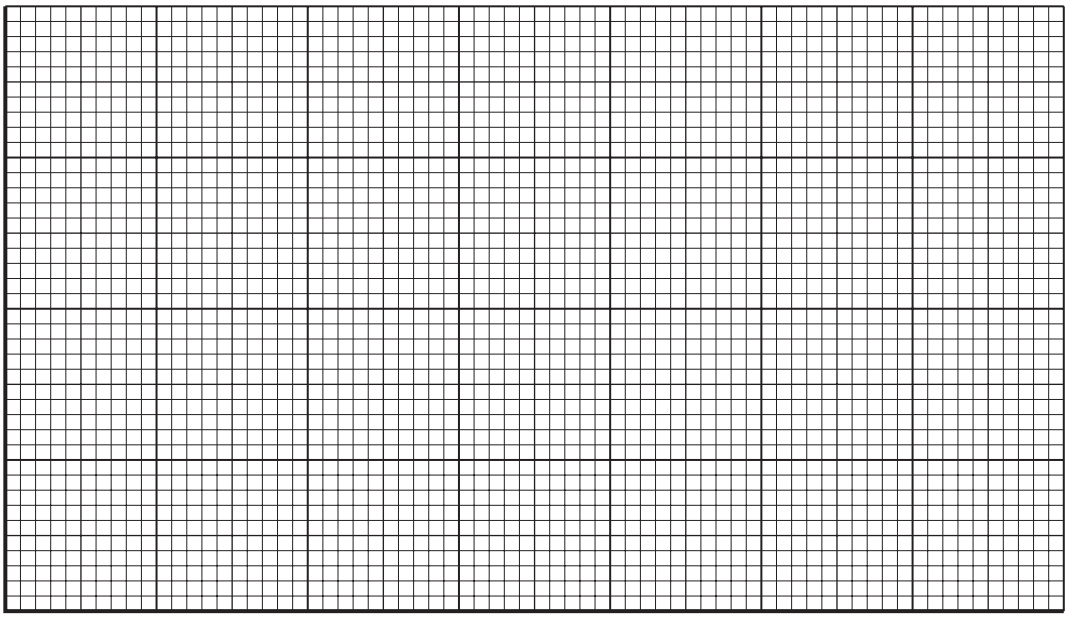
Table 4.2

mass of berry / g	number of individuals
0.3	1
0.4	2
0.5	4
0.6	5
0.7	1
0.8	0
0.9	1
1.0	4
1.1	5
1.2	
1.3	
1.4	5
1.5	1
1.6	1

[2]

For Examiner's Use

(ii) Plot on the grid below the data in Table 4.2 as a histogram.



mass of berry / g

[5]

(b) State, with a reason, the type of variation illustrated by the berries with masses between 0.3 g and 0.7 g.

.....

.....

..... [2]

[Total: 9]

For Examiner's Use

5 **(a)** Fig. 5.1 shows a dicotyledonous flower in section.

Fig. 5.1

Label on Fig. 5.1 using label lines

(i) a petal, [1]

(ii) a sepal, [1]

(iii) a stamen. [1]

(b) Table 5.1 shows one difference between insect-pollinated flowers and wind-pollinated flowers. Complete Table 5.1 by listing **three** more differences.

Table 5.1

insect-pollinated flowers	wind-pollinated flowers
bright coloured petals	green petals that are not obvious

[3]

(c) (i) State where pollination happens in a flower.

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..... [1]

(ii) State where fertilisation happens in a flower.

..... [1]

QUESTION 5 CONTINUES ON PAGE 10

(d) Fig. 5.2 shows a tree and the surrounding ground where seeds may land when they are dispersed from the tree.

For Examiner's Use

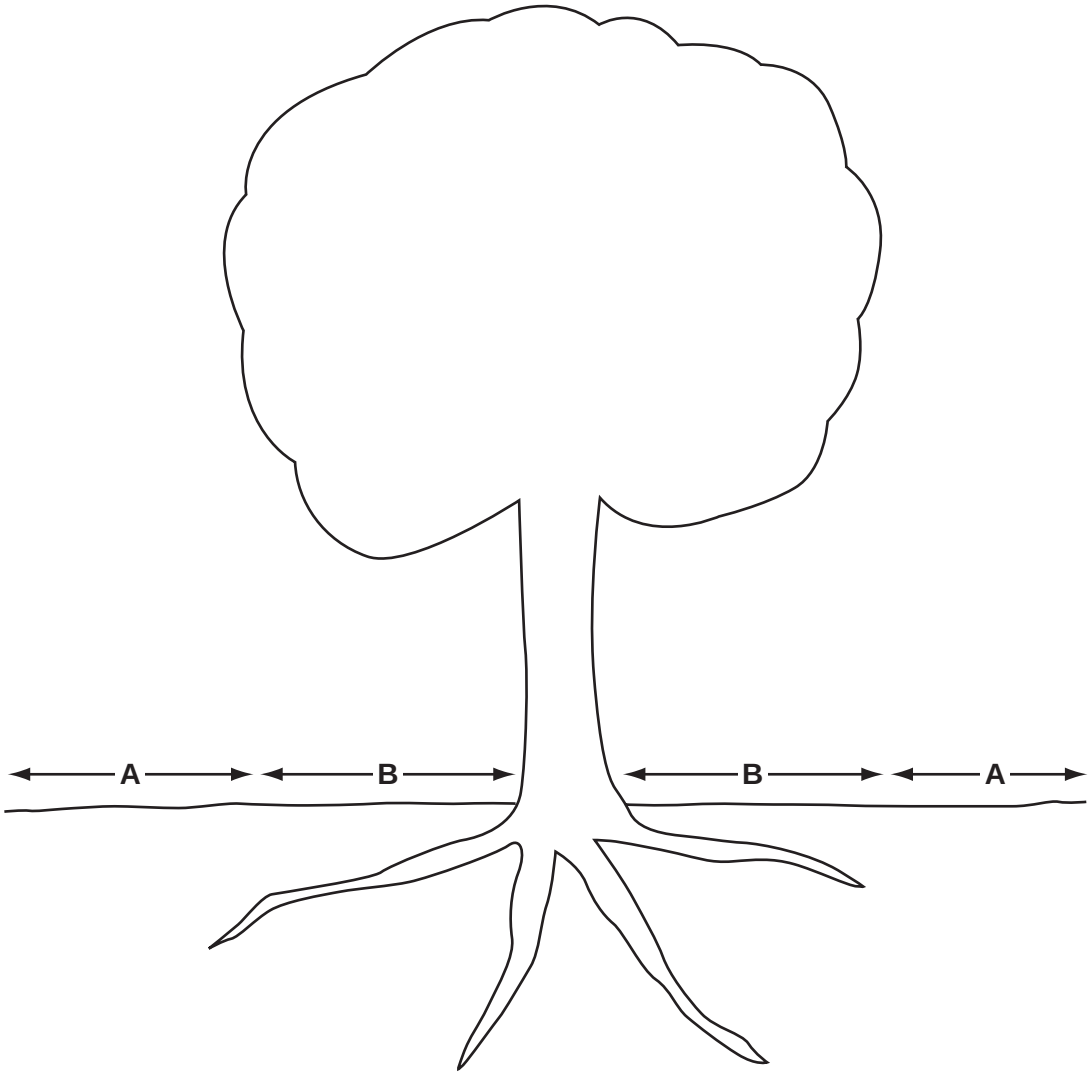

Fig. 5.2

Suggest reasons why seeds landing in area A are more likely to grow into young trees than those landing in area B.

.....

.....

.....

.....

.....

..... [4]

[Total: 12]

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QUESTION 6 IS ON PAGE 12

[Turn over

For Examiner's Use

6 Fig. 6.1 shows the teeth in the lower jaw of an adult human.

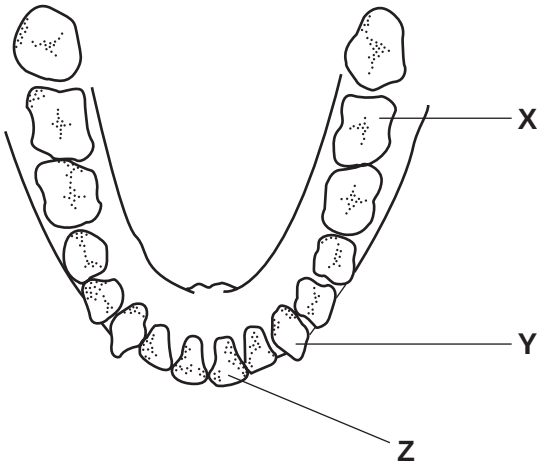

Fig. 6.1

(a) (i) Name the teeth labelled **X**, **Y** and **Z**.

X .....

Y .....

Z ..... [3]

(ii) Describe the functions of teeth **X** and **Z**.

X .....

.....

Z .....

..... [2]

(b) Name **one** mineral and **one** vitamin that are essential for the healthy development of teeth.

mineral .....

vitamin ..... [2]

(c) Fig. 6.2 shows a section through a tooth.

For Examiner's Use

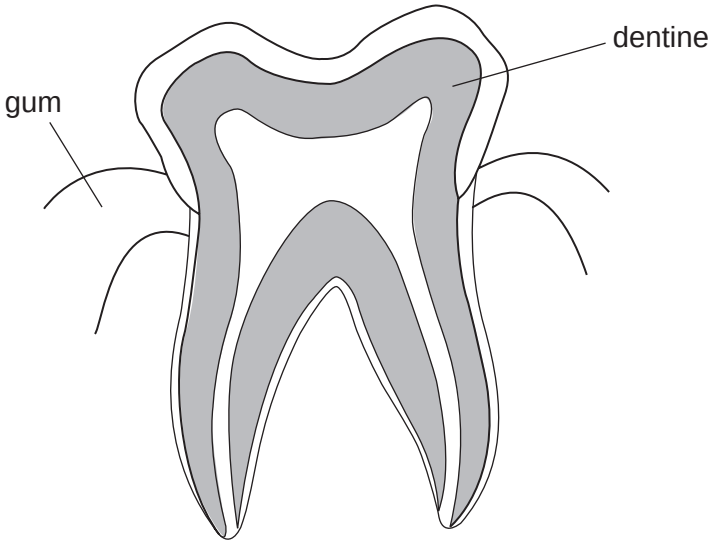

Fig. 6.2

(i) Tooth decay is caused by bacteria getting into the dentine. Explain how bacteria can enter the dentine.

.....

.....

.....

..... [3]

(ii) List three actions you could take to reduce the risk of tooth decay.

1 .....

.....

2 .....

.....

3 .....

..... [3]

[Total: 13]

For Examiner's Use

7 **(a)** Describe two ways in which arteries differ in structure from veins.

1 .....

.....

2 .....

..... [2]

(b) **(i)** Name the artery that carries blood with a low oxygen concentration.

..... [1]

(ii) State in which organ urea is added to the blood and in which organ it is removed from the blood.

urea added to blood .....

urea removed from blood ..... [2]

(c) **(i)** State how many times a red blood cell must pass through the heart when it travels from the lungs and returns to the lungs.

..... [1]

(ii) The heart beats more than 100 000 times every day. It is vital that the heart remains healthy.

List three ways of keeping your heart healthy.

1 .....

.....

2 .....

.....

3 .....

..... [3]

[Total: 9]

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QUESTION 8 IS ON PAGE 16

[Turn over

For Examiner's Use

8 **(a)** Fig. 8.1 shows a section through a leaf. A leaf is designed for photosynthesis and this process provides a supply of simple sugars for a plant.

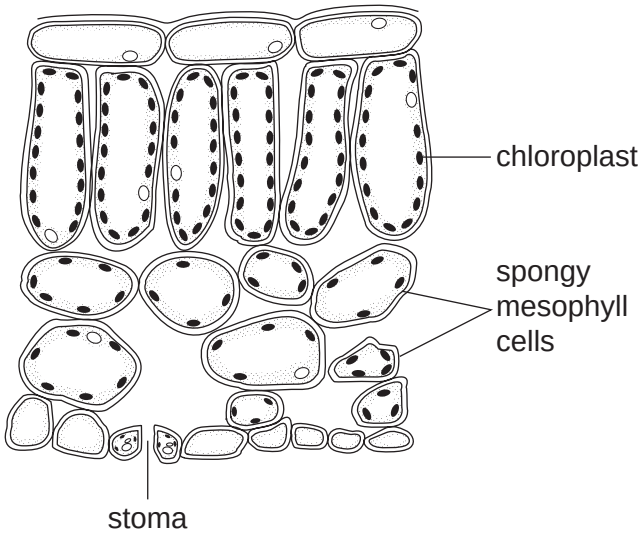

Fig. 8.1

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

.....

..... [1]

(ii) Describe and explain the advantage of the distribution of the chloroplasts as shown in Fig. 8.1.

.....

.....

..... [2]

(iii) Suggest the function of the stomata and the spaces between the spongy mesophyll cells in the process of photosynthesis.

.....

.....

.....

..... [3]

(b) (i) Name the tissue that transports the sugars made by photosynthesis to other parts of the plant.

For Examiner's Use

.....

[1]

(ii) Name the mineral ion that is used to form proteins.

.....

[1]

[Total: 8]

9 Fig. 9.1 shows an alveolus in which gaseous exchange takes place.

For Examiner's Use

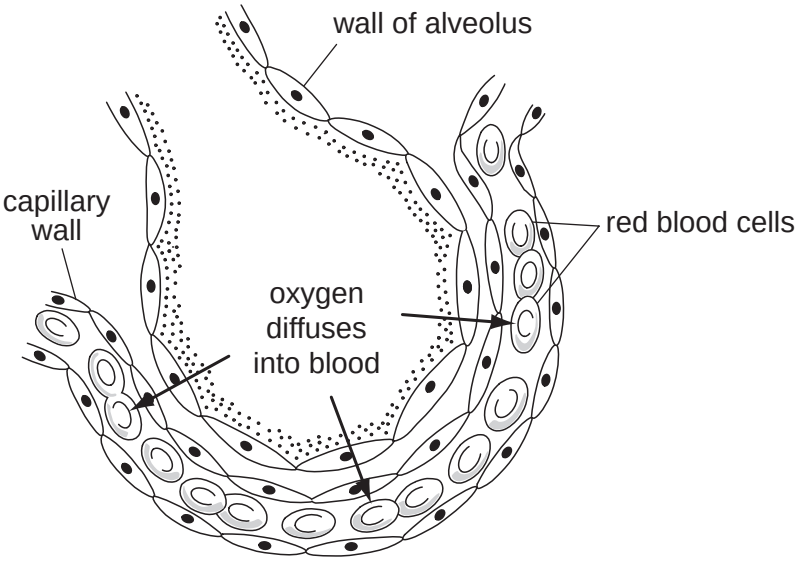

Fig. 9.1

(a) (i) Define the term *diffusion*.

.....

.....

..... [2]

(ii) State what causes oxygen to diffuse into the blood from the alveoli.

.....

..... [1]

(iii) List three features of gaseous exchange surfaces in animals, such as humans.

1 .....

.....

2 .....

.....

3 .....

..... [3]

(b) (i) At high altitudes there is less oxygen in the air than at sea level.
Suggest how this might affect the uptake of oxygen in the alveoli.

For Examiner's Use

.....

.....

..... [2]

(ii) In the past some athletes have cheated by injecting themselves with extra red blood cells before a major competition.
Predict how this increase in red blood cells might affect their performance.

.....

.....

..... [2]

[Total: 10]

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