Centre Number	Candidate Number	Name

CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

BIOLOGY **0610/03**

Paper 3

May/June 2003

1 hour 15 minutes

Additional Materials: Answer Paper

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 soft pencil for any diagrams, graphs or rough working.
Do not use staples, paper clips, highlighters, glue or correction fluid.

Section A
Answer **all** questions.
Write your answers in the spaces provided on the Question Paper.

Section B
Answer any **two** questions.
Write your answers on the separate Answer Paper provided.

At the end of the examination,
1. fasten all your work securely together;
2. enter the numbers of the Section B questions you have answered in the grid below.

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	
Section A	
Section B	
Total	

This document consists of **8** printed pages.

Section A

Answer **all** the questions.

Write your answers in the spaces provided.

1 Fig. 1.1 shows an incomplete diagram of the female urinary system.

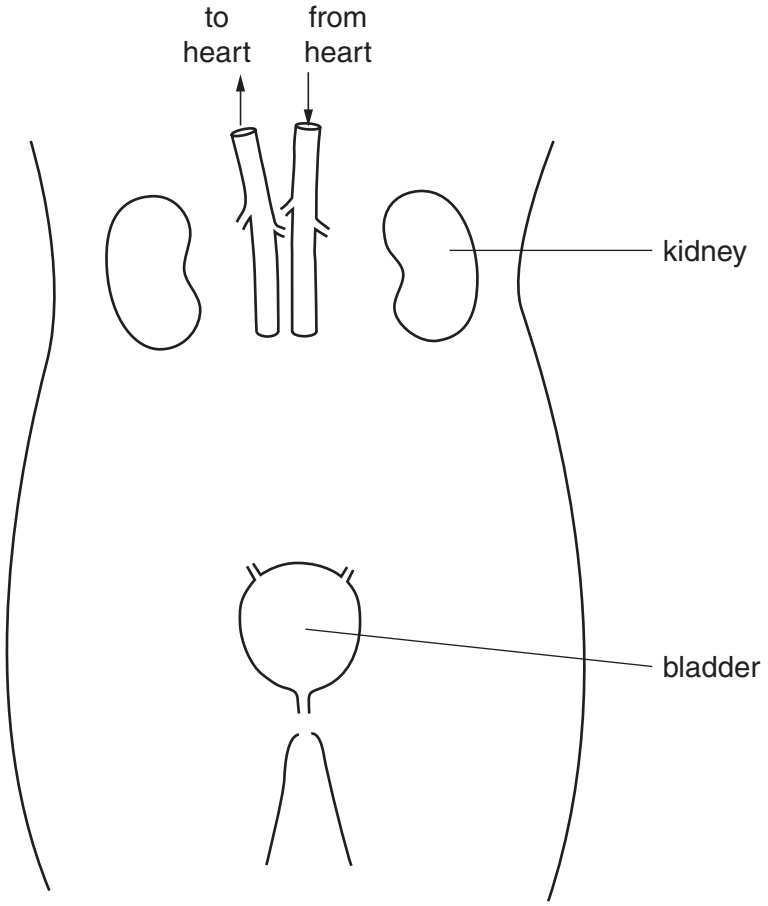

Fig. 1.1

(a) On Fig. 1.1, draw and label the following parts:

renal artery, urethra and ureter. [4]

(b) Name three components that are present in the urine of a healthy person.

1. .....

2. .....

3. .....[3]

(c) If the kidneys fail, the patient may be put on a kidney machine.

Explain how a kidney machine works.

.....

.....

.....

.....

.....[4]

(d) The kidneys are part of the body's homeostatic mechanism.

(i) Define *homeostasis*.

.....

.....

.....[2]

(ii) Outline the role of the kidneys in homeostasis.

.....

.....

.....[2]

(iii) Name another organ of the body also involved with homeostasis and outline its role.

name of organ .....

role .....

.....

.....[3]

[Total : 18]

2 A study was carried out to compare the amount of tooth decay in the children of two towns. Town **A** had drinking water containing fluoride at a concentration of 2 parts million. Town **B** had no fluoride in its drinking water.

Fig. 2.1 shows the results of the study, but the graph is incomplete.

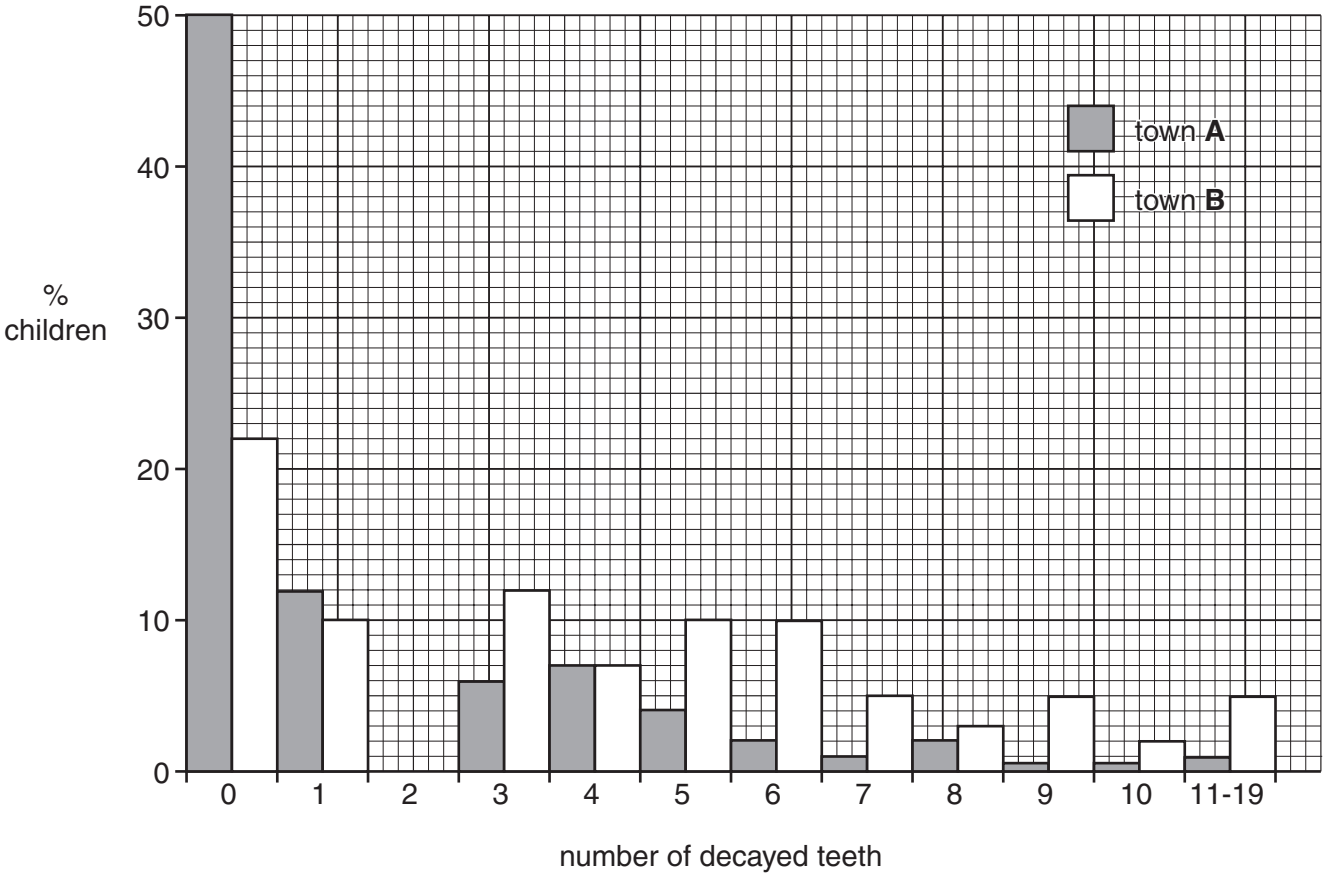

Fig. 2.1

(a) Complete Fig. 2.1, using the following data.

town	number of decayed teeth	% children
A	2	13
B	2	9

[2]

(b) (i) For town **B**, state the percentage of children with three decayed teeth.

.....[1]

(ii) For town **A**, calculate the total percentage of children with **less** than five d
teeth. Show your working.

total percentage .....[2]

(c) (i) What conclusion, relating to the effect of fluoride, can be drawn from this study?

.....

.....[1]

(ii) Based on your conclusion, what recommendation should be given to town **B**?

.....

.....[1]

(iii) Explain why some people may object to this recommendation.

.....

.....[1]

[Total : 8]

3 The seaweed, *Caulerpa taxifolia*, lives in tropical oceans but is now also found in the Mediterranean sea, where it grows at twice the rate of local seaweeds. As a result, the local seaweeds are becoming rare.

Although not poisonous, *Caulerpa* produces a chemical in its cells that makes it inedible to Mediterranean herbivores, such as sea urchins. They do not feed on it and their numbers are decreasing. Carnivorous fish populations have also decreased by up to 50 %.

Marine conservationists are very concerned. At first they used chlorine to kill *Caulerpa* but are now considering the introduction of tropical sea slugs (herbivorous molluscs). *Caulerpa* is part of their natural diet.

(a) The seaweed, *Caulerpa taxifolia*, is named using the binomial system.

Explain the term *binomial system*.

.....

.....

.....[2]

(b) (i) Suggest why the local seaweeds are becoming rare.

.....

.....[2]

(ii) Sea urchins are herbivores. Define the term *herbivore*.

.....

.....[1]

(iii) Suggest why the populations of carnivorous fish have decreased by up to 50%.

.....

.....

.....[2]

(c) Suggest why using chlorine to kill *Caulerpa* might **not** be a good idea.

.....

.....[1]

(d) (i) Suggest why conservationists are concerned about the effects of *Caul* other organisms in the Mediterranean.

.....

.....

.....[2]

(ii) Explain how the introduction of herbivorous sea slugs from the tropics could be effective in re-establishing a balanced ecosystem.

.....

.....

.....[2]

(iii) Outline the possible dangers of introducing tropical sea slugs.

.....

.....

.....[2]

[Total : 14]

Section B

Answer any **two** questions.

Write your answers on the separate answer paper provided.

4 **(a)** **(i)** Describe the main similarities between insects and arachnids. [3]

(ii) By means of a table, show the differences between insects and arachnids. [5]

(b) Suggest and explain how a **named** insect could evolve over a period of time. [7]

[Total : 15]

5 **(a)** Explain why, in some parts of the world, not enough food is available to feed the people living there. [10]

(b) Describe the uses of hormones in food production. [5]

[Total : 15]

6 **(a)** Explain the term *codominance*. [3]

(b) Using a suitably labelled genetic diagram, explain how a baby can have blood group O (I^oI^o) when its mother is group A and its father is group B. [6]

(c) **(i)** Describe and explain what could happen when blood of different groups is mixed. [3]

(ii) Describe and explain the role of the placenta in relation to this problem. [3]

[Total : 15]

7 **(a)** State the functions of **five** named parts of the male reproductive system. [5]

(b) **(i)** Explain how sperm, deposited in the vagina during sexual intercourse, reach an egg. [4]

(ii) Describe the process of fertilisation. [3]

(c) Outline the ways in which HIV can be prevented from spreading. [3]

[Total : 15]