Centre Number	Candidate Number	Name

UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
General Certificate of Education Ordinary Level

HUMAN AND SOCIAL BIOLOGY **5096/02**

Paper 2

October/November 2006

2 hours

Additional Materials: Answer Booklet/Paper.

READ THESE INSTRUCTIONS FIRST

If you have been given an Answer Booklet, follow the instructions on the front cover of the Booklet.
Write your Centre number, candidate number and name on all the work you hand in.
Write in dark blue or black pen.
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.
You are advised to spend no longer than 1 hour on Section **A**.

Section B
Answer **all** the questions, including questions 8, 9 and 10 **Either** or 10 **Or**.
Write your answers to questions 8, 9 and 10 on the separate answer paper provided.

Write an E (for Either) or an O (for Or) next to the number 10 in the grid below to indicate which question you have answered.
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		
Section A		
Section B		
8		
9		
10		
Total		

This document consists of **11** printed pages and **1** blank page.

Section A

Answer **all** the questions.

Write your answers in the spaces provided.

1 Fig. 1.1 shows the liver, part of the small intestine and some associated blood vessels.

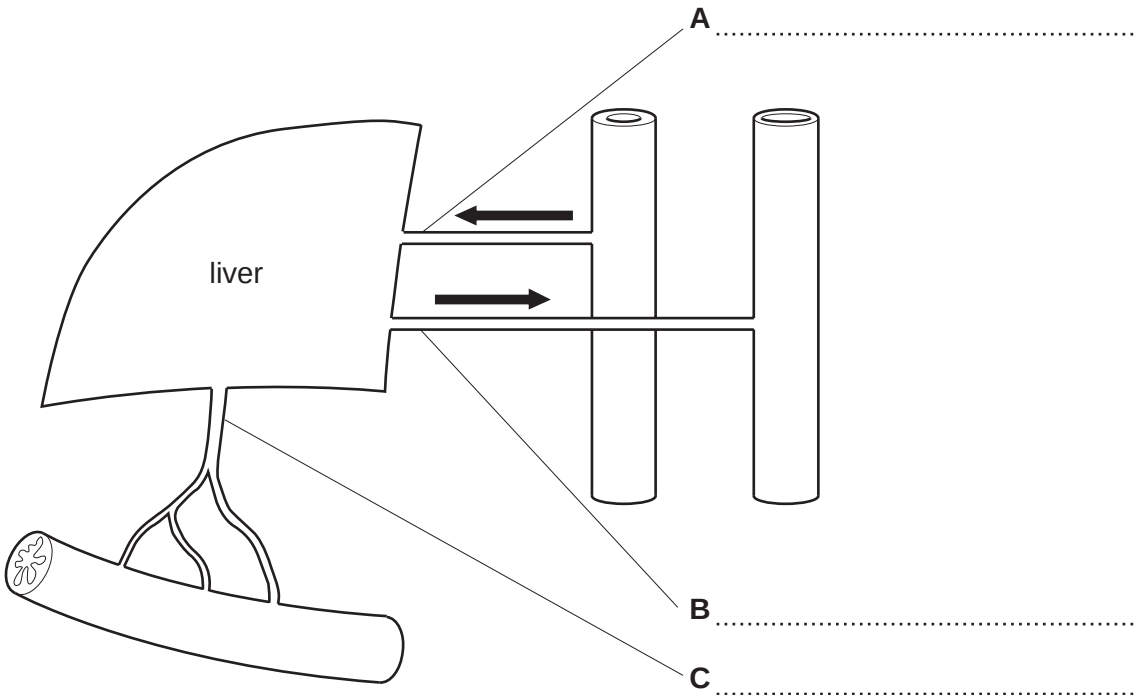

Fig. 1.1

(a) On Fig. 1.1, name the blood vessels **A**, **B** and **C**. [3]

(b) State which of the blood vessels **A**, **B** or **C** would have the most

(i) glucose after a meal, ...

(ii) carbon dioxide, ...

(iii) oxygen. .....[3]

A person went into hospital for an operation that involved removing the liver. The amo amino acid and urea in blood vessel **B** were measured before, during and after the liver removed. The liver was removed 60 minutes into the operation. The results are shown Table 1.1.

Table 1.1

time/min	amounts in blood vessel **B**/arbitrary units	
	urea	amino acids
0	5.0	2.0
30	5.0	2.0
60	5.0	2.0
90	2.0	4.0
120	0.5	5.5
150	0.0	5.5

Fig. 1.2 is a graph of some of these results. The line for amino acids has been shown on the graph.

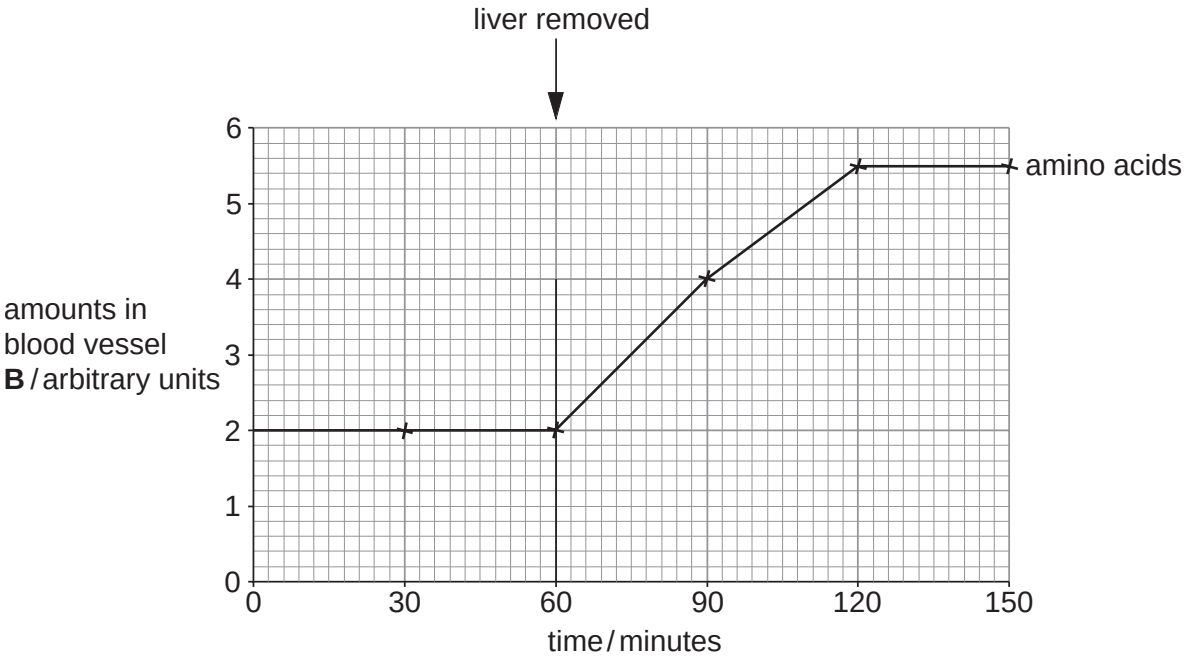

Fig. 1.2

(c) Using Table 1.1, plot the figures for **urea** onto the graph and join them up to form a line. Label this line **urea**. [5]

(d) Using the graph, describe what happens to the amounts of these substances in vessel **B** after the liver is removed.

(i) amino acids.....

.....

.....[3]

(ii) urea.....

.....

.....[3]

(e) Name the process in the intact liver which maintains low concentrations of amino acids in the blood and high concentrations of urea in the blood.

.....[1]

(f) Explain why, after the liver is removed, the amount of urea continues to fall after 120 minutes, while the amino acid amounts stay level.

.....

.....[2]

[Total : 20]

2 In an investigation into osmosis, a yam was peeled and cut into chips exactly 5 mm x 50 mm. Three chips were placed into each of three different sugar solutions, **D**, **E** and corked tubes, and left for 24 hours. They were then removed and their average length determined. The results are shown in Table 2.1 below.

Table 2.1

sugar solution / mol per dm^3	average length of chips / mm
D 0.2	55.0
E 0.4	51.3
F 0.6	45.0

(a) Explain the changes in average chip length seen in solutions **D** and **F**.

D .....

.....

.....[2]

F .....

.....

.....[2]

(b) Which of the three solutions **D**, **E** and **F** has a sugar concentration nearest to that of the yam?

.....[1]

(c) Suggest **one other** way in which changes to these yam chips could have been measured.

.....[1]

(d) Explain why, in an experiment like this, all the chips should be taken from the same yam.

.....[1]

[Total : 7]

3 Fig. 3.1 is a working model of the chest and lungs. By moving the rubber sheet up an
the balloons representing the lungs can be seen to deflate and inflate.

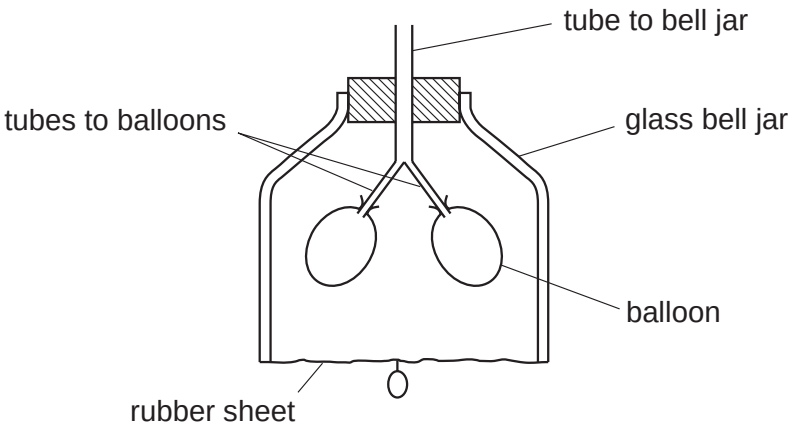

Fig. 3.1

(a) Name the parts of the gaseous exchange system represented by the

(i) tube entering each balloon, ...

(ii) tube entering the bell jar, ...

(iii) rubber sheet. .....[3]

(b) Explain why the balloons inflate if the rubber sheet is pulled down.

.....

.....

.....

.....[3]

(c) Suggest why this model does not give the full explanation of how lungs inflate.

.....

.....[1]

[Total : 7]

4 Fig. 4.1 shows a clinical and a laboratory thermometer not drawn to the same scale.

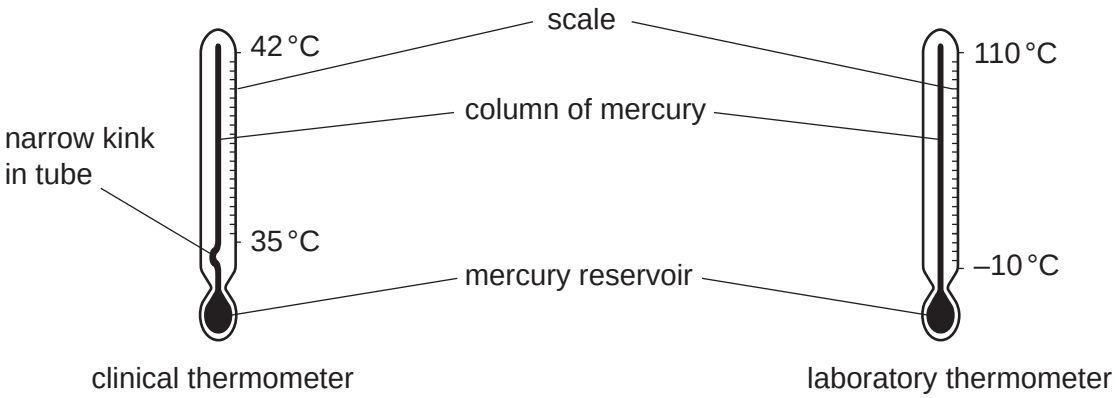

Fig. 4.1

(a) State two ways in which the clinical thermometer differs from the laboratory thermometer, as seen in Fig. 4.1.

1. .....

2. .....[2]

(b) Describe how you would take your temperature using the clinical thermometer.

.....

.....

.....[3]

(c) Suggest **one** difference that you would make to the method in **(b)** if you were asked to take the temperature of a baby.

.....

.....[1]

[Total : 6]

5 A plant with variegated leaves was left in the dark for several days. Two variegated leaves, **G** and **H**, were taken and tested as shown in Fig. 5.1 below.

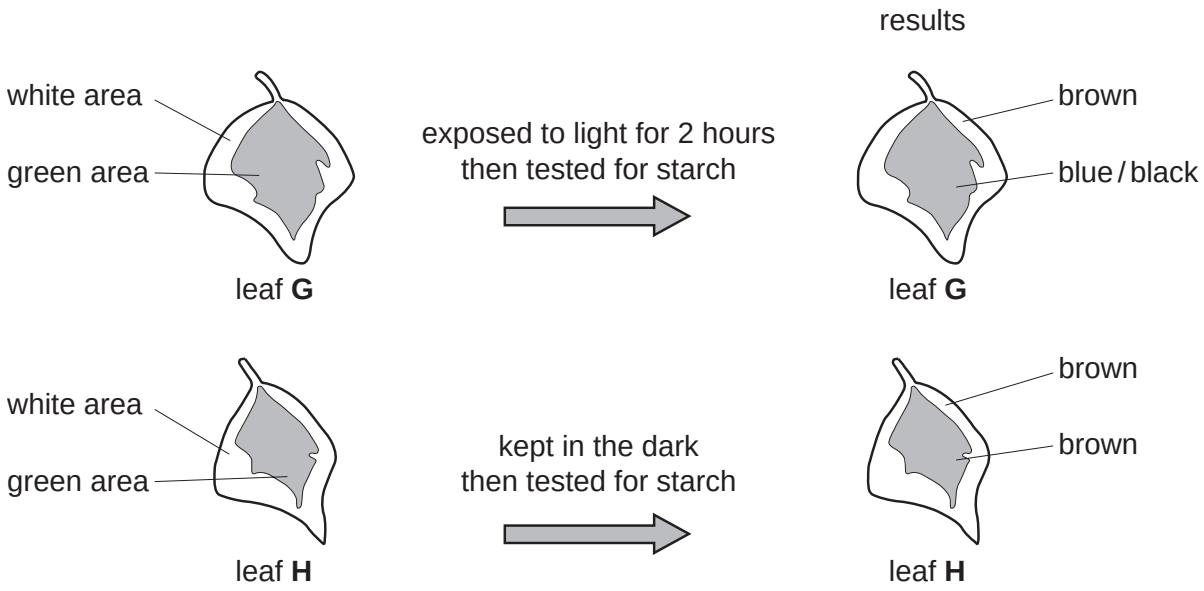

Fig. 5.1

(a) State which chemical

(i) makes the leaf green, ...

(ii) is used to test for starch. .....[2]

(b) Explain the different results seen in leaves **G** and **H**.

.....

.....

.....

.....

.....

.....

.....[5]

[Total : 7]

6 Two opposing pressures operate on blood as it passes through a capillary. One ... hydrostatic pressure pushing the water and solutes out of the capillary to form tissue ... This is opposed by the osmotic pressure of the large blood proteins pulling water into t... capillaries.

(a) Explain why

(i) hydrostatic pressure falls as blood passes along the capillary,

.....

(ii) osmotic pressure remains the same.

.....[2]

(b) Some of the tissue fluid does not return directly to the capillaries. Describe how this fluid is returned to the blood.

.....

.....[2]

[Total : 4]

7 Athlete's foot is a common infection. Fig. 7.1 shows how athlete's foot may be spread.

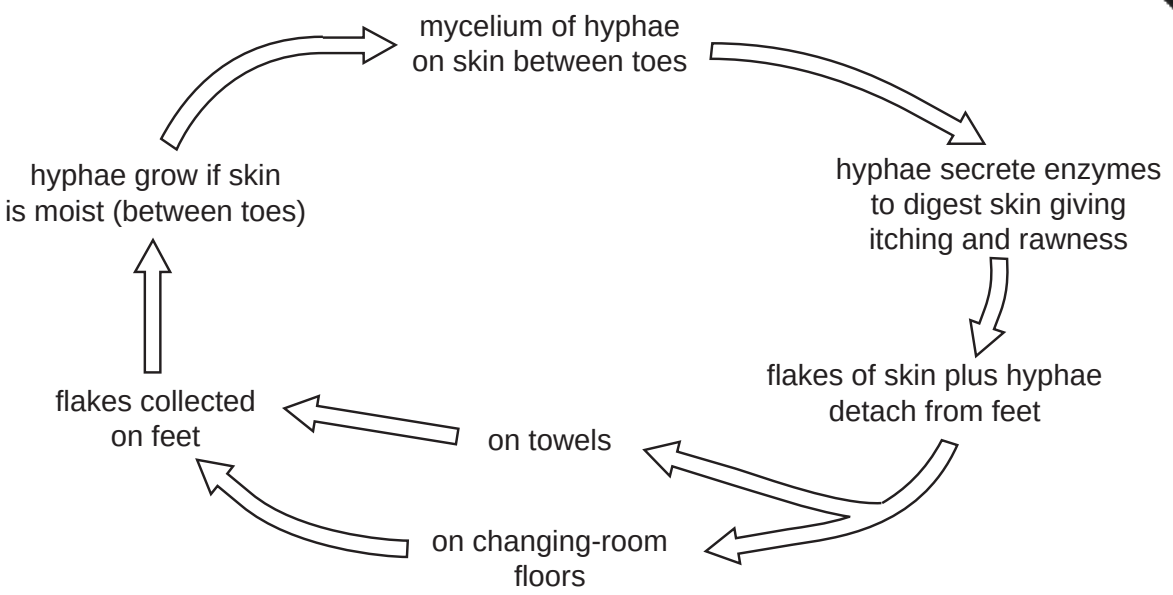

Fig. 7.1

(a) Suggest three ways to reduce the spread of the hyphae from person to person.

1. .....

2. .....

3. .....[3]

(b) Name the type of organism which causes athlete's foot.

.....[1]

[Total : 4]

Section B

Answer **all** the questions, including questions 8, 9 and 10 **Either** or 10 **Or**.

Write your answers on the separate answer paper provided.

8 Houseflies are vectors of typhoid; mosquitoes are vectors of malaria.

(a) What is meant by the term *vector*? [2]

(b) What are the differences between the two insects in the way they act as vectors? Arrange your answer under the following headings.

(i) How and where the disease organism is picked up by the insect.

(ii) How the disease organism is transmitted to a new host. [10]

(c) State **three** ways to reduce the numbers of flies. [3]

9 Explain, in detail, the differences between the following pairs of terms.

(a) aqueous humour and vitreous humour

(b) glycogen and glucagon

(c) antibiotic and antibody [15]

10 Question 10 is in the form of an **Either**/**Or** question. Only answer question 10 **Either** or question 10 **Or**.

Either

A working muscle produces heat and carbon dioxide during respiration.These are both carried away in the blood.

(a) Describe how and where heat and carbon dioxide are released from the blood to the environment. [10]

(b) Carbon dioxide reacts with lime water when blown through it to form a chalky suspension. Suggest how you could use this information to show that you produce **more** carbon dioxide when you exercise than when you are at rest. [5]

Or

(a) Describe the ways in which the body uses water. [6]

(b) Describe how water is removed from the blood in the kidneys and excreted. [5]

(c) On hot days the urine produced may be concentrated. Explain how this is achieved. [4]

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