UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
General Certificate of Education Ordinary Level

CANDIDATE NAME

CENTRE NUMBER | | | | | |

CANDIDATE NUMBER | | | | |

HUMAN AND SOCIAL BIOLOGY **5096/23**

Paper 2 **May/June 2011**

2 hours

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.
Do not use staples, paper clips, highlighters, glue or correction fluid.
DO **NOT** WRITE IN ANY BARCODES.
Write your answers in the spaces provided on the question paper.

Section A
Answer **all** questions.
You are advised to spend no longer than 1 hour on Section **A**.
Section B
Answer **both** questions.
Section C
Answer **either** question **9 or** question **10**.

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	
Section A sub-total	
7	
8	
Section C	
9 / 10	
Total	

This document consists of **19** printed pages and **1** blank page.

Section A

Answer **all** the questions in this section.

Write your answers in the spaces provided.

Fig. 1.1 shows a section through the human heart. The structure labelled **E** is the pacemaker of the heart.

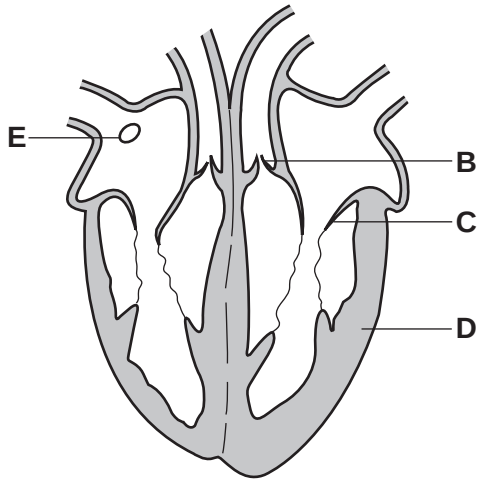

Fig. 1.1

1 **(a)** **(i)** Use label lines and letters to identify the aorta, vena cava, pulmonary vein and right ventricle on Fig.1.1.

A aorta
P pulmonary vein
R right ventricle
V vena cava

[4]

(ii) What type of tissue is found at **D**?

.....[1]

(iii) Explain the importance of the pacemaker to the functioning of the heart.

.....

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.....

.....[2]

(iv) Name the part of the heart labelled **C** and state its function.

.....

.....

.....[2]

(v) Name structure **B**.

.....[1]

(vi) Where else in the body are structures of this type found?

.....[1]

Fig. 1.2 shows a surface view of the heart of someone who has just suffered a heart attack.

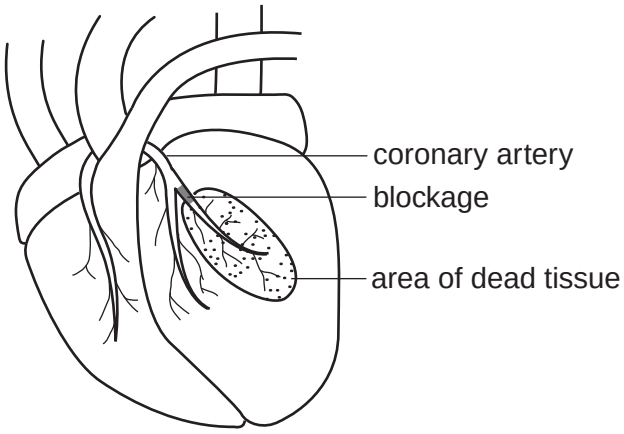

Fig. 1.2

(b) (i) State what is blocking the coronary artery.

.....[1]

(ii) Explain why some of the tissue has died.

.....

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.....[2]

(iii) Explain how the death of this tissue would affect the functioning of the heart.

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.....

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.....[2]

(c) There are many factors that are known to increase the likelihood of having a heart attack. These factors are known as risk factors.

Name **four** risk factors that can contribute towards a heart attack.

1. .....

2. .....

3. .....

4. .....[4]

[Total: 20]

2 Organisms that cause human disease enter the body in different ways. The possible sites are shown on Fig. 2.1.

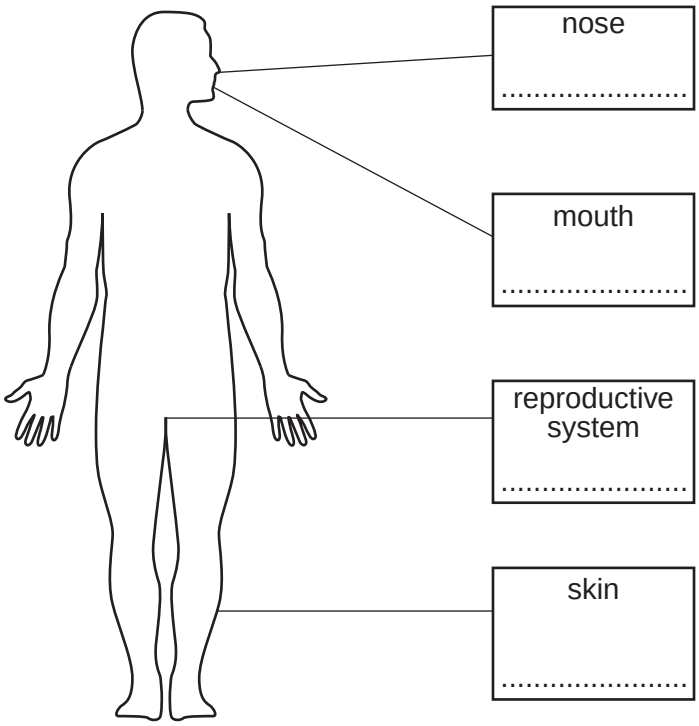

Fig. 2.1

Table 2.1

human diseases	
F	HIV infection
G	cholera
H	gonorrhoea
J	influenza
K	ringworm
L	schistosomiasis / bilharzia
M	tuberculosis / TB
N	typhoid

The letters **F** to **N** in Table 2.1 represent some human diseases.

Complete Fig. 2.1 by writing in each box, two letters chosen from **F** to **N**, to show how the organisms causing those diseases enter the body. [4]

[Total: 4]

3 Information was collected about the relative death rates of men in different categorie… men were divided into categories according to whether they smoked or not, and if they… smoke, at what age they started. The data is shown in the bar chart in Fig. 3.1.

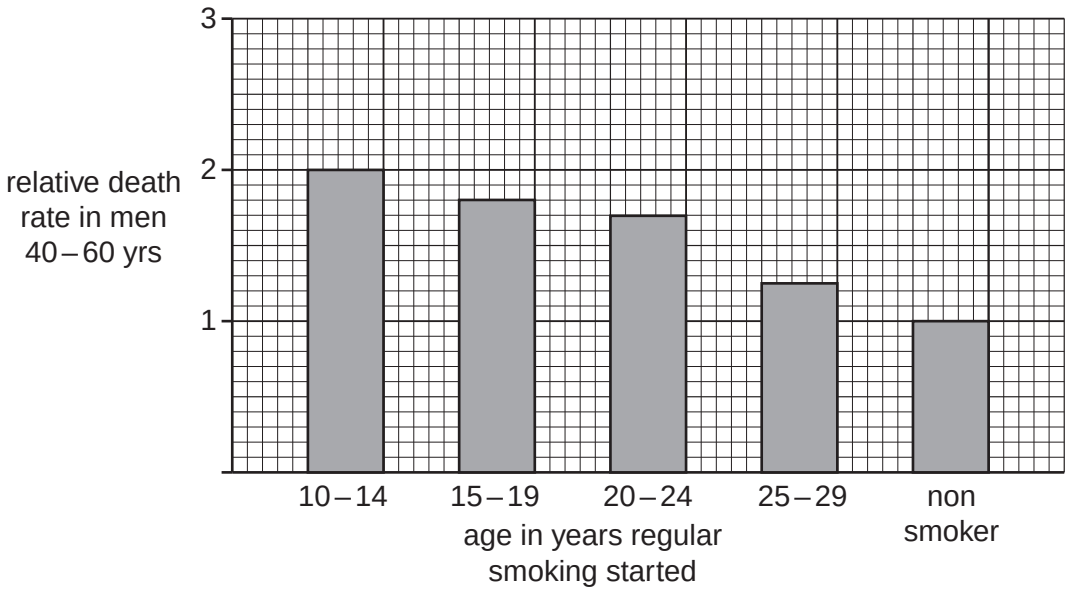

Fig. 3.1

The men in the study were also divided into categories according to the number of cigarettes smoked per day. This data is shown in Table 3.1.

Table 3.1

number of cigarettes smoked per day	relative death rates in men 40 – 60 yrs
0	1.0
1 – 9	1.6
10 – 19	2.0
20 – 29	2.2
30 – 39	2.4

(a) Complete Fig. 3.2 by using the data in Table 3.1 to draw a bar chart similar to Fig. 3.1.

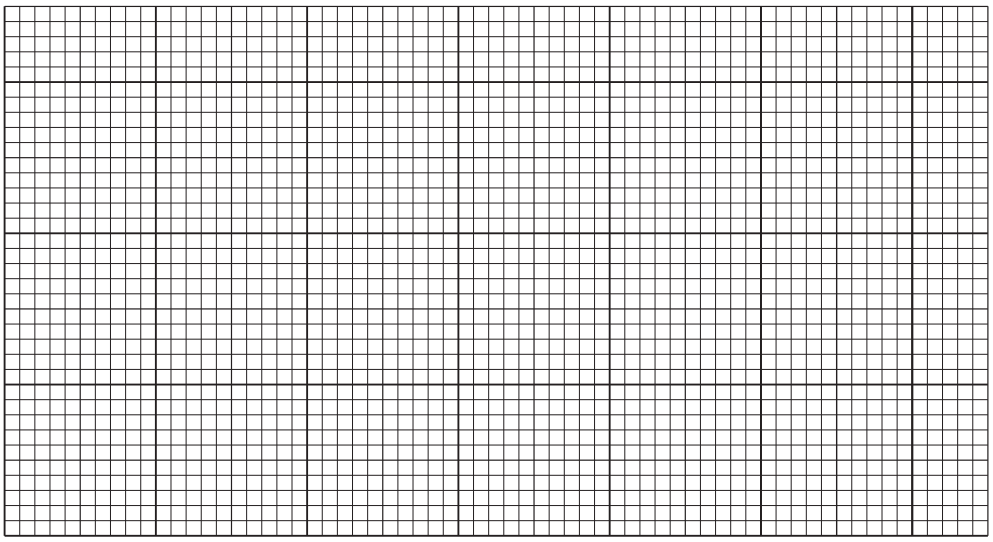

Fig. 3.2 [4]

(b) Using the information in Fig. 3.1 and Fig. 3.2, state **three** different conclusions about the connection between cigarette smoking and risk of dying between ages 40–60 years.

1. .....

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2. .....

.....

3. .....

.....[3]

[Total: 7]

4 Fig. 4.1 shows a section through the female reproductive system as seen from the si

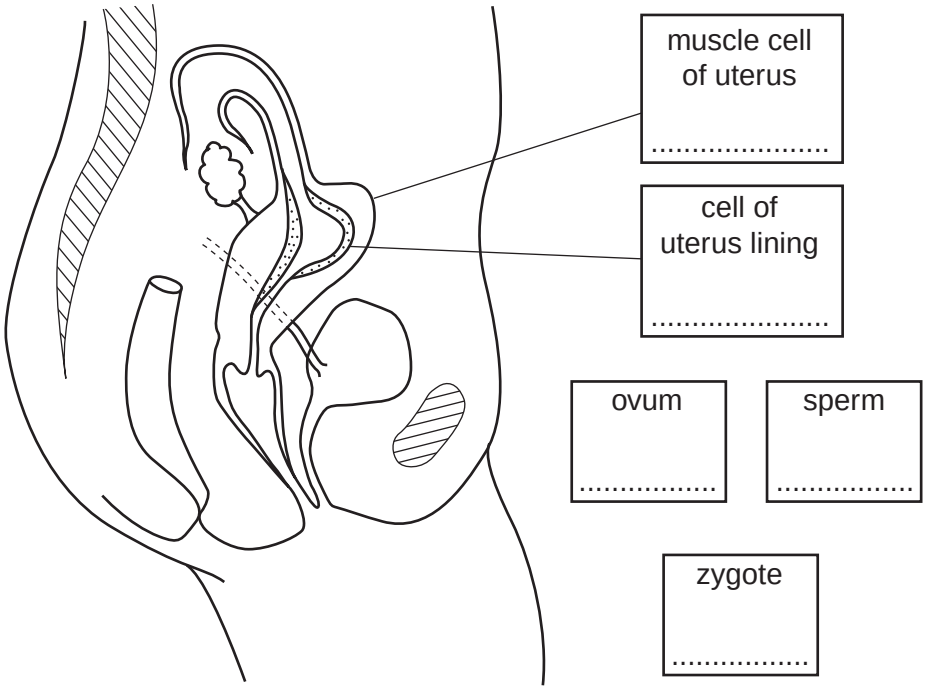

Fig. 4.1

(a) (i) Use label lines and letters to identify the cervix and the ovary on Fig. 4.1.

P cervix
Q ovary

[2]

(ii) In the nucleus of a cell in the human kidney there are 46 chromosomes.

Complete Fig. 4.1 by writing the number of chromosomes in each cell in the boxes provided. [3]

(iii) Name the type of nuclear division that occurs as the zygote develops into a fetus.

.....[1]

(b) Polydactyly is an inherited condition where there are more than five digits on the or feet. Fig. 4.2 shows the inheritance pattern of this condition in a family.

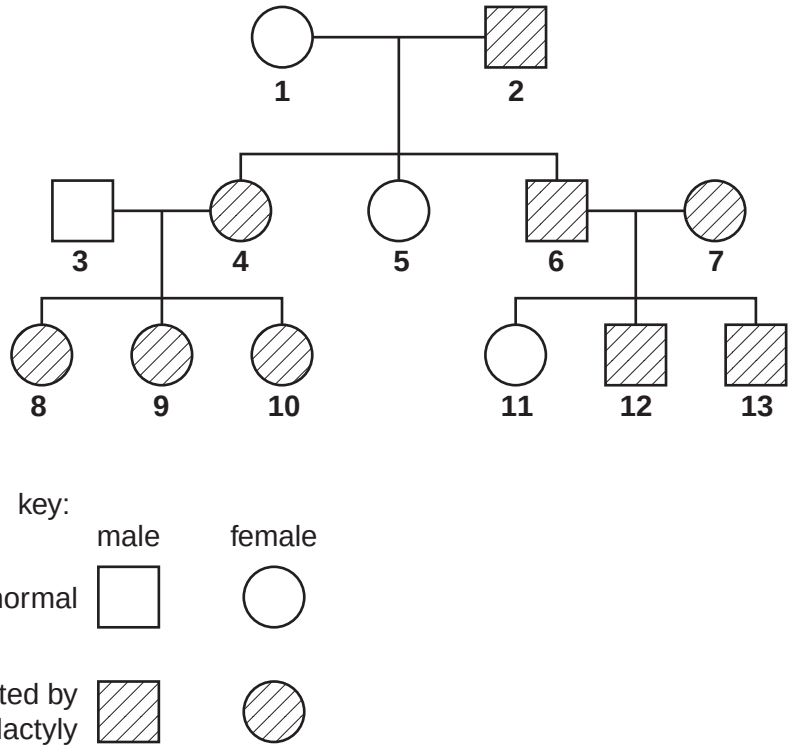

Fig. 4.2

(i) Using Fig. 4.2, deduce whether the allele causing polydactyly is dominant or recessive.

.....[1]

(ii) Explain your answer by referring to individuals **6**, **7**, **11**, **12** and **13** from Fig. 4.2.

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.....[3]

[Total: 10]

5 An investigation was carried out into the changes in concentration of antibody mo... in the blood of two people. Person **R** was given passive immunity and person **S** was g... active immunity. The concentration of antibody molecules in their blood is shown in Fig. 5.1.

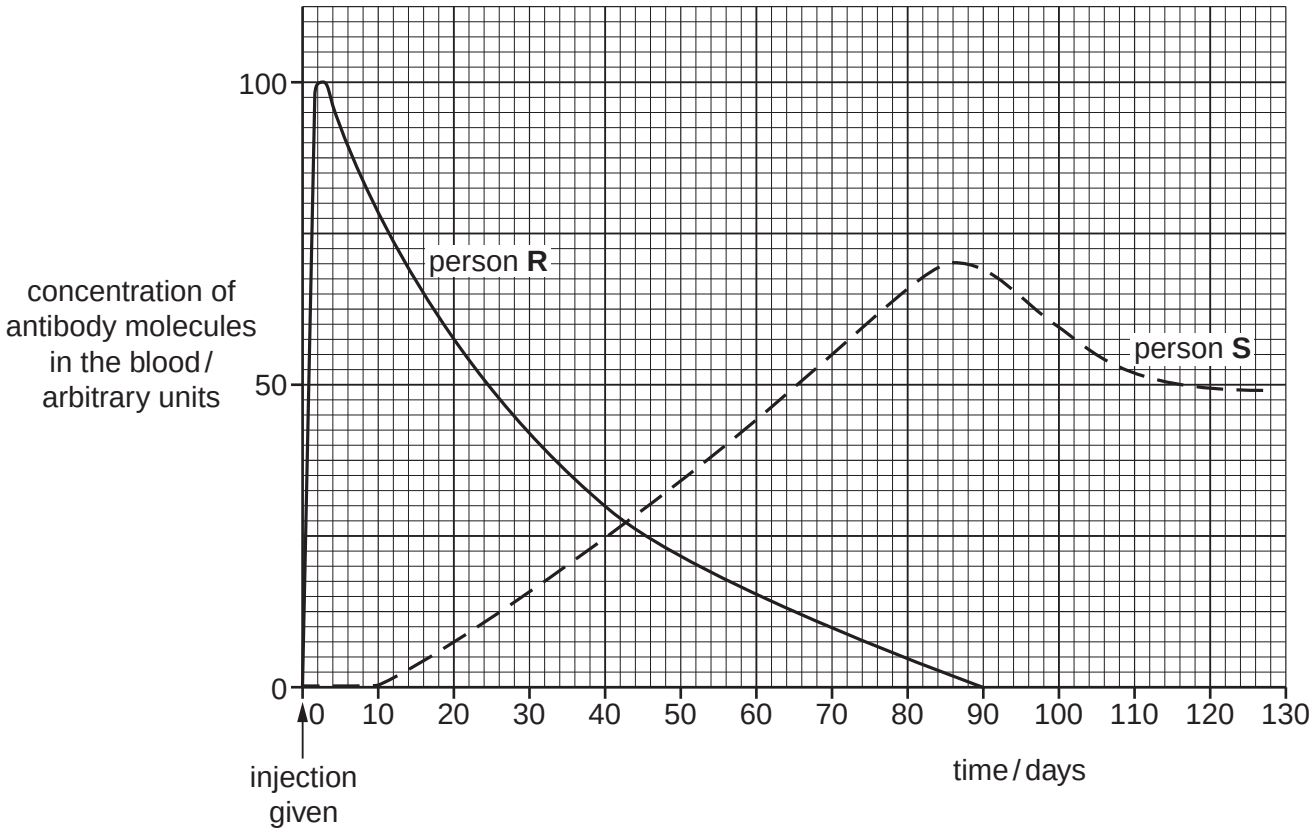

Fig 5.1

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

.....

.....[2]

(ii) Explain why the concentration of antibody molecules shown in Fig. 5.1 decreased to zero in person **R** by day 90.

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.....[2]

(iii) Explain why the concentration of antibody molecules shown in Fig. 5.1 for person **S** did not start to increase until 10 days after the injection.

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.....[2]

(b) Breast milk contains antibodies, which are absorbed by the baby. The antibodies give the baby immunity to the diseases to which the mother is immune.

State the type of immunity that the baby has as a result of absorbing the mother's antibodies.

.....[2]

[Total: 8]

6 Table 6.1 gives information about the daily water loss from the body.

Table 6.1

method of loss	average volume per day / cm^3
urine	1500
sweat	500
breathing	400
feces	100

(a) Some water is lost as sweat.

Calculate the water lost as sweat as a percentage of the total water lost per day.
Show your working.

answer = ...% [2]

(b) Suggest **and** explain how the volume of water lost as sweat would change on a very hot day.

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.....[2]

(c) Explain how water is lost in breathing.

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.....[2]

[Total: 6]

Section B

Answer **both** questions in this section.

Write your answers in the spaces provided.

7 Macronutrients are nutrients that are required in the diet in large quantities. Macronutrients are carbohydrates, fats and proteins.

(a) Outline **two** functions of each group of macronutrients in the body.

carbohydrates .....

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fats .....

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proteins .....

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..... [6]

(b) Name a food rich in calcium **and** state the functions of calcium in the body.

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..... [4]

(c) State **five** ways of maintaining the vitamin and mineral content of fruit and vegetables during cooking.

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.....[5]

[Total: 15]

8 The nervous system is composed of three types of neurones: sensory, intermedia… motor.

(a) State precisely the function of each type of neurone.

sensory neurone .....

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intermediate neurone .....

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motor neurone .....

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..... [6]

(b) Describe how a nerve impulse is passed from one neurone to the next.

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..... [3]

(c) **(i)** State **four** short-term effects that the drinking of alcohol has on the body.

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.....[4]

(ii) State **one** long-term effect on the brain and **one** long-term effect on the liver caused by the excessive drinking of alcohol.

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.....[2]

[Total: 15]

Section C

Answer **either** question **9 or** question **10**.

Write your answers in the spaces provided.

9 The liver and pancreas produce digestive juices that act in the small intestine. They are also involved in the assimilation of the products of digestion that are absorbed from the small intestine.

(a) Describe how the liver and the pancreas are involved in the digestion of food in the small intestine.

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.....[7]

(b) Explain the role of the pancreas in the control of the blood glucose concentration.

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.....[4]

(c) Describe the functions of the liver in the assimilation of the products of digestion.

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.....[4]

[Total: 15]

10 **(a)** Describe how fats are digested in the different parts of the alimentary canal.

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..... [5]

(b) Describe how proteins are digested in the different parts of the alimentary canal.

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(c) Explain how the chemicals produced from the digestion of fats and proteins are ab... into the body.

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.....[5]

[Total: 15]

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