



UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS  
General Certificate of Education Ordinary Level

CANDIDATE  
NAME

CENTRE  
NUMBER

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NUMBER

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**SCIENCE**

**5125/04**

Paper 4 Biology

**October/November 2010**

**1 hour 15 minutes**

Candidates answer on the Question Paper

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.  
You may use a soft pencil for any diagrams, graphs or rough working.  
Do not use staples, paper clips, highlighters, glue or correction fluid.  
**DO NOT WRITE IN ANY BARCODES.**

**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, 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	
<b>Section A</b>	
<b>Section B</b>	/
<b>Total</b>	

This document consists of **12** printed pages.



Section A

Answer **all** the questions in the spaces provided.

1 Fig. 1.1 shows sections through two types of human blood vessel.

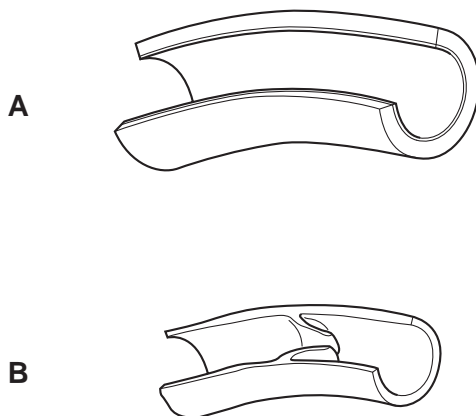


Fig. 1.1

(a) Name the types of blood vessel shown in Fig. 1.1.

A .....

B .....

[1]

(b) (i) Describe two differences in the structure of blood vessels **A** and **B**.

1. ....

.....

2. ....

..... [2]

(ii) For each of your answers in (b)(i), explain how the difference in structure relates to the function of the blood vessel.

1. ....

.....

2. ....

..... [2]

(c) Fatty deposits may build up in blood vessels.

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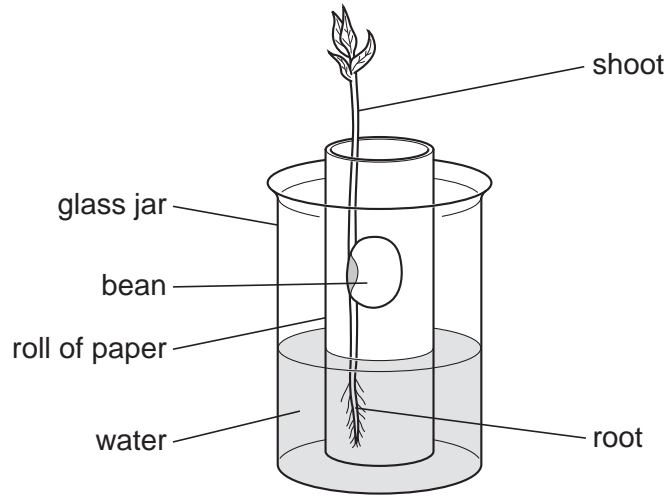
(i) Explain how these fatty deposits may cause coronary heart disease.

.....  
.....  
..... [2]

(ii) State two lifestyle choices that may increase the chance of coronary heart disease.

1. ....  
2. .... [2]

2 A scientist investigates the germination of bean seeds at different temperatures. He germinates each seed as shown in Fig. 2.1.



**Fig. 2.1**

The scientist finds that the seeds germinate

- very slowly at 2 °C
- quickly at 35 °C
- not at all at 60 °C.

**(a)** Name the part of the bean seed that develops into

**(i)** the shoot,

..... [1]

**(ii)** the root.

..... [1]

**(b)** Other than water and warmth, what do seeds require for germination?

..... [1]

**(c)** Energy for germination of seeds is provided by aerobic respiration.

The glucose used in aerobic respiration comes from the breakdown of starch stored in the seeds.

**(i)** State the word equation for aerobic respiration.

..... [1]

**(ii)** Where is starch stored in bean seeds?

..... [1]

(d) In the seeds, the action of enzymes breaks down starch into glucose.

Use your knowledge of enzyme activity to explain the results obtained by the scientist for the germination of bean seeds at 2 °C, 35 °C and 60 °C.

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.....

.....

.....

.....

..... [3]

3 Fig. 3.1 shows a strawberry plant.



**Fig. 3.1**

(a) In the leaves of this plant, glucose is made by the process of photosynthesis.

(i) Write a word equation for photosynthesis.

..... [1]

(ii) Explain how the plant gains the energy needed for this process.

.....  
 .....  
 ..... [2]

(b) Sugar is transported from the leaves to the strawberry fruit.

Through which cells is sugar transported along the stem?

..... [1]

- (c) Strawberry fruits contain seeds which can grow into new plants. These have been produced by sexual reproduction.

Strawberry plants can also produce new plants by runners. When the tip of a runner touches the ground, roots and a new daughter plant grow. This is asexual reproduction.

- (i) Explain the difference between sexual and asexual reproduction in terms of genetics.

.....  
.....  
..... [2]

- (ii) What is the advantage for the strawberry plant of using each type of reproduction?

sexual reproduction

.....  
.....

asexual reproduction

.....  
..... [2]

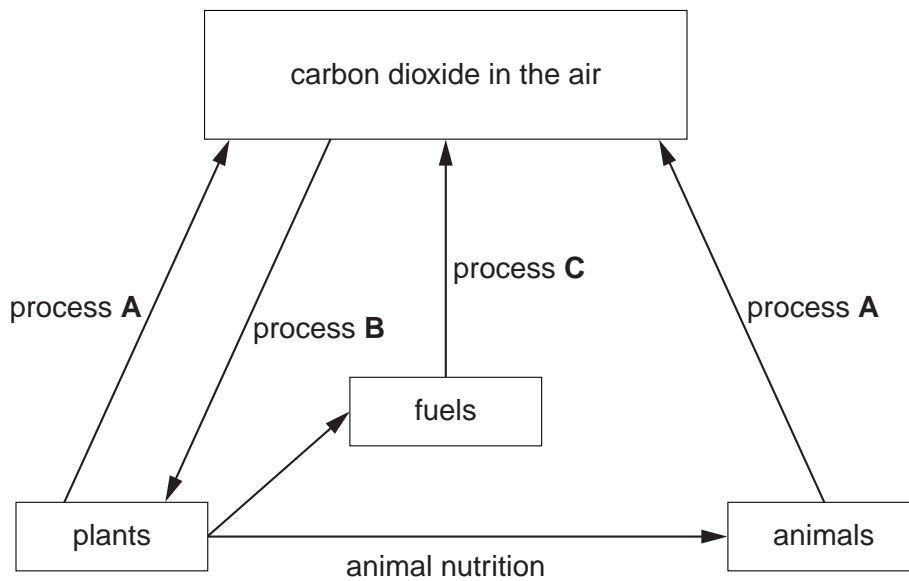
- (d) Strawberry fruits are eaten by animals.

Explain how this is an advantage to the plant.

.....  
.....  
..... [2]

4 Fig. 4.1 shows the carbon cycle.

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**Fig. 4.1**

(a) (i) What is the name of process **B**?

..... [1]

(ii) What is the name of process **C**?

..... [1]

(b) Process **A** is respiration. Both aerobic respiration and anaerobic respiration produce carbon dioxide.

(i) Complete this word equation for anaerobic respiration.

..... → carbon dioxide + ..... [1]

(ii) How does anaerobic respiration differ from aerobic respiration?

.....  
 .....  
 ..... [2]



(c) (i) Explain how processes **A** and **B** maintained a constant percentage of carbon dioxide in the air for thousands of years.

.....  
..... [1]

(ii) Suggest how process **C** has helped to increase the percentage of carbon dioxide in the air during the past 100 years.

.....  
.....  
..... [2]

(d) Animal nutrition involves breakdown of food materials by enzymes and absorption of the products.

Describe the part played by each of the following in breakdown and absorption by

(i) teeth,

.....  
.....  
..... [2]

(ii) small intestine.

.....  
.....  
..... [2]

5 The list shows five methods of birth control.

**chemical**  
**hormonal**  
**mechanical**  
**natural**  
**surgical**

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(a) Choose words from this list to fill in the blank boxes in Table 5.1.

**Table 5.1**

method of birth control	description
	A rubber sheath is placed over the penis before insertion into the vagina.
	A woman's oviducts are cut.
	A couple abstain from intercourse during the woman's fertile periods.
	A spermicidal foam is introduced into a woman's vagina before intercourse.
	A woman takes a pill each day to prevent ovulation.

[3]

(b) Describe and explain one advantage and one disadvantage of the method of birth control where a woman's oviducts are cut.

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advantage

.....  
.....  
.....

disadvantage

.....  
.....  
..... [3]

**Section B**

Answer **two** questions from this section.

Write your answers on the separate answer paper provided.

- 6** Binge-drinking has become common amongst young adults in many cities of the World. When clubs close in the early hours of the morning, people who have drunk large quantities of alcohol gather in city centre streets.
- (a) Describe the effects of drinking too much alcohol, and suggest how this may cause problems for binge-drinkers and for the society they live in. [5]
- (b) Suggest two ways by which your government could reduce binge-drinking, giving an advantage and a disadvantage of each method. [5]
- 7** (a) Describe how water enters, travels in and is lost from a plant. [7]
- (b) Suggest three reasons why this flow of water is important for the plant. [3]
- 8** (a) Define excretion, and explain why it is important for some substances to be excreted from the human body. Use examples of these substances in your answer. [6]
- (b) Describe and explain how excess amino acids are metabolised and how the main product of this metabolism is excreted. [4]

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