UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

CANDIDATE NAME

CENTRE NUMBER

CANDIDATE NUMBER

4160810555

BIOLOGY **0610/21**

Paper 2 Core **May/June 2013**

1 hour 15 minutes

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.
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 ANY BARCODES.

Answer **all** questions.

Electronic calculators may be used.
You may lose marks if you do not show your working or if you do not use appropriate units.

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.

This document consists of **18** printed pages and **2** blank pages.

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For Examiner's Use

1 The terms eating and breathing are often wrongly stated as characteristics of living organisms.

(a) Eating is often confused with nutrition.

Define the term *nutrition*.

.....

.....

.....

..... [2]

(b) Breathing is often confused with respiration.

Define the term *respiration*.

.....

.....

.....

..... [2]

[Total: 4]

For Examiner's Use

2 **(a)** Table 2.1 shows some of the effects of alcohol and heroin.

Complete Table 2.1 by writing YES **or** NO in each of the boxes.

One box has been completed for you.

Table 2.1

effect	alcohol	heroin
addiction		
depressant		
can cause liver damage when used in excess		YES

[3]

(b) Tobacco smoke contains harmful chemicals.

State **one** effect of the following chemicals in tobacco smoke:

(i) carbon monoxide;

.....

..... [1]

(ii) nicotine;

.....

..... [1]

(iii) tar.

.....

..... [1]

[Total: 6]

For Examiner's Use

3 **(a)** Fig. 3.1 shows the digestive system.

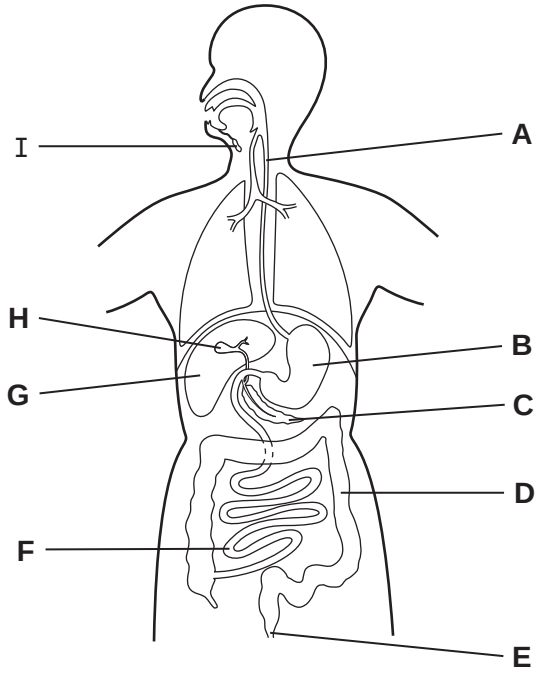


Fig. 3.1

Use the letters from Fig. 3.1 to identify **one** place where each process occurs.

(i) amylase is secreted

letter ..... [1]

(ii) lipase is secreted

letter ..... [1]

(iii) protease is secreted

letter ..... [1]

(iv) bile is formed

letter ..... [1]

(v) hydrochloric acid is released

letter ..... [1]

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(b) Enzymes are involved in chemical digestion.

Describe the function of the enzyme lipase.

.....

.....

.....

.....

.....

..... [3]

(c) The teeth are involved in physical digestion.

Fig. 3.2 shows a section through a tooth.

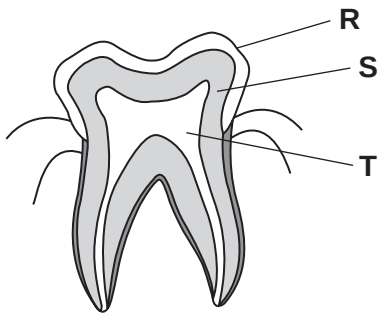


Fig. 3.2

(i) Name a mineral that is required for the development of healthy teeth.

..... [1]

(ii) Name the parts labelled **R**, **S** and **T** as shown on Fig. 3.2.

R .....

S .....

T ..... [3]

(iii) Describe how dental decay is caused.

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.....

.....

.....

.....

.....

..... [3]

[Total: 15]

Question 4 begins on page 8.

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4 Fig. 4.1 shows a section through an insect-pollinated flower.

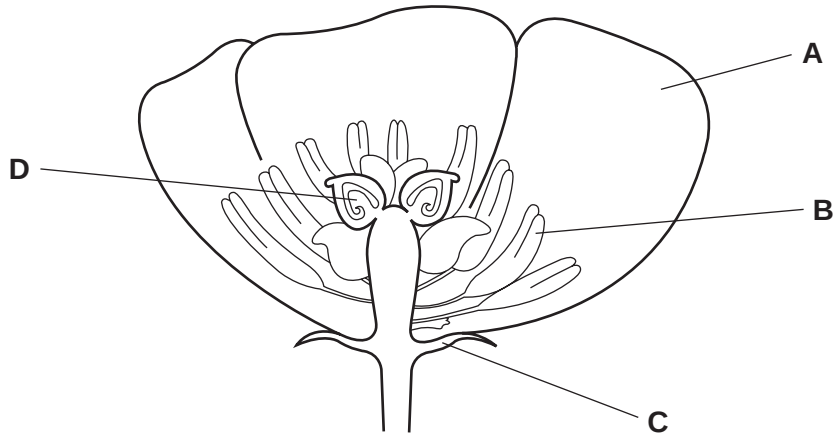


Fig. 4.1

(a) Name the parts labelled **A**, **B**, **C** and **D** as shown on Fig. 4.1.

A .....

B .....

C .....

D ..... [4]

(b) (i) Define the term *pollination*.

.....

.....

.....

..... [2]

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(ii) Pollination can be carried out by insects or by wind.

Describe **four** features of flowers that would show they are insect-pollinated.

1 .....

.....

2 .....

.....

3 .....

.....

4 .....

..... [4]

(c) Wind-pollinated flowers produce much more pollen than insect-pollinated flowers.

This pollen is usually lighter than pollen from insect-pollinated flowers.

Suggest why these are advantages to a plant that is wind-pollinated.

more pollen .....

.....

light pollen .....

..... [2]

[Total: 12]

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5 **(a)** Fig. 5.1 shows a graph of the human population from 1800 to 2010.

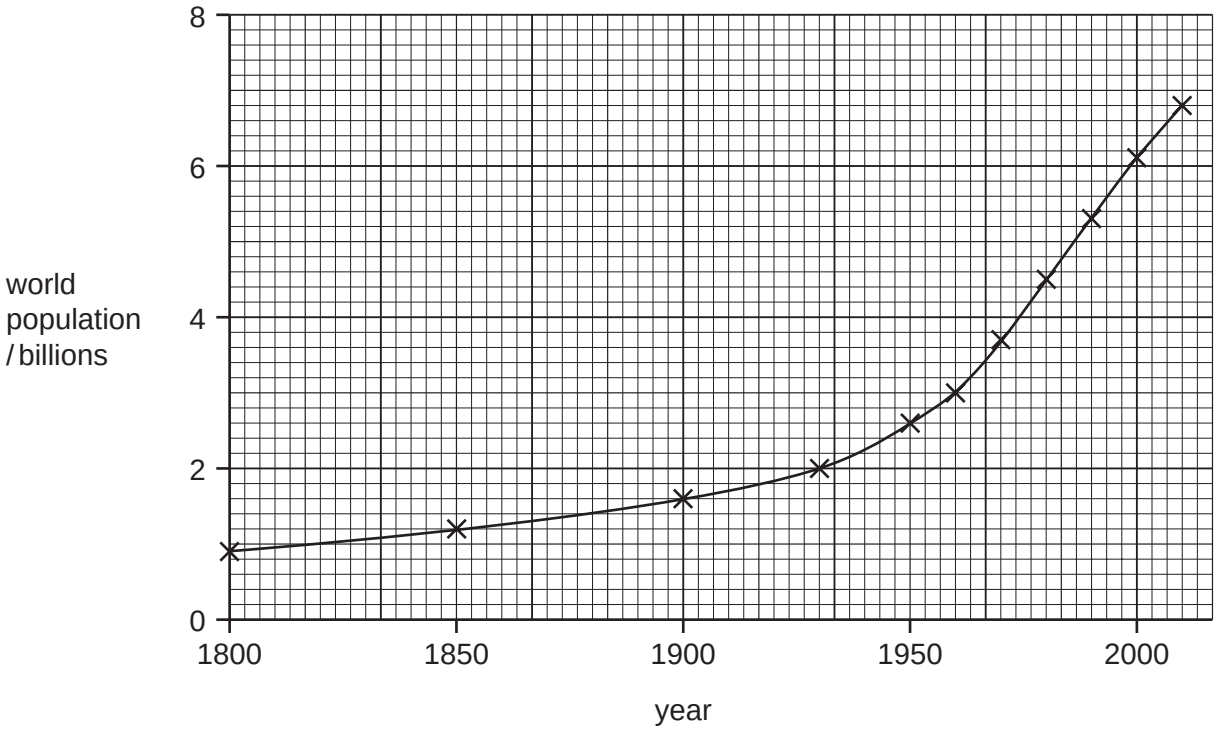


Fig. 5.1

The human population before 1800 had remained fairly constant.

(i) Suggest **three** reasons for the increase in the human population since 1800.

1 .....

.....

2 .....

.....

3 .....

..... [3]

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(ii) State **three** social implications if the human population continues to increase at the current rate.

1 .....

.....

2 .....

.....

3 .....

..... [3]

(b) Many human activities cause pollution of the environment.

Describe the undesirable effects of the following pollutants.

(i) nuclear fall-out .....

.....

.....

..... [2]

(ii) untreated sewage .....

.....

.....

.....

.....

..... [3]

[Total: 11]

For Examiner's Use

6 **(a)** Explain the term *carnivore*.

.....

.....

.....

..... [2]

(b) Fig. 6.1 shows a food chain.

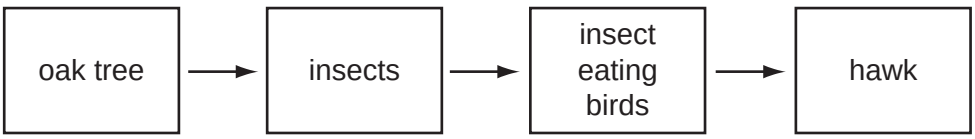


Fig. 6.1

Name a herbivore from the food chain shown in Fig. 6.1.

..... [1]

(c) Draw and label a pyramid of biomass for this food chain.

[2]

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(d) The food chain shown in Fig. 6.1 starts with an oak tree.

Name **and** describe the method of nutrition of the oak tree.

name .....

description .....

.....

.....

.....

.....

..... [4]

[Total: 9]

For Examiner's Use

For Examiner's Use

7 **(a)** Explain the terms *allele* and *gene*.

allele .....

.....

gene .....

..... [2]

(b) PTC is a bitter tasting chemical that some humans can taste while others cannot. This is controlled by a single gene with a pair of alleles.

Fig. 7.1 shows the inheritance of the ability to taste PTC in a family.

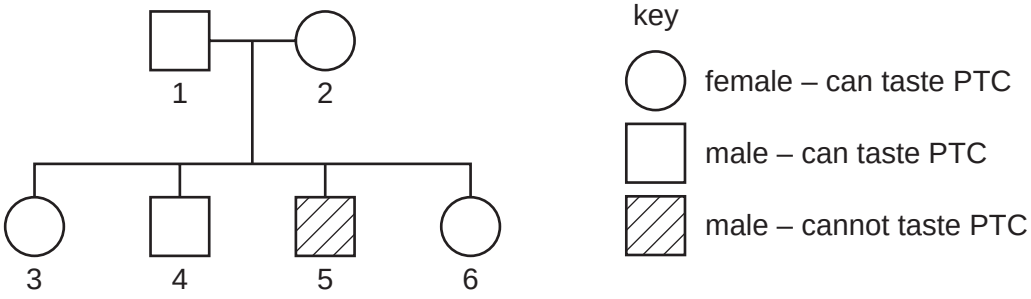


Fig. 7.1

(i) The allele for tasting PTC is dominant to the allele for not tasting PTC.

State evidence shown in Fig. 7.1 that supports this fact.

.....

.....

.....

.....

.....

..... [3]

(ii) Use the symbols **T** for the dominant allele and **t** for the recessive allele to state the genotypes for individuals 2 and 5.

individual 2 .....

individual 5 ..... [2]

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(iii) What are the **two** possible genotypes for individual 3?

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..... [1]

[Total: 8]

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8 **(a)** Fig. 8.1 shows a diagram of the human circulatory system.

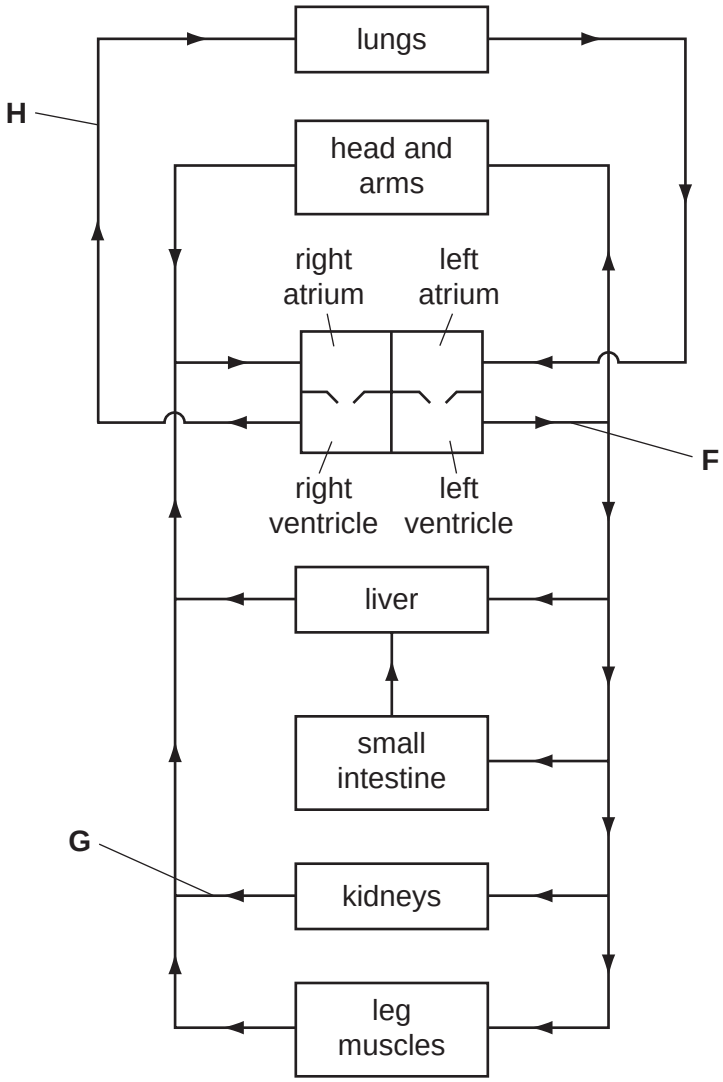


Fig. 8.1

Name the blood vessels labelled **F**, **G** and **H** as shown on Fig. 8.1.

F .....

G .....

H ..... [3]

(b) State **two** ways in which the blood entering leg muscles differs from the blood leaving leg muscles.

1 .....

.....

2 .....

..... [2]

(c) Humans have a double circulation, as shown in Fig. 8.1.

Explain the advantages of humans having a double circulation.

.....

.....

.....

.....

.....

..... [3]

[Total: 8]

For Examiner's Use

For Examiner's Use

9 **(a)** Define the term *excretion*.

.....

.....

.....

..... [2]

(b) Name **two** human excretory organs.

Identify **two** substances that each organ excretes.

organ .....

substances excreted 1 .....

2 .....

organ .....

substances excreted 1 .....

2 ..... [4]

(c) Green plants are living organisms and excrete substances.

Suggest **one** substance that plants excrete.

..... [1]

[Total: 7]

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