UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

CANDIDATE NAME

CENTRE NUMBER

CANDIDATE NUMBER

0080678196

BIOLOGY **0610/02**

Paper 2 Core **October/November 2009**

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.
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	
7	
8	
9	
10	
Total	

This document consists of **15** printed pages and **1** blank pages.

1 Vertebrates can be classified by their external features.

For Examiner's Use

Complete the paragraph by using the name of a vertebrate class in each space.

Some vertebrates have scales all over their skin. If they also have nostrils that allow air into their lungs and two pairs of legs they are ..... .

Some vertebrates have wings. If their body is also covered in feathers they are ..... , but if their body has fur they are ..... .

Vertebrates that do not have feathers, fur or scales on the outside of their body are ..... . [4]

[Total: 4]

For Examiner's Use

2 **(a)** Fig. 2.1 shows a partly completed diagram of a palisade cell.

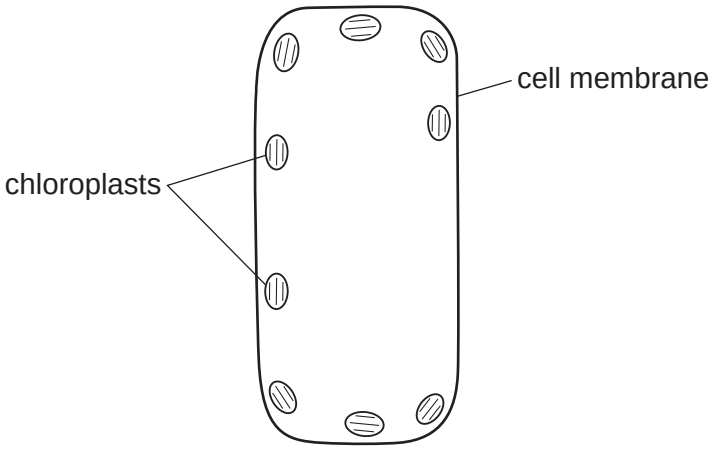

Fig. 2.1

Complete the diagram to show the other major components of this cell.

Label all the components that you have added to Fig. 2.1. [4]

(b) State precisely where palisade cells are found in a plant.

.....

..... [2]

[Total: 6]

For Examiner's Use

3 **(a)** Micronutrients are food materials that are only needed in very small quantities in the human diet.
Draw **one** straight line from each micronutrient to its deficiency symptom.

micronutrient	deficiency symptom
calcium	anaemia
vitamin C	rickets
vitamin D	scurvy
iron	

[4]

(b) Explain how iron, in the diet of humans, is used in the body.

.....

.....

.....

..... [3]

[Total: 7]

For Examiner's Use

4 **(a)** Enzyme activity is vital in human digestion.

Complete Table 4.1 by choosing appropriate words from the list.

amino acids	***amylase***	***cellulose***		***fatty acids***
hydrochloric acid	***lipase***	***protein***	***starch***	***water***

Table 4.1

substrate	enzyme	product
fat	.....	glycerol + ...
.....	protease	.....
.....	.....	maltose

[6]

(b) Maltose is changed into glucose.

(i) Which part of the blood carries glucose?

..... [1]

(ii) Which process, happening in all living cells, needs a constant supply of glucose?

..... [1]

(iii) Excess glucose is stored. Which carbohydrate is glucose changed into for storage?

..... [1]

(iv) Which organ is the main store of this carbohydrate?

..... [1]

(v) Name a hormone that causes glucose to be released from storage.

..... [1]

[Total: 11]

5 Rabbits are primary consumers. Fig. 5.1 shows changes in the population of rabbits after a small number were released on an island where none had previously lived.

For Examiner's Use

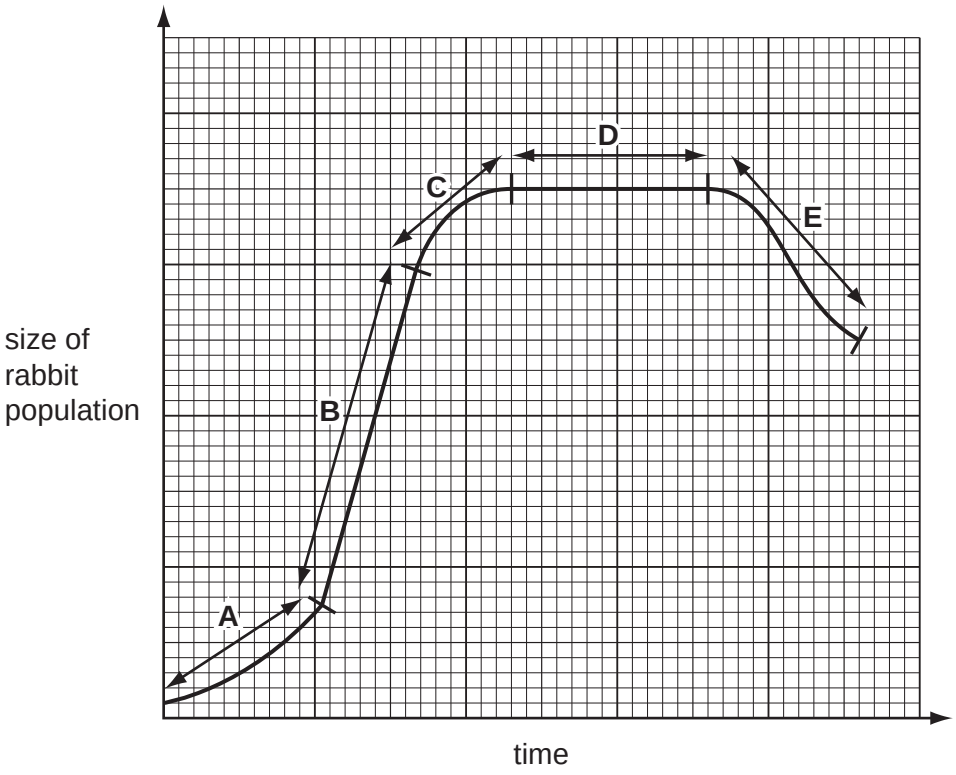

Fig. 5.1

(a) Which stage, **A**, **B**, **C**, **D** or **E**, shows when the birth rate was

(i) equal to the death rate,

..... [1]

(ii) **slightly** greater than the death rate?

..... [1]

For Examiner's Use

(b) (i) Suggest two factors that allowed the change in the rabbit population during stage **B**.

1. .....

2. ..... [2]

(ii) Suggest two reasons for the change in the rabbit population during stage **E**.

1. .....

.....

2. .....

..... [2]

[Total: 6]

For Examiner's Use

6 **(a)** Fig. 6.1 shows the female reproductive system.

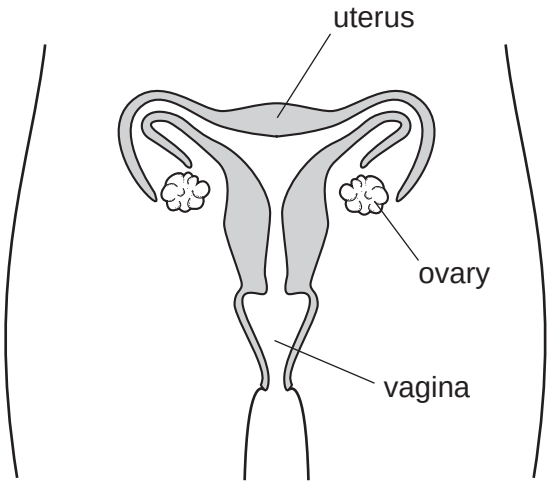

Fig. 6.1

Describe the functions of each of the following structures in the female reproductive system.

(i) ovary

.....

.....

..... [2]

(ii) uterus

.....

..... [1]

(iii) vagina

.....

..... [1]

(b) Explain the purpose of the events that happen during the menstrual cycle in human females.

For Examiner's Use

.....

.....

.....

.....

..... [3]

[Total: 7]

7 Fig. 7.1 shows a food web for a habitat in Europe.

For Examiner's Use

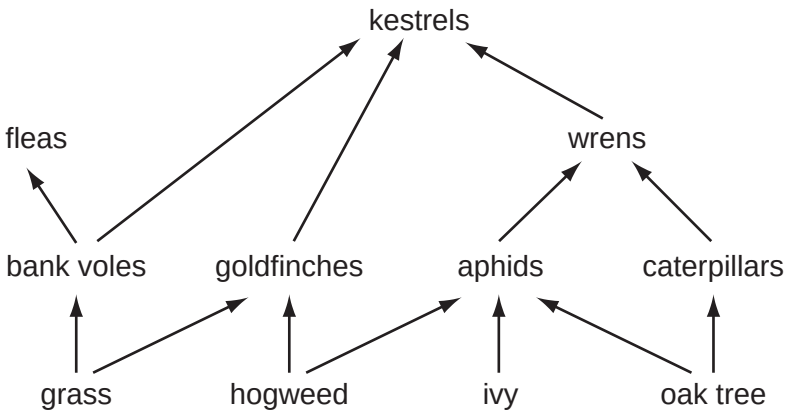

Fig. 7.1

(a) (i) In the space below draw a food chain consisting of **four** organisms. The organisms must be part of the food web in Fig.7.1.

[2]

(ii) Explain what is meant by the terms *herbivore* and *carnivore* **and** in each case give an example from the food web in Fig. 7.1.

herbivore .....

.....

carnivore .....

..... [3]

(iii) Name an animal in the food web in Fig.7.1 that would normally be present in far greater numbers than the animal on which it feeds.

..... [1]

(b) Sometimes a very large number of ladybirds arrive in this habitat.

For Examiner's Use

Ladybirds are insects that feed on aphids.

Predict and explain how this could affect the populations of wrens and bank voles in this food web.

wrens .....

.....

.....

bank voles .....

.....

..... [4]

[Total: 10]

For Examiner's Use

8 Gaseous exchange takes place while air flows in and out of the lungs.

(a) State three ways in which inspired air is different from expired air.

1. .....

.....

2. .....

.....

3. .....

..... [3]

(b) List three features of gaseous exchange surfaces that help to make them more efficient.

1. .....

.....

2. .....

.....

3. .....

..... [3]

[Total: 6]

For Examiner's Use

9 (a) (i) Define *osmosis*.

.....

.....

.....

..... [3]

(ii) Osmosis is considered by many scientists to be a form of diffusion.

Suggest two ways in which diffusion is different from osmosis.

1. .....

.....

2. .....

..... [2]

(b) (i) Explain how root hair cells use osmosis to take up water.

.....

.....

.....

..... [2]

(ii) The land on which a cereal crop is growing is flooded by sea water.

Suggest the effect sea water could have on the cereal plants.

.....

.....

.....

.....

..... [4]

[Total: 11]

For Examiner's Use

10 (a) In *Drosophila*, the fruit fly, wing length is controlled by a single gene.

Wing length can be long or short. A long winged male fruit fly was crossed with a short winged female. All of their offspring, the second generation, had long wings. When the second generation flies were interbred, to produce a third generation, some of the offspring had long wings and some had short wings.

(i) Which wing length is controlled by the recessive allele?

..... [1]

(ii) Complete the genetic diagram, using the symbols **R** and **r** to represent the alleles.

Parents male female
(first generation)

phenotypes …… wings ……. wings

genotypes ……..…..... ……...…..

gametes ◯ ◯ ◯ ◯

Offspring
(second generation)

genotypes …… ……. ……. …….

phenotypes …… ……. ……. ……. [5]

(iii) If the third generation consisted of 464 offspring how many would be expected to have short wings?

For Examiner's Use

Show your working.

.....

..... [2]

(b) The female parent fruit fly was crossed with one of her male offspring from the second generation.

Draw a genetic diagram to show this cross **and** state the ratio of the offspring phenotypes.

genetic diagram

ratio of offspring phenotypes

..... [4]

[Total: 12]

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