



UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

CANDIDATE
NAME

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BIOLOGY

0610/02

Paper 2 Core

October/November 2008

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 **16** printed pages.



- 1 (a) The binomial naming system used to identify all living things gives the Indian elephant a scientific name of *Elephas maximus*.

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Which part of this name refers to the genus and which part refers to the species?

genus

species [1]

- (b) The list gives the names of eight members of the cat family. The common or English name is followed by the binomial name.

Bobcat – *Lynx rufus* **Cheetah** – *Acinonyx jubatus* **Jaguar** – *Panthera onca*

European lynx – *Lynx lynx*

Leopard – *Panthera pardus*

Lion – *Panthera leo*

Iberian lynx – *Lynx pardinus*

Tiger – *Panthera tigris*

- (i) State the common or English names of two members of the same genus.

1.

2. [2]

- (ii) Name the genus that has only one species.

..... [1]

[Total: 4]

- 2 (a) Table 2.1 shows the percentage of haemoglobin that is inactivated by carbon monoxide present in the blood of taxi drivers in a city.

Table 2.1

| city taxi drivers | | percentage of haemoglobin inactivated by carbon monoxide |
|--------------------|-------------|--|
| day time drivers | smokers | 5.7 |
| | non-smokers | 2.3 |
| night time drivers | smokers | 4.4 |
| | non-smokers | 1.0 |

3

- (i) The carbon monoxide in the blood of these taxi drivers comes from two sources. One source is from vehicle exhaust fumes.

Name the other source of carbon monoxide that may be inhaled by drivers.

..... [1]

- (ii) Using data from Table 2.1, suggest which of these two sources contributes most to the inactivation of the haemoglobin.

Explain your choice.

source

explanation

..... [3]

- (iii) Calculate the difference in the percentage of haemoglobin inactivated by carbon monoxide in day and night time taxi drivers and suggest a reason for the difference.

difference

reason

..... [2]

- (b) (i) Name two other harmful components of cigarette smoke, apart from carbon monoxide.

For each, describe an effect it can have on the body of a person who smokes.

1. component

effect

.....

2. component

effect

..... [4]

- (ii) Suggest a possible effect that might happen to the fetus of a pregnant woman who smokes.

..... [1]

[Total: 11]

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3 After an accident at a nuclear power plant in 1986, particles containing radioactive strontium were carried like dust in the atmosphere. These landed on grassland in many European countries. When sheep fed on the grass they absorbed the strontium and used it in a similar way to calcium.

(a) Explain where in the sheep you might expect the radioactive strontium to become concentrated.

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

(b) Suggest the possible effects of the radiation, given off by the strontium, on cells in the body of the sheep.

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

[Total: 5]

- 4 Choose words from the list to complete each of the spaces in the paragraph.

Each word may be used once only and some words are not used at all.

allele **diploid** **dominant** **gene** **haploid**
heterozygous **homozygous** **meiosis** **mitosis** **recessive**

In humans there is a condition known as cystic fibrosis.

This is controlled by a single which has two forms. One form causes cystic fibrosis while the other does not.

Gametes are formed by When two humans reproduce, their gametes fuse at fertilisation to form a zygote.

Neither of the two humans has cystic fibrosis but one of their three children does have the condition. This means that cystic fibrosis is controlled by a allele and that each of the parents is

[5]

[Total: 5]

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5 Fig. 5.1 shows a side view of the male reproductive system.

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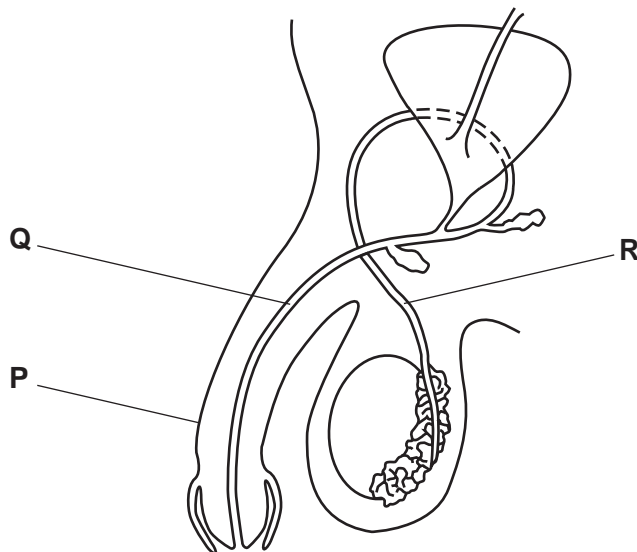


Fig. 5.1

(a) Name the structures labelled **P**, **Q** and **R**.

- P**
- Q**
- R** [3]

(b) On Fig. 5.1,

- (i) label with a line and a letter **S** where sperm are produced, [1]
- (ii) label with a line and a letter **T** where testosterone is produced. [1]

(c) Describe two effects that testosterone can have on the male body during puberty.

1.
-
2.
- [2]

(d) The human immunodeficiency virus (HIV) is a sexually transmitted virus.

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Apart from intercourse, describe two other routes by which HIV can be transmitted from human to human.

1.
.....
.....

2.
.....
..... [4]

[Total: 11]

- 6 (a) Cape buffalo graze on grass. While the buffalo are grazing, two or three oxpecker birds are often seen standing on the backs of each buffalo. These birds eat ticks that are parasites on the buffalo's skin.

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- (i) Draw a pyramid of numbers to represent these feeding relationships.

Label the pyramid with the names of the organisms.

[3]

- (ii) Draw a pyramid of biomass to represent the same feeding relationships.

Label the trophic levels on this pyramid.

[2]

(b) Explain how the nutrition of consumers differs from that of producers.

.....

.....

.....

.....

..... [3]

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[Total: 8]

7 (a) Fig. 7.1 shows the carbon cycle.

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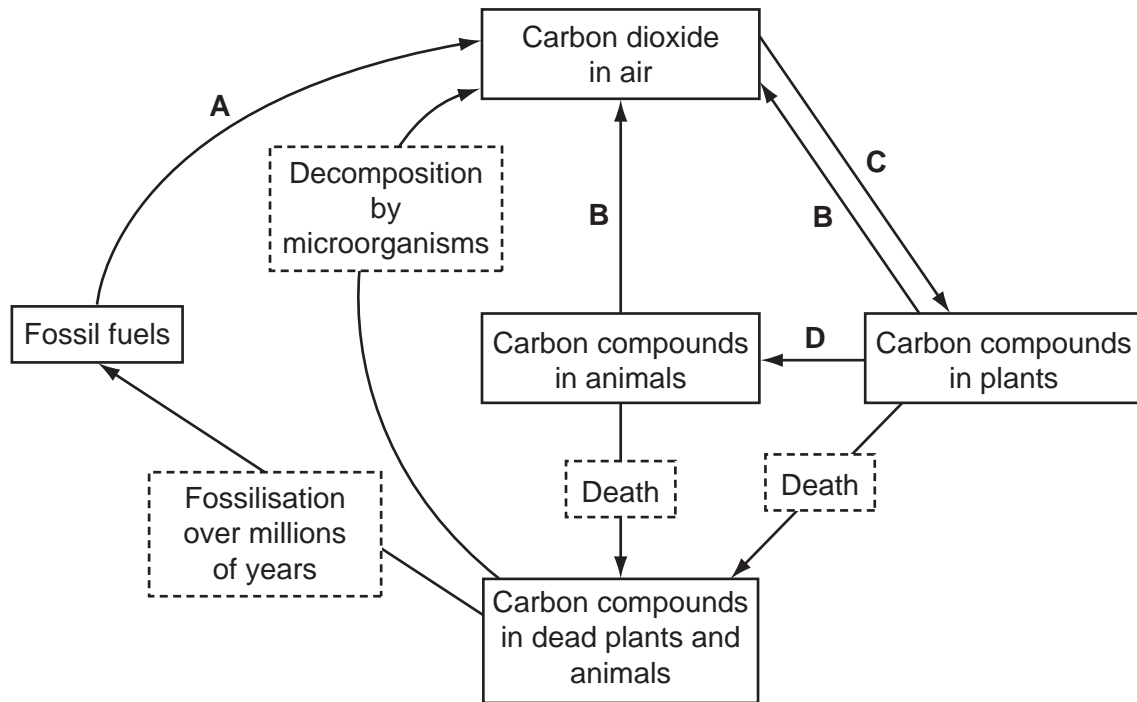


Fig. 7.1

(i) Name the processes that cause the changes shown by the arrows.

- A
- B
- C
- D [4]

(ii) Name **one** type of organism that brings about decomposition.

..... [1]

(b) Over the last few decades, the carbon dioxide concentration in the atmosphere has been rising.

Suggest how this has happened.

.....

.....

.....

.....

..... [3]

[Total: 8]

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8 Fig. 8.1 shows the bones and muscles of a human leg.

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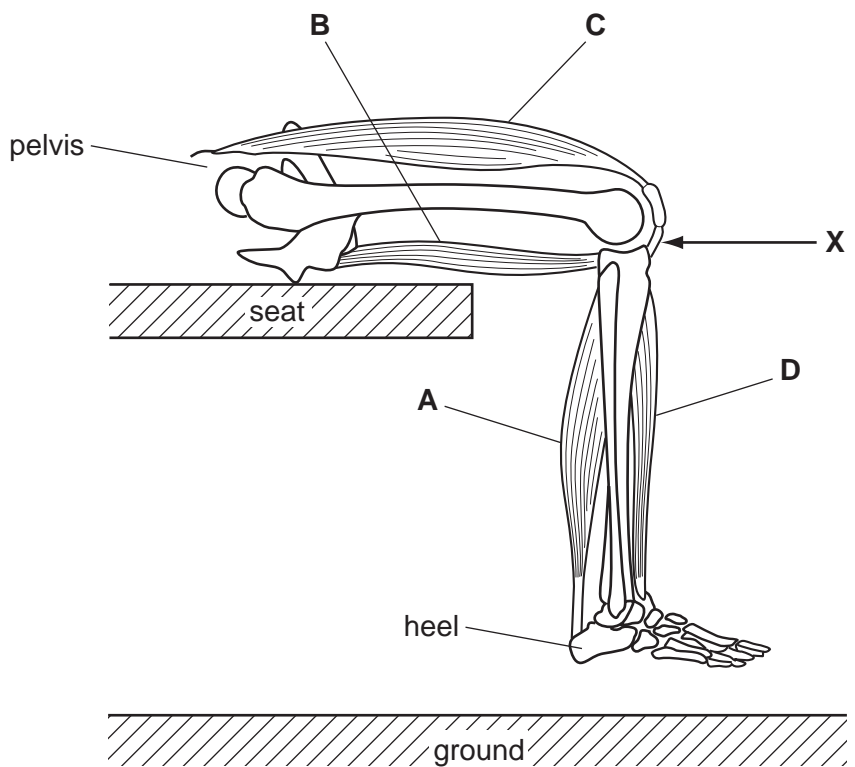


Fig. 8.1

(a) Muscles in the leg work antagonistically.

(i) State which muscle is antagonistic to muscle A.

..... [1]

(ii) Explain what is meant by *antagonistic*.

.....

 [2]

(b) In Fig. 8.1, the person is sitting with the foot clear of the ground.

If a sharp tap is given at X then the lower leg swings forwards.

This is a reflex action.

(i) Describe the general features of any reflex action.

.....

.....

..... [2]

(ii) If the spinal cord is cut through near the chest, this reflex action still takes place.

Suggest where in the central nervous system this reflex response is coordinated.

.....

..... [1]

(c) In an emergency, a person might have to run suddenly and very quickly.

(i) Name the hormone that the body releases in such an emergency.

..... [1]

(ii) Describe three changes that occur in the body when this hormone is released in such an emergency.

1.

.....

2.

.....

3.

..... [3]

[Total: 10]

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9 (a) Fig. 9.1 shows a root hair cell.

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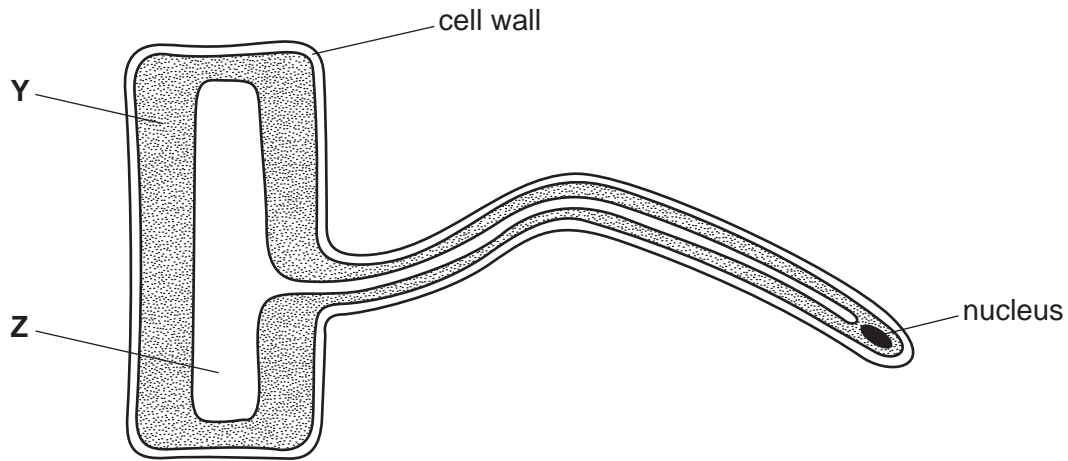


Fig. 9.1

(i) Name the following parts of the cell.

Y

Z [2]

(ii) The function of this cell is to absorb water and mineral ions from the soil.

Describe **one** feature shown in the diagram, that is an adaptation for this function.

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

(iii) State two features of this plant cell that would **not** be present in a typical animal cell, such as a liver cell.

1.

.....

2.

..... [2]

(b) (i) State what is meant by the term *osmosis*.

.....

.....

.....

..... [3]

(ii) Explain how this process applies to the uptake of water by this cell.

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

[Total: 10]

10 (a) Transport in plants occurs through the vascular bundles.

Describe the role of phloem and xylem tissue in transport in a plant stem.

phloem
.....
.....

xylem
.....
..... [4]

(b) Transport in mammals is through the system of arteries and veins.

Describe and explain the differences between the structure of arteries and veins.

.....
.....
.....
.....
..... [4]

[Total: 8]

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