Surname

Other Names

Candidate Signature

AQA

General Certificate of Secondary Education
Foundation Tier
June 2012

Science B
Unit Biology B1

Biology
Unit Biology B1

Written Paper

Tuesday 12 June 2012   9.00 am to 9.45 am

BLY1F

F

For this paper you must have:
● a ruler.
You may use a calculator.

Time allowed
● 45 minutes

Instructions
● Use black ink or black ball-point pen.
● Fill in the boxes at the top of this page.
● Answer **all** questions.
● You must answer the questions in the spaces provided. Do not write outside the box around each page or on blank pages.
● Do all rough work in this book. Cross through any work you do not want to be marked.

Information
● The marks for questions are shown in brackets.
● The maximum mark for this paper is 45.
● You are expected to use a calculator where appropriate.
● You are reminded of the need for good English and clear presentation in your answers.

Advice
● In all calculations, show clearly how you work out your answer.

BLY1F

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

1 Many animals and plants are adapted to stop other organisms eating them.

1 (a) The photograph shows part of a plant stem.

Suggest how this plant is adapted to stop animals eating it.

Adaptation

....

Describe how the adaptation helps to stop animals eating the plant.

....

....

(2 marks)

1 (b)   The photograph shows an insect on a plant twig.

—————— Insect

Suggest how this insect is adapted to stop animals eating it.

Adaptation

....

Describe how the adaptation helps to stop animals eating the insect.

....

....

(2 marks)

Question 1 continues on the next page

Turn over ▶

1 (c) The photograph shows some insects.

These insects are bright red.

Suggest how these insects are adapted to stop animals eating them.

Adaptation

....

Describe how the adaptation helps to stop animals eating the insects.

....

....

(2 marks)

6

2 (a) **List A** gives the names of three substances. The substances can help ill people.

List B gives information about the three substances.

Draw a line from each substance in **List A** to the correct information in **List B**.

List A
Substance

List B
Information

White blood cells produce this substance

Antibiotic

This substance is used to kill bacteria

Antitoxin

This substance lowers blood cholesterol levels

Painkiller

This substance relieves only the symptoms of a disease

(3 marks)

2 (b) Complete the sentences.

A vaccine contains an .... form of a pathogen.
(1 mark)

The MMR vaccine protects children against measles,

mumps and ....
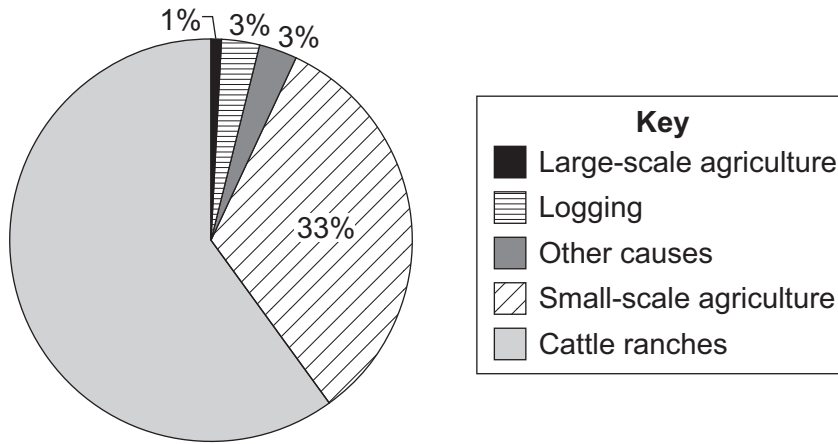*(1 mark)*

5

Turn over ▶

3 Large-scale deforestation is taking place in Brazil.

The pie chart shows the causes of deforestation in Brazil.

Key
- ■ Large-scale agriculture
- ☰ Logging
- ▨ Other causes
- ▧ Small-scale agriculture
- ▢ Cattle ranches

1% 3% 3%

33%

3 (a) Calculate the percentage of forest that has been destroyed for cattle ranches.

Show clearly how you work out your answer.

....

....

Percentage = ...
(2 marks)

3 (b) Cattle give off large amounts of methane into the atmosphere.

The methane causes the Earth's temperature to increase.

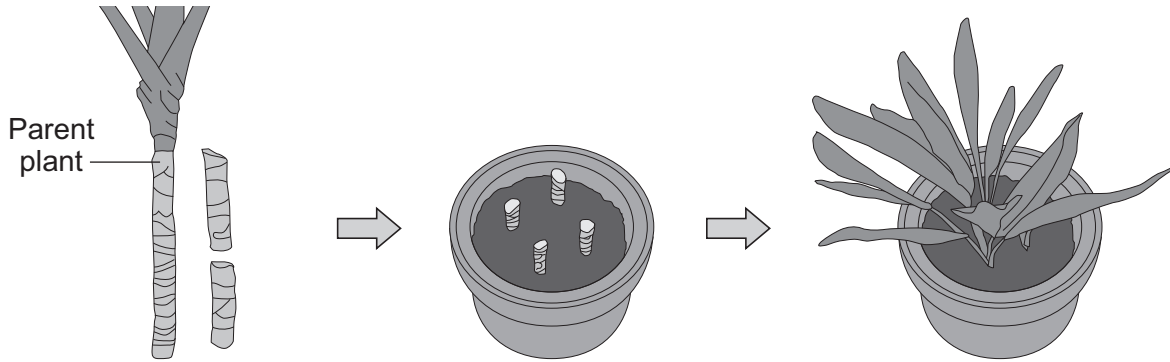Give **two** effects of the temperature increase on the environment.

1 ....

....

2 ....

....
(2 marks)

4

4 (a) The drawings show one way of producing new plants. The new plants are identical to the parent plant.

Parent plant —

1 Pieces are cut from a stem

2 Pieces of stem are pushed into damp soil

3 The pieces grow into new plants

Use words from the box to complete the sentences.

asexual	characteristics	clones	engineering	genes	sexual

The colour and shape of the leaves are known as ....

The information for leaf colour is stored in parts of chromosomes

called ....

The new plants are known as ....

The new plants have been produced by .... reproduction.

(4 marks)

4 (b) (i) Name **one** other way of producing plants that are identical to their parents.

....

(1 mark)

4 (b) (ii) Name **one** way of producing animals that are identical to each other.

....

(1 mark)

6

Turn over ▶

5 (a)   **List A** gives the names of three hormones.

List B gives information about the three hormones.

Draw a line from each substance in **List A** to the correct information in **List B**.

List A
Hormone

List B
Information

Used in some contraceptive pills
to stop eggs maturing

FSH

Used as a fertility drug to make
eggs mature

LH

Causes the lining of the womb
to break down

Oestrogen

Stimulates the release of eggs
in IVF

(3 marks)

5 (b) The table gives information about three methods of giving hormones to stop a woman becoming pregnant.

	The 'pill'	The 'patch'	The 'implant'
How the hormone is given	Swallowed each day for 21 days out of every 28 days.	Stuck onto the skin. Each patch lasts three weeks. There is a one week gap between each patch.	Needs an operation to put it under the skin. Lasts for up to 5 years.

Use the information in the table to answer these questions.

5 (b) (i) Which of the three methods is likely to be the most reliable?

....
(1 mark)

5 (b) (ii) Explain why you chose this method.

....

....
(1 mark)

5 (b) (iii) Give **one** disadvantage of the method you have chosen.

....

....
(1 mark)

6

Turn over for the next question

Turn over ▶

There are no questions printed on this page

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ANSWER IN THE SPACES PROVIDED

6 Obesity is linked to several diseases.

6 (a) Name **two** diseases linked to obesity.

1 ....

2 ....

(2 marks)

6 (b) Scientists trialled a new slimming drug.

The table shows their results after one year.

Percentage change in mass of each volunteer	Number of volunteers
gained mass or lost 0 to 3.9 %	1900
lost 4.0 to 4.9 %	1100
lost 5.0 to 9.9 %	1500
lost 10 % or more	1500

6 (b) (i) Calculate the proportion of the volunteers who lost 10 % or more of their mass.

You should first calculate the total number of volunteers, then work out the proportion.

....

....

Proportion of volunteers = ...

(2 marks)

6 (b) (ii) The National Health Service (NHS) gave permission for the drug to be used.

Use information from the table to suggest a reason why the NHS gave permission for the drug to be used.

....

....

(1 mark)

5

Turn over ▶

7 (a)   **List A** gives the names of three stages in trialling a new drug.

List B gives information about the three stages.

Draw a line from each stage in **List A** to the correct information in **List B**.

List A	**List B**
Stage	**Information**

Used to find if the drug is toxic

Tests on humans including a placebo

The first stage in the clinical trials of the drug

Tests on humans using very small quantities of the drug

Used to find the optimum dose of the drug

Tests on animals

Used to prove that the drug is effective on humans

(3 marks)

7 (b) Read the passage.

> **Daily coffee dose delays development of Alzheimer's in humans**.
>
> Alzheimer's is a brain disease that causes memory loss in elderly people. Scientists studied 56 mice that had been genetically engineered to develop Alzheimer's.
>
> Before treatment all the mice did badly in memory tests.
>
> Half the mice were given a daily dose of caffeine in their drinking water. The dose was equivalent to the amount of caffeine in six cups of coffee for a human.
>
> The other mice were given ordinary water.
>
> After two months, the caffeine-drinking mice did better in memory tests than the mice drinking ordinary water.

The headline for the passage is not justified.

Explain why as fully as possible.

....

....

....

....

....

....

....

....
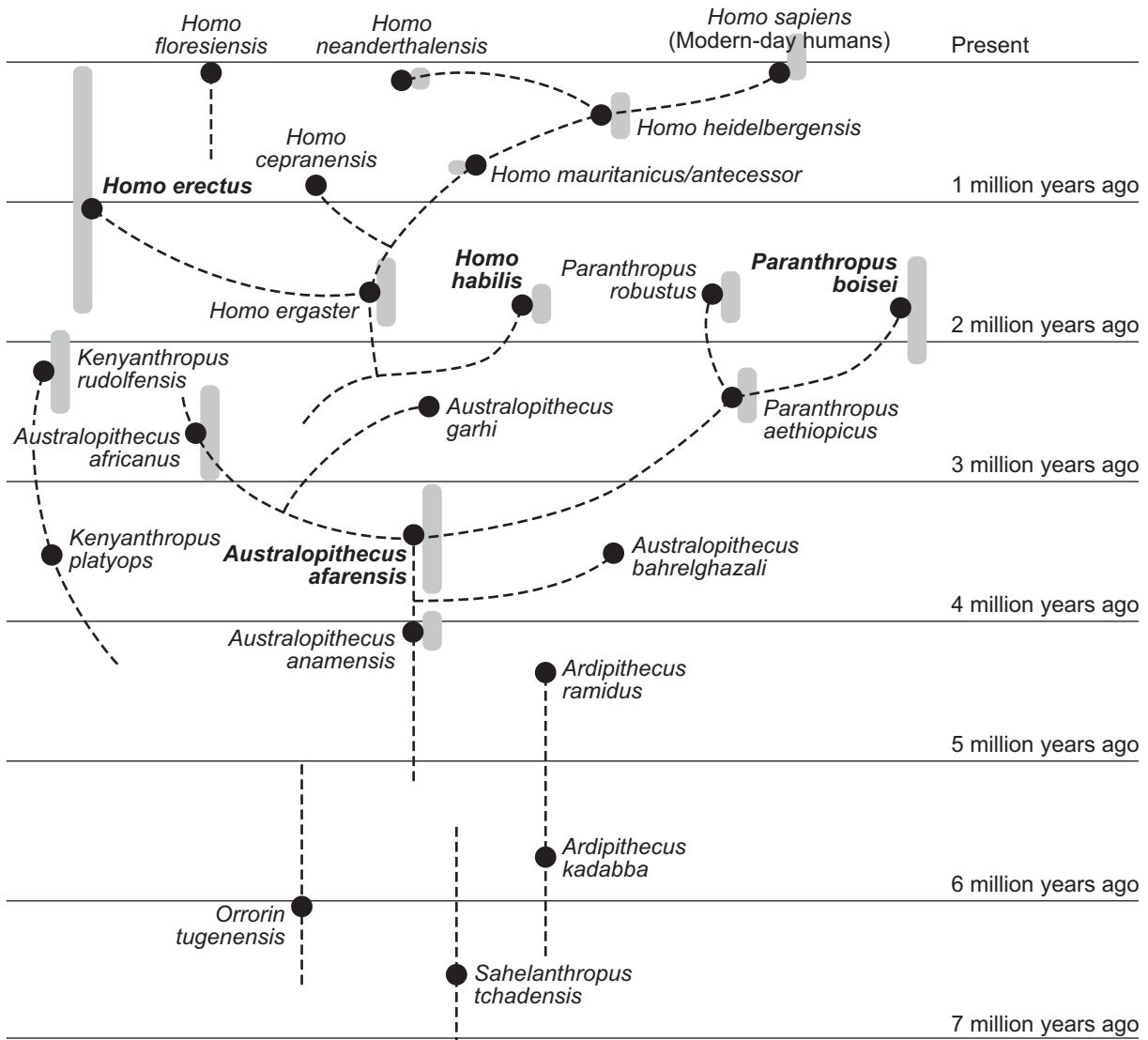
(3 marks)

6

Turn over for the next question

Turn over ▶

8 The diagram shows an evolutionary tree for humans.
The diagram is based on a study of fossils.

Key: ▮ When each species lived ⁞ Relationships between species

8 (a) When did *Australopithecus afarensis* first appear?

.... million years ago.

(1 mark)

8 (b) Which species was the direct ancestor of *Paranthropus boisei*?

....

(1 mark)

8 (c) Which species is most closely related to *Homo habilis*?

....

(1 mark)

8 (d) About 250 fossils of *Homo erectus* have been found. About 50 of these fossils have been found in China.

A Chinese scientist has suggested the hypothesis that Chinese people evolved from *Homo erectus*.

Most scientists do **not** agree with this hypothesis.

Use the information above and information from the diagram to suggest **two** reasons why.

1 ....

....

2 ....

....

(2 marks)

8 (e) Darwin suggested the theory of natural selection. It was a long time before this theory was accepted by most scientists.

Give **two** reasons why it took a long time.

1 ....

....

2 ....

....

(2 marks)

7

END OF QUESTIONS

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