Surname _____

Other Names _____

Centre Number_____

Candidate Number_____

For Examiner's Use

Candidate Signature _____

ASSESSMENT AND QUALIFICATIONS ALLIANCE

General Certificate of Secondary Education
Foundation Tier
June 2010

Science B

Unit Biology B1

Biology

Unit Biology B1

Written Paper

BLY1F

Wednesday 9 June 2010 1.30 pm

You will need no other materials.
You may use a calculator.

TIME ALLOWED

- **45 minutes plus your additional time allowance.**

At the top of the page, write your surname and other names, your centre number, your candidate number and add your signature.

[Turn over]

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INSTRUCTIONS

- Use black ink or black ball-point pen.
- 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.

DO NOT TURN OVER UNTIL TOLD TO DO SO

Answer ALL questions in the spaces provided.

1 **A healthy body needs a healthy diet.**

Draw a ring around the correct answer to complete each sentence.

1 (a) **To build cells we need large amounts**

of

mineral ions.
proteins.
vitamins.

[1 mark]

1 (b) **Too much fat in the diet can lead**

to

heart disease.
leprosy.
lung cancer.

[1 mark]

1 (c) Too much salt in the diet can lead

to

- arthritis.
- diabetes.
- high blood pressure.

[1 mark]

1 (d) Not eating enough food can lead

to

- diabetes.
- irregular periods.
- leprosy.

[1 mark]

4

[Turn over for the next question]

2 **The photograph shows an aardvark.**

- **Aardvarks feed on insects that they dig from the soil.**
- **Aardvarks hunt for these insects at night.**

How does each of these adaptations help the aardvark?

2 (a) **It has powerful claws. [1 mark]**

_____

_____

2 (b) **It has a long, sticky tongue. [1 mark]**

_____

_____

2 (c) It has very large ears. [1 mark]

_____

_____

2 (d) It can cover the end of its nose with flaps of skin. [1 mark]

_____

_____

4

[Turn over for the next question]

3 A company makes a fruit-flavoured herbal drink called 'Liquid Smoking'.

The company claims that the drink:

- will deliver the same 'fix' as cigarettes
- does not contain nicotine
- is not harmful in any way.

3 (a) The 'Liquid Smoking' container does not have a warning on it.

Give TWO reasons why cigarette smoking is dangerous. [2 marks]

1 _____

_____

2 _____

_____

3 (b) Why do cigarette smokers need a 'fix'? [1 mark]

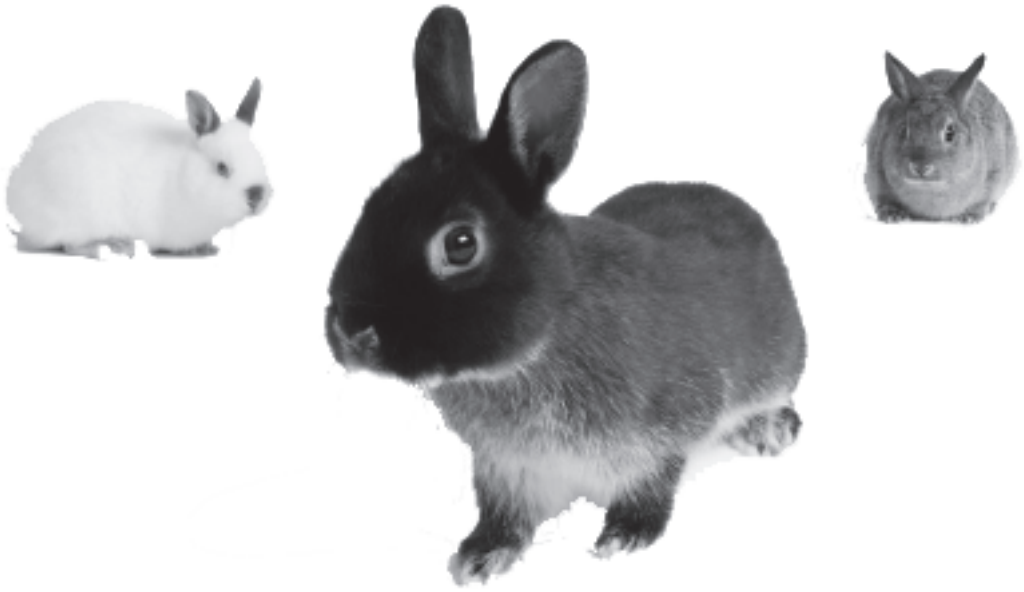
_____

_____

3

4 We breed animals with the characteristics that we prefer.

4 (a) The photograph shows a rabbit with some of its babies.



Use words from the list to complete the sentences about inheritance in rabbits.
[1 mark + 1 mark + 1 mark]

characteristic chromosome gene gamete

4 (a) (i) The colour of a rabbit's fur is known as a

_____ .

4 (a) (ii) This colour is controlled by a

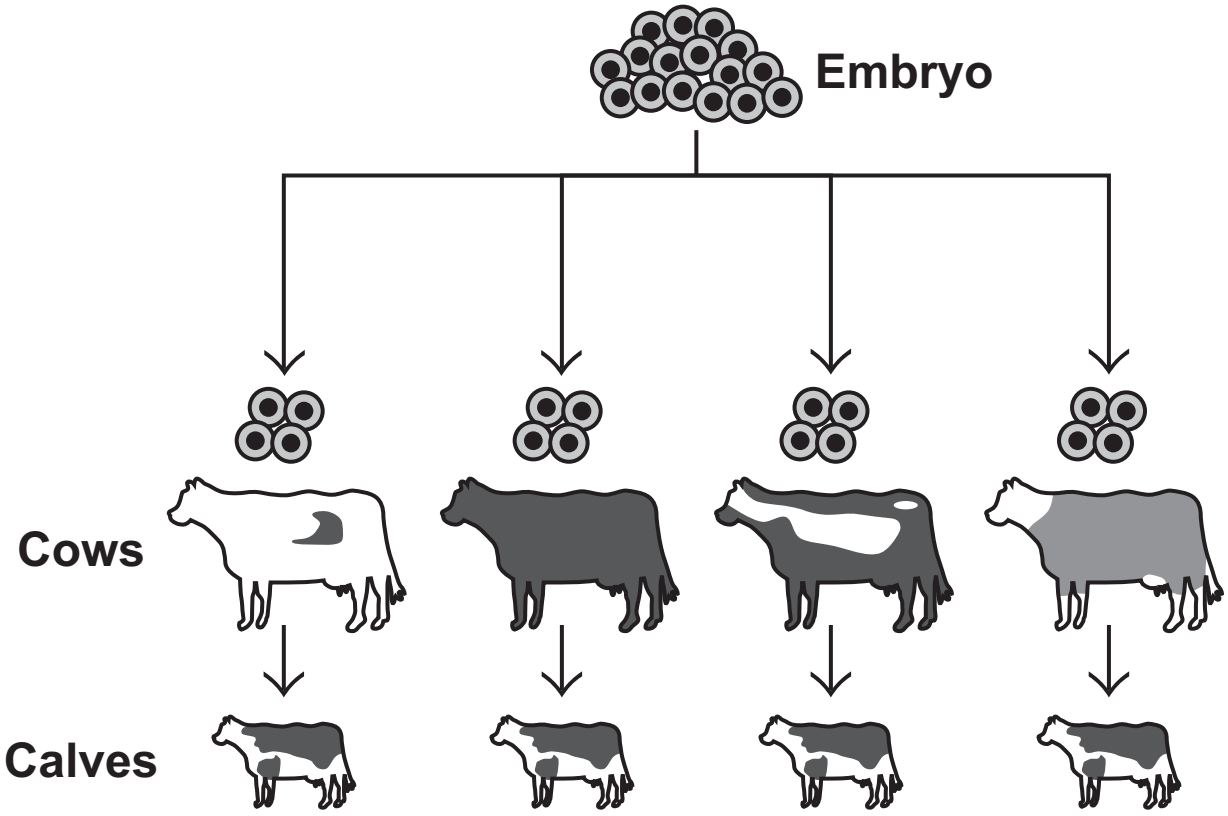
_____ .

4 (a) (iii) Each sex cell of a rabbit is known as a

_____ .

[Question 4 continues on the next page]

4 (b) **The diagram shows one way of producing calves.**



Bull is mated with cow and an embryo develops

↓

Embryo is split into four parts

↓

Each part is placed in the womb of a different cow

↓

Four identical calves are born

Use words from the list to complete the sentences. [3 marks]

asexual	clones	cuttings
gametes	genetic	sexual

A bull was mated with a cow.

This is _____ reproduction.

The embryo produced was split into four parts.

The calves in the diagram have identical genetic information.

This is because the calves were produced by

_____ reproduction.

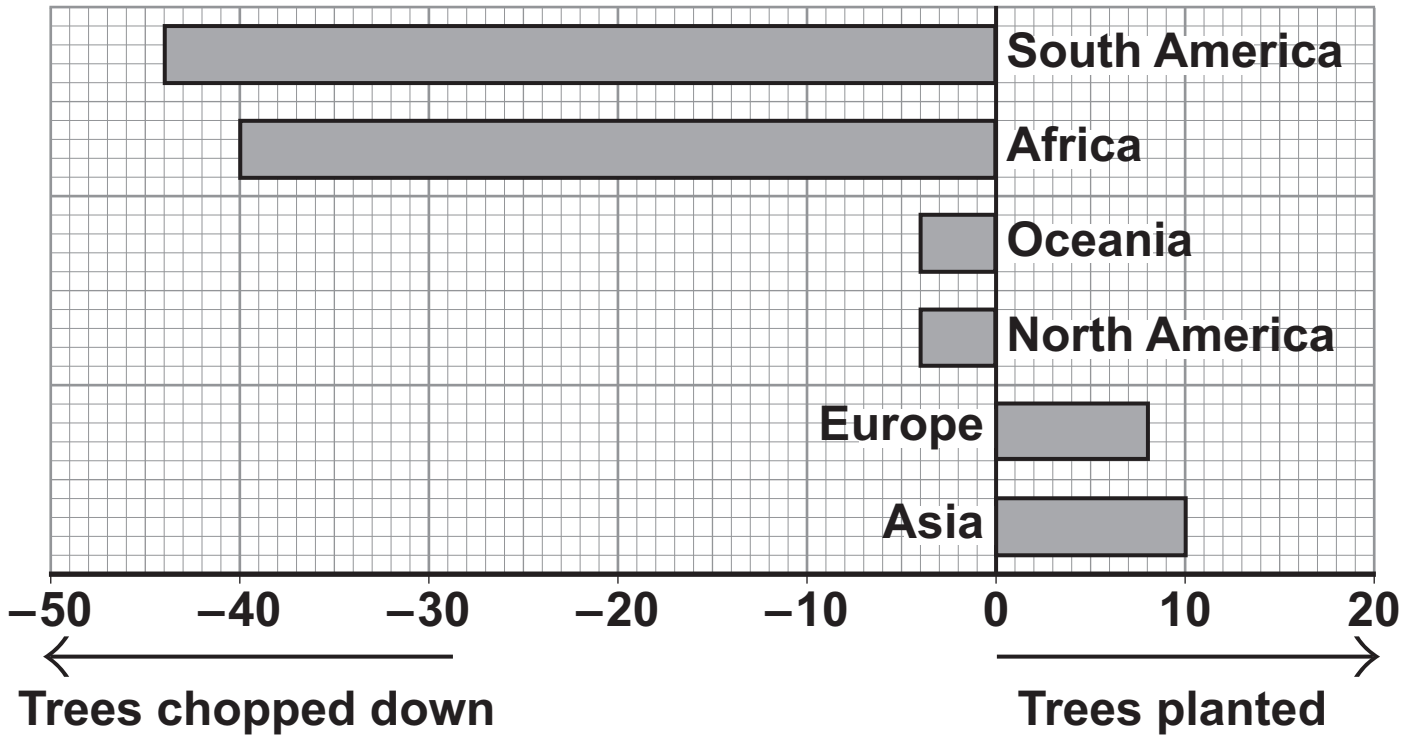
The identical calves are known as

_____ .

6

5 In many parts of the world, forests are being chopped down (deforestation) so that the land can be used to grow food crops. In other parts, trees are planted to produce new forests.

The graph shows how the area of forest in each of the continents is changing each year.



5 (a) (i) What area of forest is being lost in Africa each year? [1 mark]

Area = _____ thousand km^2

5 (a) (ii) Use STEPS 1, 2 and 3 to calculate the total change to the area of forest each year. [3 marks]

STEP 1 Calculate the total area of trees chopped down.

_____

Total area chopped down = _____ thousand km^2

STEP 2 Calculate the total area of trees planted.

_____

Total area planted = _____ thousand km^2

STEP 3 Use your answers from STEPS 1 and 2 to calculate the total change in the area of forest.

_____

Total change in area of forest

_____ thousand km^2

[Question 5 continues on the next page]

5 (b) Draw a ring around the correct answer to complete each sentence.
[1 mark + 1 mark + 1 mark]

5 (b) (i) Large scale deforestation reduces the number of species of

- plants only.
- animals only.
- both animals and plants.

5 (b) (ii) The remains of the trees are broken down into carbon dioxide by

- lichens.
- microorganisms.
- plants.

5 (b) (iii) The gas released into the atmosphere when trees are burned is

- carbon dioxide.
- methane.
- oxygen.

7

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TURN OVER FOR THE NEXT QUESTION

6 **The Invocell device below is used in a new IVF (in-vitro fertilisation) treatment.**
Sperm and eggs are placed in the device which is then placed in the woman's vagina.

The table compares standard IVF treatment with Invocell IVF treatment.

	Standard IVF treatment	Invocell IVF treatment
Success rate	29·6%	19·7%
Cost	£2500	£900
Laboratory equipment needed	Extra equipment needed	None
Fertility problems that can be treated	100%	50%
Hormone treatment needed	Yes	Yes
When the embryos can be seen	Within hours	After 3 days

Using ONLY the information given in the table, answer these questions.

6 (a) **Give TWO advantages of Invocell IVF treatment compared with standard IVF treatment. [2 marks]**

1 _____

_____

2 _____

_____

6 (b) **Give TWO disadvantages of Invocell IVF treatment compared with standard IVF treatment. [2 marks]**

1 _____

_____

2 _____

_____

4

7 **The photograph shows an Anolis lizard.**
This lizard lives on a tiny island.

Scientists investigated how the leg length of the Anolis lizards affected their survival.
At the start of the investigation the Anolis lizards had a large range of leg lengths.

- **The scientists placed six Curly-tailed lizards onto the island.**
- **The Curly-tail lizard is a predator of the Anolis lizard.**
- **After one year the population of Anolis lizards had halved.**
- **Nearly all the remaining Anolis lizards had long legs.**

7 (a) **Why did the population of Anolis lizards halve? [1 mark]**

_____

_____

7 (b) **The remaining Anolis lizards had long legs. [2 marks]**

Suggest an explanation for this.

_____

_____

_____

_____

_____

[Question 7 continues on the next page]

7 (c) **Answer each of these questions by placing a tick (✓) in the correct box.**

7 (c) (i) **Which theory is supported by evidence from this investigation? [1 mark]**

- ☐ **Global warming**
- ☐ **Natural selection**
- ☐ **Sustainability**

7 (c) (ii) **Which scientist proposed this theory? [1 mark]**

- ☐ **Darwin**
- ☐ **Lamarck**
- ☐ **Semmelweiss**

5

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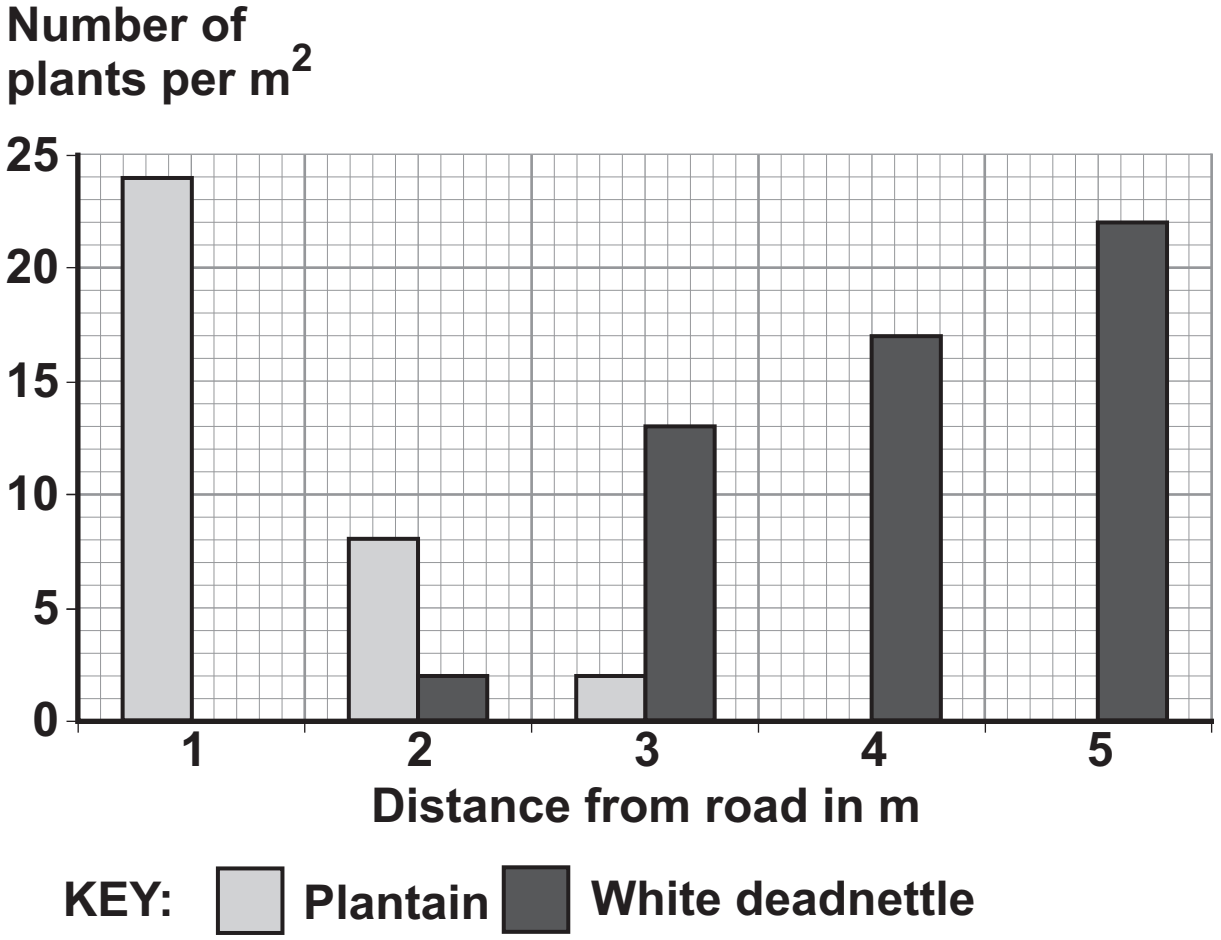
TURN OVER FOR THE NEXT QUESTION

8 Students investigated the distribution of two plant species near a busy road.
The bar chart shows their results.



8 (a) (i) Name the piece of apparatus used in sampling a 1m^2 piece of land. [1 mark]

_____

8 (a) (ii) Describe how this piece of apparatus could be used to obtain the data shown in the bar chart. [2 marks]

_____

_____

_____

_____

_____

8 (a) (iii) Describe the pattern shown in the data for the Plantain plants. [1 mark]

_____

_____

_____

[Question 8 continues on the next page]

8 (b) Suggest explanations for:

8 (b) (i) the distribution of the White deadnettle plants [2 marks]

8 (b) (ii) the distribution of the Plantain plants. [2 marks]

8

9 Influenza is an infectious disease. The influenza virus often mutates.
This has made the World Health Organisation worried about another influenza pandemic.

9 (a) What is meant by a 'pandemic'? [1 mark]

_____

_____

9 (b) Explain why a mutation of the influenza virus might cause another influenza pandemic.
[3 marks]

_____

_____

_____

_____

_____

_____

_____

_____

4

END OF QUESTIONS

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For Examiner's Use	
Examiner's Initials	
Question	Mark
1	
2	
3	
4	
5	
6	
7	
8	
9	
TOTAL	

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