

Centre Number						Candidate Number				
Surname										
Other Names										
Candidate Signature										

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



General Certificate of Secondary Education  
Higher Tier  
June 2011

**Science B**  
Unit Biology B1

**BLY1H**

**H**

**Biology**  
Unit Biology B1

**Written Paper**

**Tuesday 7 June 2011 1.30 pm to 2.15 pm**

**You will need no other materials.**  
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.



J U N 1 1 B L Y 1 H 0 1

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

**1** Animals in a habitat compete with each other.

**1 (a)** Give **two** factors for which animals may compete.

1 .....

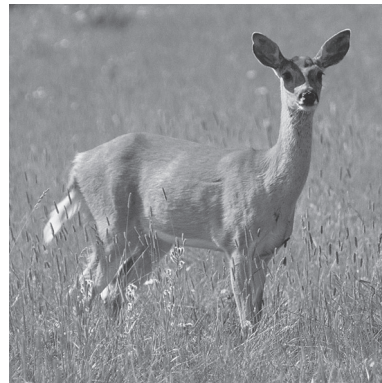
2 .....

(2 marks)

**1 (b)** The photographs show a mule deer and a white-tailed deer.



Mule deer

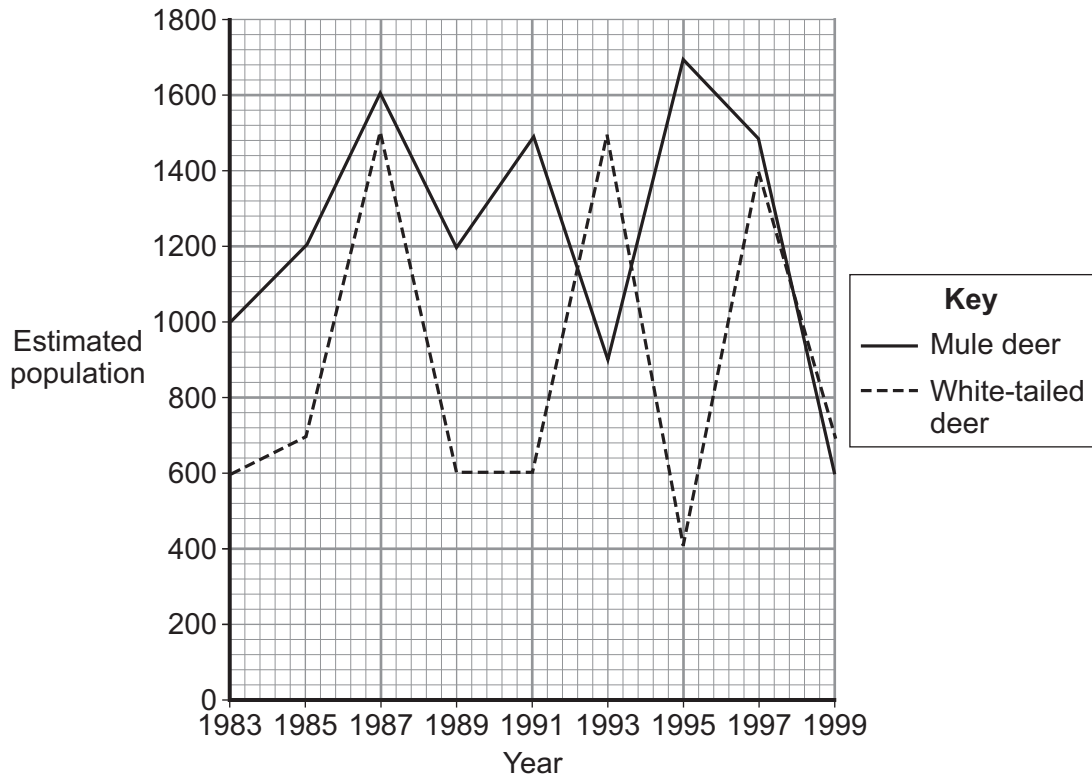


White-tailed deer

Mule deer and white-tailed deer live together in the same national park in the USA.

The graph shows changes in the populations of the two deer species between 1983 and 1999.





1 (b) (i) Describe the changes in the population of white-tailed deer between 1991 and 1995.

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(2 marks)

1 (b) (ii) Use information from the graph to suggest an explanation for changes in the population of white-tailed deer between 1991 and 1995.

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(2 marks)



- 2** Scientists have trialled a new statin called rosuvastatin.
- 17 802 people took part in the trial.
  - All of these people had high levels of a protein called CRP in their blood.
  - The higher the level of CRP in the blood, the higher the risk of heart attack.
  - None of these people had heart conditions at the beginning of the investigation.
  - None of these people had high LDL (low density lipoprotein) levels.
  - All of these people were aged 50 or above.
  - Half the people were given a rosuvastatin tablet each day; the other half were given a placebo.
  - The trial was stopped 7 months early when it was found that the people given rosuvastatin were 54% less likely to have a heart attack than people given the placebo.

**2 (a)** Give **two** control variable in this investigation.

1 .....

2 ..... *(2 marks)*

**2 (b)** What would the placebo be in the investigation?

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..... *(1 mark)*

**2 (c)** The trial gave reliable results.

Give **one** reason why.

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..... *(1 mark)*

**2 (d)** The trial was stopped 7 months early.

Give **one** reason why.

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..... *(1 mark)*



**2 (e)** The manufacturers of rosuvastatin paid for the trial.

However, the manufacturers took no part in the trial.

Suggest **one** reason why the manufacturers did not take part in the trial.

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(1 mark)

**2 (f)** The table shows some of the results of the trial.

Substance	Concentration in blood in mg per 100 cm <sup>3</sup> after 3 years of trial	
	People given rosuvastatin	People given placebo
LDL cholesterol	53	106
HDL cholesterol	50	49
Saturated fats	106	123

Rosuvastatin reduces the risk of heart attacks.

Use the data in the table to explain why.

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(2 marks)

8

**Turn over for the next question**

**Turn over ►**



**3** The body's immune system protects us from disease.

Describe the different ways in which white blood cells protect us from infectious diseases.

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(4 marks)

<b>4</b>



4 Governments are encouraging *sustainable development*.

4 (a) Explain what is meant by *sustainable development*.

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(2 marks)

4 (b) The government has asked families in the UK to reduce their impact on the environment.

Give **three** different ways in which families can do this.

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2 .....  
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(3 marks)

5

Turn over for the next question

Turn over ►



5 Some *recreational* drugs are dangerous.

Class A drugs include heroin and cocaine. Class A drugs are very addictive.

5 (a) It is difficult to stop using addictive drugs.

Explain why.

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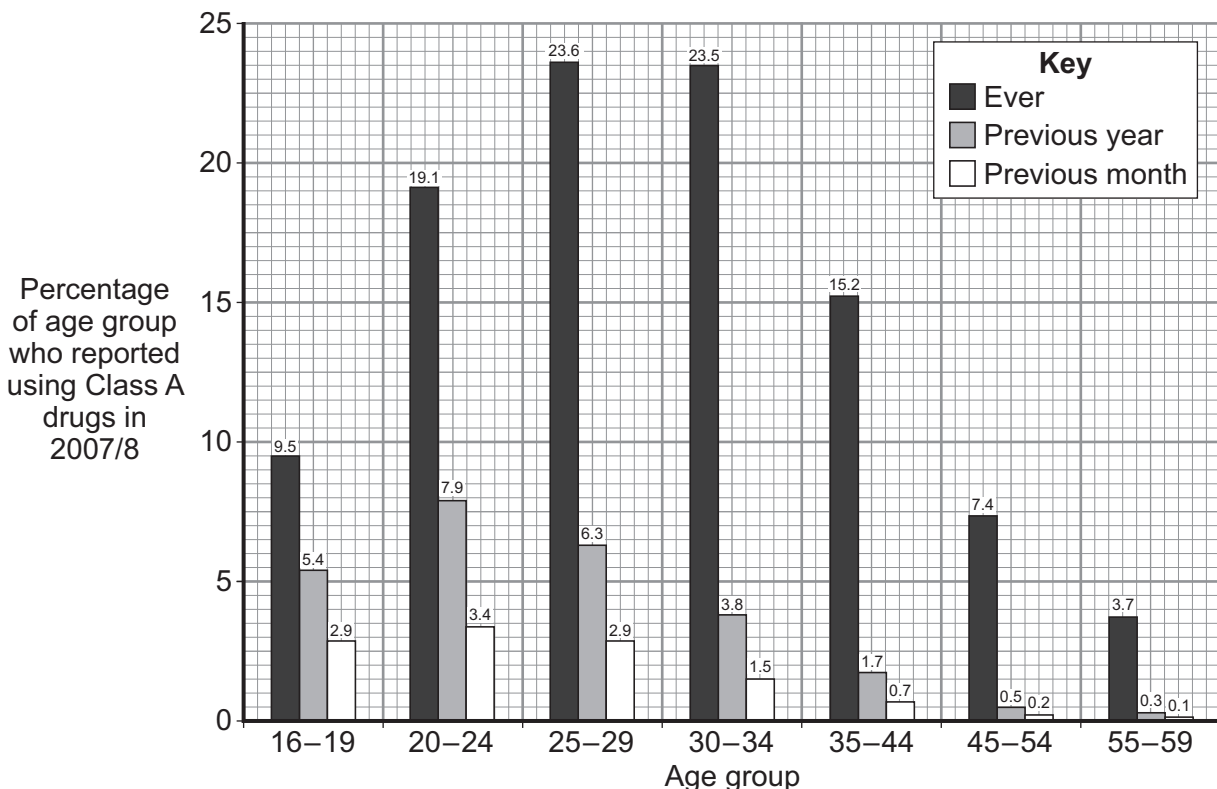
(2 marks)

5 (b) As part of the British Crime Survey, a large, random selection of the UK population is interviewed in their own home about drug use.

People in the sample:

- answer questions about drug use
- answer questions on a lap top
- do not give their names.

The bar chart shows the percentages of people aged 16–59 by age group who reported using any Class A drug ever, in the previous year and in the previous month.





**5 (b) (i)** Describe how the percentage of people who have ever used Class A drugs is related to age.

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(2 marks)

**5 (b) (ii)** The percentage of people who reported using Class A drugs in the previous month is highest amongst 16–29 year-olds.

Suggest **two** reasons for this.

1 .....

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2 .....

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(2 marks)

**5 (b) (iii)** The data in the bar chart is unlikely to be completely accurate.

Explain why.

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(2 marks)

8

**Turn over for the next question**

**Turn over ►**



6 Soay sheep live wild on an island off the north coast of Scotland. No people live on the island.



Over the last 25 years, the average height and mass of the wild Soay sheep have decreased.

The scientists think that climate change might have affected the size of the sheep.

Suggest an explanation for the evolution of the wild Soay sheep over the last 25 years.

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(4 marks)

4



7 Organisms can be produced by asexual reproduction and by sexual reproduction.

7 (a) Give **two** differences between asexual reproduction and sexual reproduction.

1 .....

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2 .....

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(2 marks)

7 (b) Adult cell cloning is a type of asexual reproduction.

Explain why.

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(2 marks)

4

Turn over for the next question

Turn over ►



**8** Hormones can be used as contraceptives.

**8 (a)** Explain **one** way in which a hormone can prevent conception (pregnancy).

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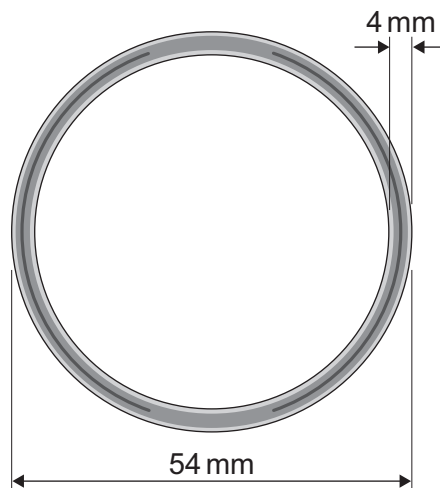
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(2 marks)

**8 (b)** Two methods of giving contraceptive hormones to a woman are the vaginal ring and the hormone implant.

**Vaginal ring**

The vaginal ring is a flexible ring 54 mm in diameter containing hormones.



The woman puts in and takes out the vaginal ring herself; there is no 'wrong' way to put the ring in.

Each ring is designed for one cycle of use, which is three weeks of continuous ring use, followed by one week without the ring.

About 0.3% of women become pregnant in the first year of ring use.

4% of women stop using the ring because of vaginal discomfort.



**Hormone implant**

A health professional puts the hormone implant under the skin of the woman's arm. The implant releases contraceptive hormones for three years before the implant needs to be replaced.

The hormone implant is 100% effective.

About 2% of women stop using the hormone implant, mainly because of irregular menstrual bleeding.

Evaluate the use of the vaginal ring compared with the hormone implant.

Remember to give a conclusion to your evaluation.

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(4 marks)

<b>6</b>

**END OF QUESTIONS**



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Graph: E O Garton, *Competition Between Mule And White-Tailed Deer Metapopulations In North-Central Washington*, University of Idaho, 2001
- Question 2 Source: *Justification for the Use of statins in Primary prevention: an Intervention Trial Evaluating Rosuvastatin*, AstraZeneca UK Limited
- Question 5 Source: Jacqueline Hoare and John Flatley, *Drug misuse declared: findings from the 2007/08 British Crime Survey*, Home Office, October 2008
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