

Surname		Other Names	
Centre Number		Candidate Number	
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For Examiner's Use
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General Certificate of Secondary Education  
June 2009



**SCIENCE**  
**Unit Biology B1**

**BLY1F**  
**F**

**BIOLOGY**  
**Unit Biology B1**

**Foundation Tier**

Friday 12 June 2009 9.00 am to 9.45 am

<p><b>For this paper you must have:</b></p> <ul style="list-style-type: none"> <li>a ruler.</li> </ul> <p>You may use a calculator.</p>
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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. Answers written in margins or on blank pages will not be marked.
- Do all rough work in this book. Cross through any work you do not want to be marked.

**Information**

- The maximum mark for this paper is 45.
- The marks for questions are shown in brackets.
- 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.

For Examiner's Use			
Question	Mark	Question	Mark
1		6	
2		7	
3			
4			
5			
Total (Column 1) →			
Total (Column 2) →			
TOTAL			
Examiner's Initials			



J U N O 9 B L Y 1 F 0 1

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

1 This poster advises pregnant women to stop smoking.

The photograph of a pregnant woman smoking cannot be reproduced here due to third party copyright constraints.

1 (a) Draw a ring around the correct word or phrase to complete each sentence.

1 (a) (i) Tobacco is

a legal drug  
an illegal drug  
a prescription drug

(1 mark)

1 (a) (ii) The addictive substance in tobacco smoke is

carbon dioxide  
carbon monoxide  
nicotine

(1 mark)

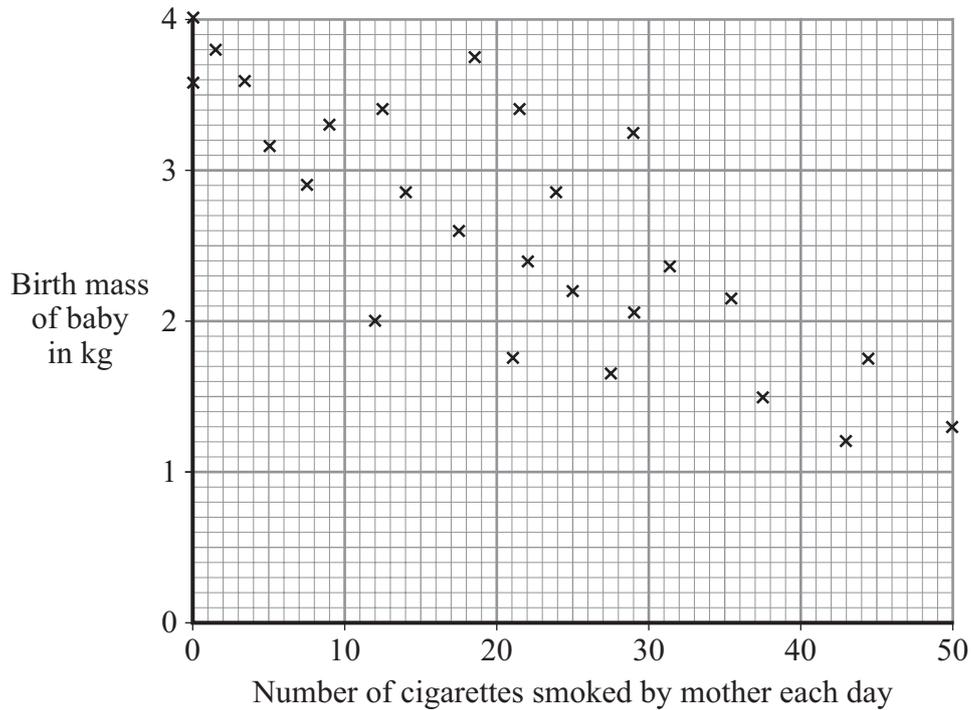
1 (a) (iii) People trying to stop smoking suffer from

high blood pressure  
obesity  
withdrawal symptoms

(1 mark)



- 1 (b) Data showing the relationship between the birth mass of a baby and the number of cigarettes smoked by the mother each day has been plotted below.



- 1 (b) (i) Draw a ring around the correct word or phrase to complete the sentence.

The data has been plotted as a

bar chart

line graph

scattergram

(1 mark)

- 1 (b) (ii) Which conclusion is supported by the data above?

Tick (✓) **one** box.

Smoking during pregnancy always reduces the birth mass of babies.

Smoking during pregnancy has no effect on the birth mass of babies.

Smoking during pregnancy often reduces the birth mass of babies.

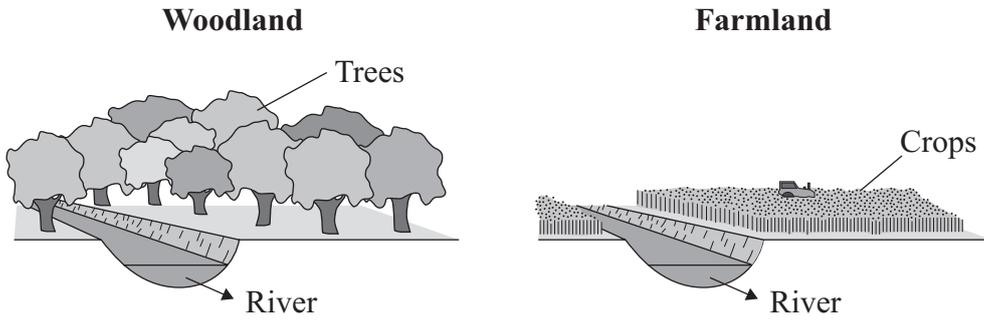
(1 mark)

5

Turn over ►



2 The drawings show some woodland and some farmland. Both have a river flowing through.



2 (a) (i) There is a wider variety of wildlife in the woodland than in the farmland.

Give **one** reason why.

.....  
 .....

(1 mark)

(Extra space) .....

2 (a) (ii) Farmers remove woodland to provide space for growing crops.

Give **two** other reasons why humans remove woodland.  
Do **not** include the uses of wood in your answers.

1 .....

.....

2 .....

.....

(2 marks)



2 (b) Many farmers spray chemicals on their fields.

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

2 (b) (i) To make crops grow larger, farmers use

- fertilisers
- herbicides
- pesticides

(1 mark)

2 (b) (ii) To kill insects that feed on the crop, farmers use

- fertilisers
- herbicides
- pesticides

(1 mark)

2 (b) (iii) There is a wider variety of wildlife in the river flowing through the woodland than in the river flowing through the farmland.

Give **one** reason why.

.....

.....

(1 mark)

(Extra space) .....

2 (c) The population of the UK has increased over the last two hundred years. This increase in population has resulted in damage to the environment.

Apart from farming methods, give **two** ways in which humans damage the environment.

1.....

.....

2.....

.....

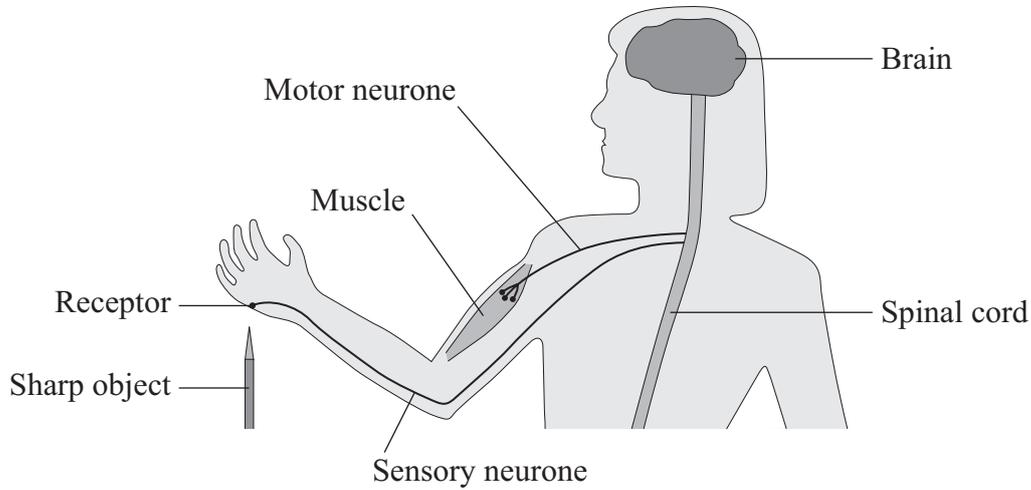
(2 marks)

8

Turn over ►



- 3 A student accidentally touches a sharp object.  
Her hand is immediately pulled away from the object.  
The diagram shows the structures involved in this response.



- 3 (a) Use the correct word or phrase **from the diagram** to complete each sentence.
- 3 (a) (i) The stimulus is detected by the .....  
(1 mark)
- 3 (a) (ii) Impulses travel to the central nervous system along a  
cell called a .....  
(1 mark)
- 3 (a) (iii) Impulses travel from the central nervous system to the effector  
along a cell called a .....  
(1 mark)
- 3 (a) (iv) The hand is pulled away from the sharp object by the  
.....  
(1 mark)



3 (b) Where in the body are there cells sensitive to:

3 (b) (i) light .....

(1 mark)

3 (b) (ii) sound .....

(1 mark)

3 (b) (iii) changes in position?.....

(1 mark)

7

**Turn over for the next question**

**Turn over ►**



- 4 Some organisms are in danger of extinction.  
The photograph shows an African elephant feeding on tree leaves.



- 4 (a) Read the information about elephants and humans in Africa.

- The African elephant is the largest land animal.
- The African elephant feeds on lots of leaves.
- Adult African elephants have no natural predators.
- Elephants are killed by poachers for their ivory tusks.
- African elephants live for about 70 years.
- Most African elephants live in large herds.
- Land available to elephants is disappearing rapidly.

The African elephant is now extinct in many parts of Africa.

Use information from the list to give **three** reasons why.

1.....

.....

2.....

.....

3.....

.....

(3 marks)



4 (b) Organisms that are in danger of extinction can be cloned.

**List A** gives the names of three different cloning techniques.

**List B** gives information about these techniques.

Draw a line from each technique in **List A** to the correct information about it in **List B**.

**List A**  
**Technique**

Adult cell cloning

Embryo transplanting

Tissue culture

**List B**  
**Information**

Small groups of cells from parts of a plant are grown on a special jelly.

Cells from a developing animal are separated before they become specialised and then placed into host mothers.

Genes are cut out from chromosomes and inserted into other organisms.

A nucleus is removed from an unfertilised egg cell. The nucleus from a body cell is inserted into the egg cell. An electric shock causes the egg to start to divide.

(3 marks)

6

**Turn over for the next question**

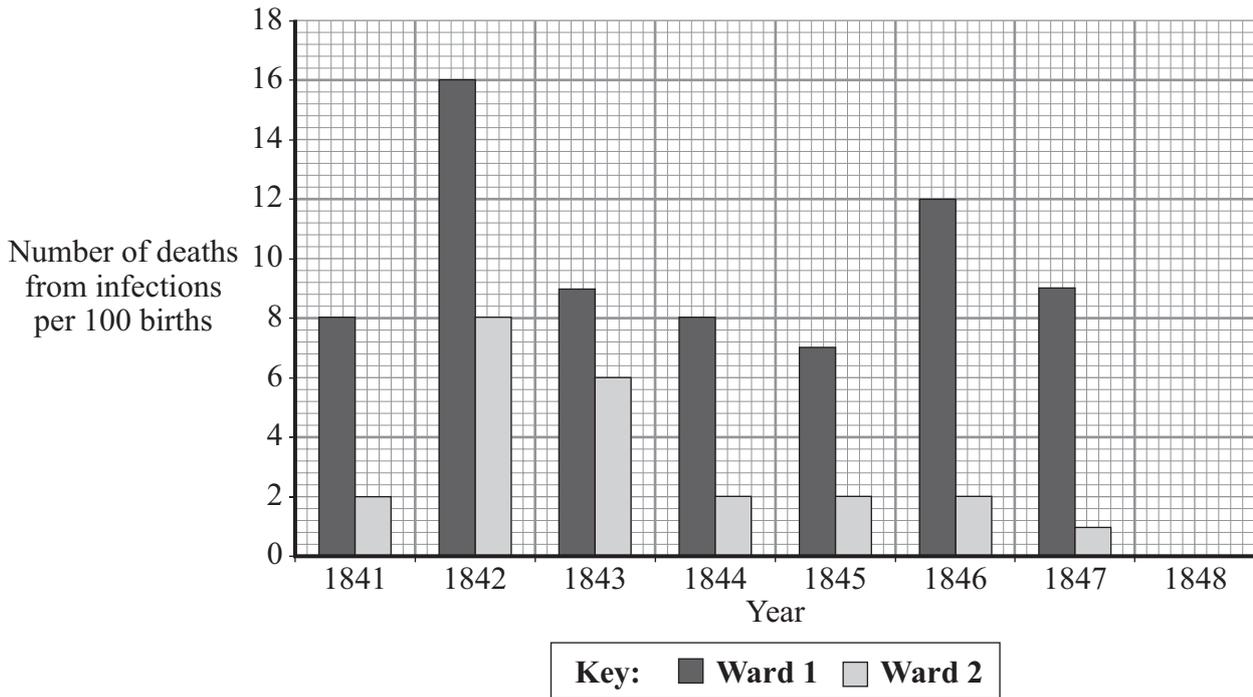
**Turn over ►**



5 In the 19th century, Dr Semmelweiss investigated infection in a hospital. He compared the number of deaths of mothers on two maternity wards.

- On **Ward 1**, babies were delivered mainly by doctors. These doctors worked on many different wards in the hospital.
- On **Ward 2**, babies were delivered by midwives. The midwives did **not** work on other wards.

The bar chart shows the results of his investigations.



5 (a) (i) 600 mothers gave birth on **Ward 2** in 1845.

How many mothers died from infections on **Ward 2** in 1845?

Show clearly how you work out your answer.

.....  
 .....

Number of mothers who died.....  
 (2 marks)



5 (a) (ii) Which was the safer ward on which to have a baby?

Draw a ring around your answer. **Ward 1 / Ward 2.**

Using data from the bar chart, give a reason for your answer.

.....  
.....  
(1 mark)

(Extra space) .....

5 (b) In January 1848, Dr Semmelweiss asked all doctors to wash their hands before delivering babies.

The table shows the number of deaths on the two wards in 1848.

Ward	Number of deaths from infections per 100 births
Ward 1	3
Ward 2	1

5 (b) (i) Plot this data on the bar chart on the opposite page. (1 mark)

5 (b) (ii) What was the effect on the death rate on **Ward 1** of doctors washing their hands before delivering babies?

.....  
.....  
(1 mark)

5 (b) (iii) Suggest an explanation for this effect.

.....  
.....  
(1 mark)

(Extra space) .....

6

Turn over ►



6 Swallows and swifts migrate between Britain and South Africa every year.

6 (a) **Photograph 1** shows a swallow.

**Photograph 1**



Swallows can fly very quickly.

Use information from the photograph to give **one** way in which the swallow is adapted for flying very quickly.

.....

.....

(1 mark)

6 (b) **Photograph 2** shows swifts.

**Photograph 2**



Swallows and swifts both feed on flying insects.

They both spend the summer in Britain and then migrate to South Africa in the autumn.

Suggest **one** reason why swallows and swifts do not stay in Britain in the winter.

.....

.....

(1 mark)



6 (c) The table gives data about swallows and swifts.

	Swallows	Swifts
Arrival date in Britain	April	Early May
Leaving date from Britain	October	Early August
Food	Flying insects	Flying insects
Height at which the birds feed	Near ground level	Up to 350m above ground level
Times at which birds feed	Mainly when it is light	Almost 24 hours per day

6 (c) (i) There is very little competition between swallows and swifts for food.

Use information from the table to suggest **two** reasons for this.

1 .....

.....

2 .....

.....

(2 marks)

(Extra space) .....

6 (c) (ii) Swallows and swifts do compete for some factors.

Suggest **one** of these factors.

.....

.....

(1 mark)

5
---

Turn over ►



7 Many people who are overweight try slimming programmes.

A research study evaluated four different slimming programmes over 6 months.

Scientists selected a group of 40 people for each slimming programme and a control group. Each of the five groups was matched for age, gender and mass.

The graph shows the results of the study.

The graph showing results cannot be reproduced here due to third party copyright constraints.

7 (a) Give **two** control variables that were used in this study.

1 .....

2 .....

(2 marks)

7 (b) Give **two** conclusions that can be drawn from the results of this study.

1 .....

.....

2 .....

.....

(2 marks)



7 (c) The costs of the four programmes were:

- Atkins book cost £3
- Rosemary Conley classes cost £140 for 6 months
- Weight Watchers classes cost £170 for 6 months
- Twice-daily Slim-Fast meal replacements cost £240 for 6 months.

Use this information and the graph to answer this question.

Which is the most cost effective of the four programmes?

.....

Explain the reason for your answer.

.....  
.....  
.....  
.....

(2 marks)

(Extra space).....

7 (d) Some slimming programmes include daily exercise.

Explain how daily exercise helps a person to lose mass.

.....  
.....  
.....  
.....

(2 marks)

(Extra space).....

8

**END OF QUESTIONS**



**There are no questions printed on this page**

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ANSWER IN THE SPACES PROVIDED**

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Question 4 Elephant © Rob Howard/Corbis  
Question 6(a) Adult Barn Swallow in Flight © Roger Tidman/Corbis  
Question 6(b) Swifts in Flight © Ashley Cooper/Corbis  
Question 7 British Medical Journal, 2006, volume 332, pages 1309–1314. Published and amended with permission from the British Medical Journal publishing group.

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