

Centre Number						Candidate Number				
Surname										
Other Names										
Candidate Signature										

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



General Certificate of Secondary Education
Higher Tier
January 2013

Science B
Unit Biology B1

BLY1H

H

Biology
Unit Biology B1

Written Paper

Monday 28 January 2013 9.00am to 9.45am

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.



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BLY1H

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

1 Deforestation affects the environment in many ways.

1 (a) Deforestation increases the amount of carbon dioxide in the atmosphere.

Give **two** reasons why.

1

2

(2 marks)

1 (b) Deforestation also results in a loss of *biodiversity*.

1 (b) (i) What is meant by *biodiversity*?

.....

(1 mark)

1 (b) (ii) Give **two** reasons why it is important to prevent organisms becoming extinct.

1

2

(2 marks)

5

Turn over for the next question

Turn over ►



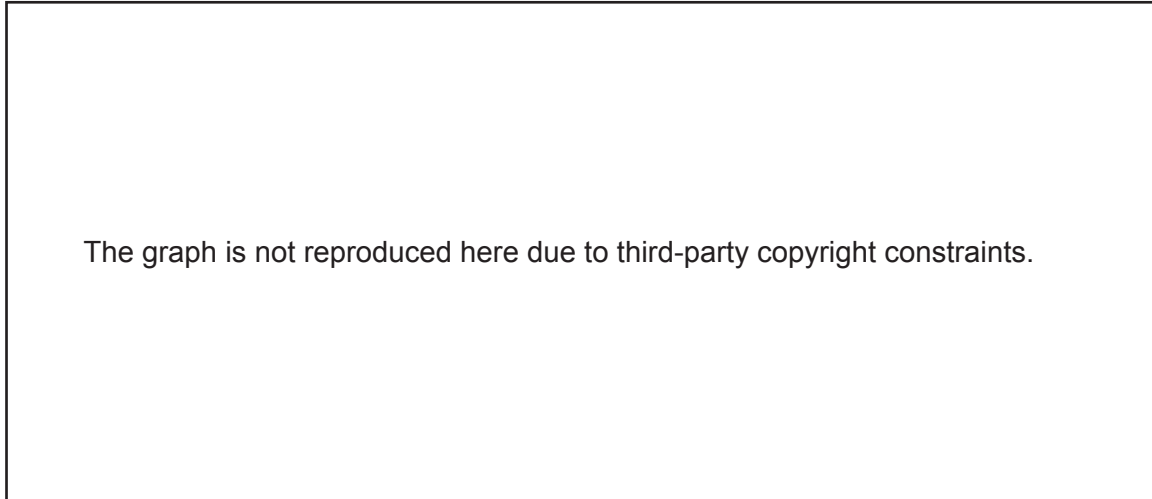
2 Many people who are overweight try slimming programmes.

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.



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

1

2
(2 marks)

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

1

.....

2
.....
(2 marks)



- 2 (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.

Which is the most cost-effective of the four programmes?

.....

Give **two** reasons for your answer.

1

.....

2

.....

(2 marks)

- 2 (d)** Some slimming programmes include daily exercise.

Explain how daily exercise helps a person to lose mass.

.....

.....

.....

.....

(2 marks)

8

Turn over for the next question

Turn over ▶



3 Organisms have adaptations that enable them to survive in extreme conditions.

3 (a) The photograph shows an arctic fox.



This fox lives in the Arctic, where it is very cold.

Suggest **two** ways in which the arctic fox is adapted for life in very cold conditions.

Explain how each adaptation helps the arctic fox to survive in very cold conditions.

Adaptation 1

How this adaptation helps the arctic fox to survive in very cold conditions.

Adaptation 2

How this adaptation helps the arctic fox to survive in very cold conditions.

(4 marks)



3 (b) The photograph shows an antelope that lives in a sandy desert.



The antelope is prey to large cats such as cheetahs.

Suggest **one** adaptation that helps this antelope avoid being killed by predators.

Explain how this adaptation helps the antelope avoid being killed by predators.

Adaptation

.....

How this adaptation helps the antelope avoid being killed by predators.

.....

.....

.....

(2 marks)

6

Turn over ►



4 Many people use recreational drugs.

4 (a) Some recreational drugs are addictive.

4 (a) (i) Give **one** example of a recreational drug that is very addictive.

.....
(1 mark)

4 (a) (ii) People may suffer withdrawal symptoms when they become addicted to drugs. How does the action of a drug make a person become addicted to it?

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

4 (b) Some doctors think that smoking cannabis causes depression.

Doctors investigated the cannabis smoking habits of 1500 young adults.

The table shows the percentage of the cannabis smokers in the investigation who became depressed.

How many times the men or women had smoked cannabis in the last 12 months	Percentage of men who became depressed	Percentage of women who became depressed
Less than 5 times	9	16
More than 5 times, but less than once per week	10	17
1 – 4 times per week	12	31
Every day	15	68

From the data, give **two** conclusions that can be drawn about the relationship between cannabis and depression.

1

.....

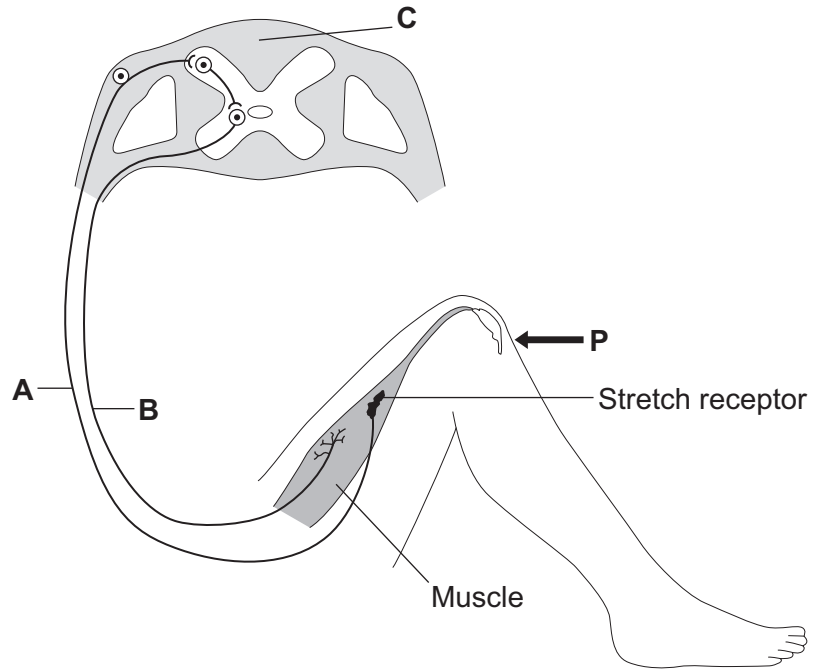
2

.....
(2 marks)

4



5 The diagram shows the structures involved in the knee-jerk reflex. When the person is hit at point **P**, the lower leg is suddenly raised.



5 (a) Name the structures labelled **A**, **B** and **C**.

A

B

C

(3 marks)

5 (b) How is information passed across a synapse?

.....

.....

(1 mark)

5 (c) What is the effector in this response?

.....

(1 mark)

5

Turn over ►



6 Some diseases can be cured by using antibiotics or prevented by vaccination.

6 (a) (i) Explain fully why antibiotics cannot be used to cure viral diseases.

.....
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.....

(2 marks)

6 (a) (ii) There has been a large increase in the populations of many antibiotic-resistant strains of bacteria in recent years.

Explain why.

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(2 marks)

6 (b) A person can be immunised against a disease by injecting them with an inactive form of a pathogen.

Explain how this makes the person immune to the disease.

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

(3 marks)

7



7 The drawings show two different species of butterfly.



Amauris



Hypolimnas

- Both species can be eaten by most birds.
- *Amauris* has an unpleasant taste which birds do **not** like, so birds have learned **not** to prey on it.
- *Hypolimnas* does **not** have an unpleasant taste but most birds do **not** prey on it.

7 (a) Suggest why most birds do **not** prey on *Hypolimnas*.

.....

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(2 marks)

7 (b) Suggest an explanation, in terms of natural selection, for the markings on the wings of *Hypolimnas*.

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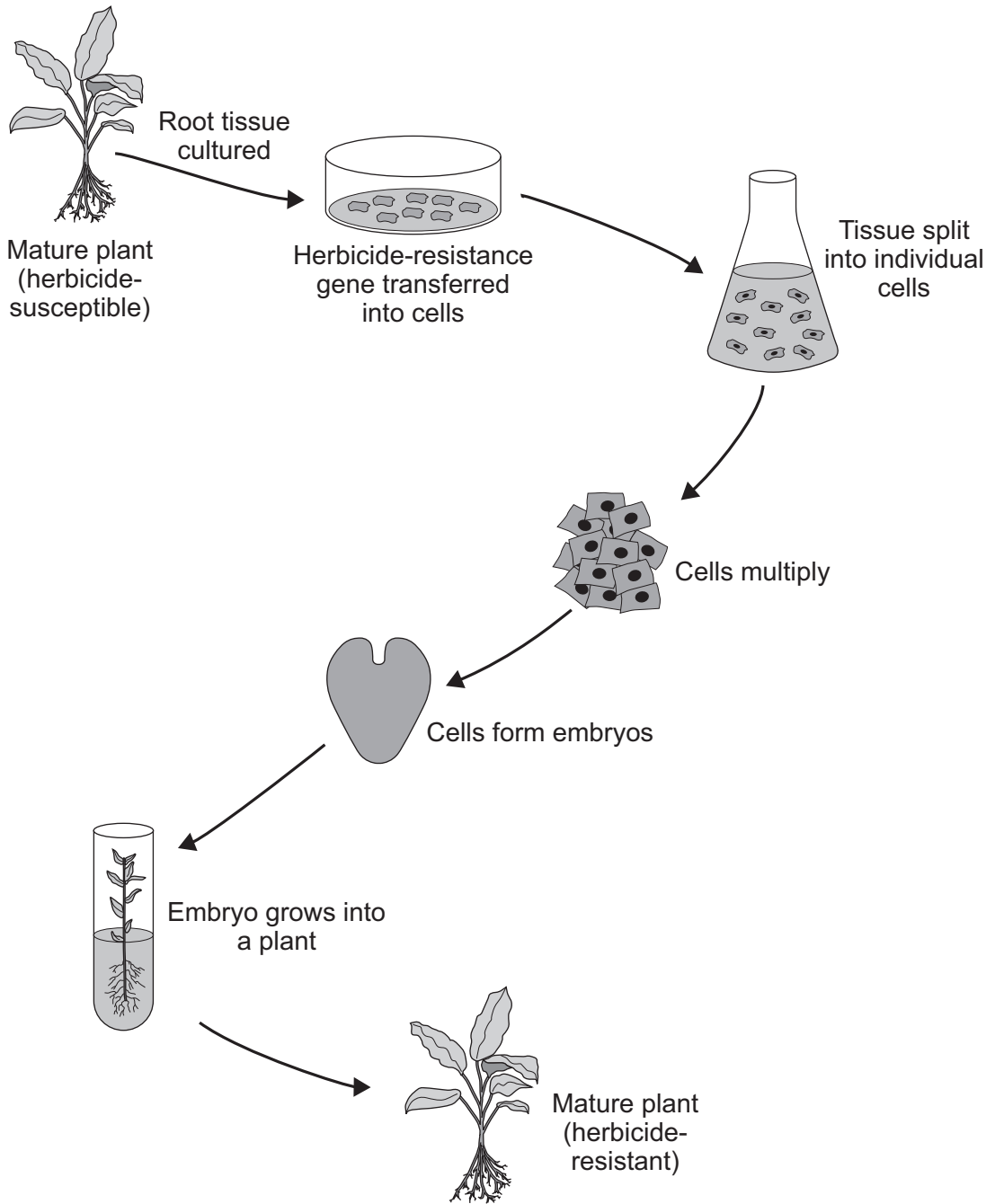
(3 marks)

5

Turn over ►



8 The diagram shows one method of producing herbicide-resistant crop plants.



8 (a) The herbicide-resistance gene is cut out of a chromosome of a herbicide-resistant plant.
How is the herbicide-resistance gene cut out of the chromosome?

.....

(1 mark)



8 (b) Apart from having the herbicide-resistance gene, the herbicide-resistant plants are identical to the herbicide-susceptible plants.

Explain why.

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

(2 marks)

8 (c) Suggest **one** advantage to a farmer of growing herbicide-resistant crops.

.....
.....

(1 mark)

8 (d) Many people are opposed to the growing of herbicide-resistant crops produced in this way.

Suggest **one** reason why.

.....
.....

(1 mark)

5

END OF QUESTIONS



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