

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
Foundation Tier
January 2012

Science B
Unit Biology B1

BLY1F

Biology
Unit Biology B1

F

Written Paper

Tuesday 24 January 2012 9.00 am to 9.45 am

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.

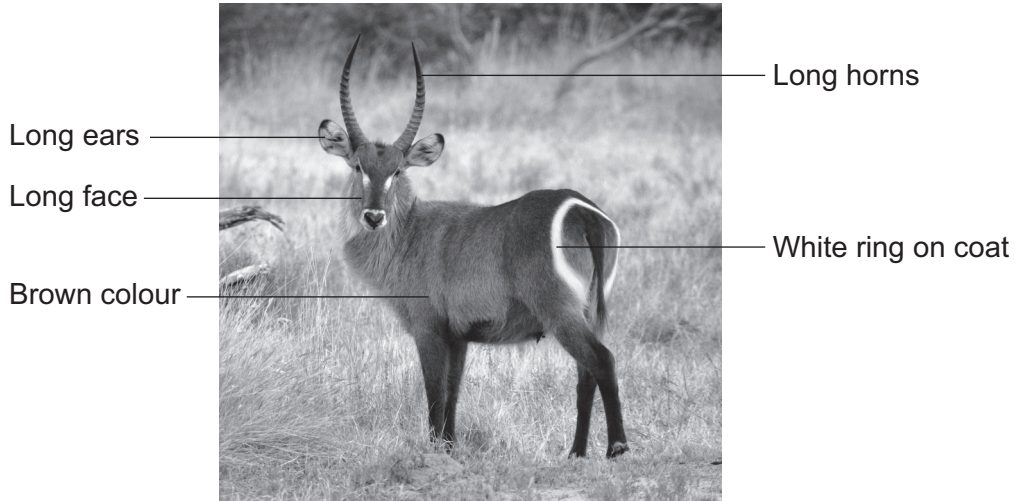


J A N 1 2 B L Y 1 F 0 1

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

1 The photograph shows some features of a waterbuck.

Waterbuck live in areas of tall, brown grass.



Choose labels from the photograph to answer these questions. You should choose a label **once** only.

1 (a) Which feature helps to camouflage the waterbuck in the grass?

.....

(1 mark)

1 (b) Which feature helps the waterbuck to detect predators?

.....

(1 mark)

1 (c) Which feature helps the waterbuck to fight predators?

.....

(1 mark)

1 (d) Which feature helps a baby waterbuck to follow a parent through the long grass?

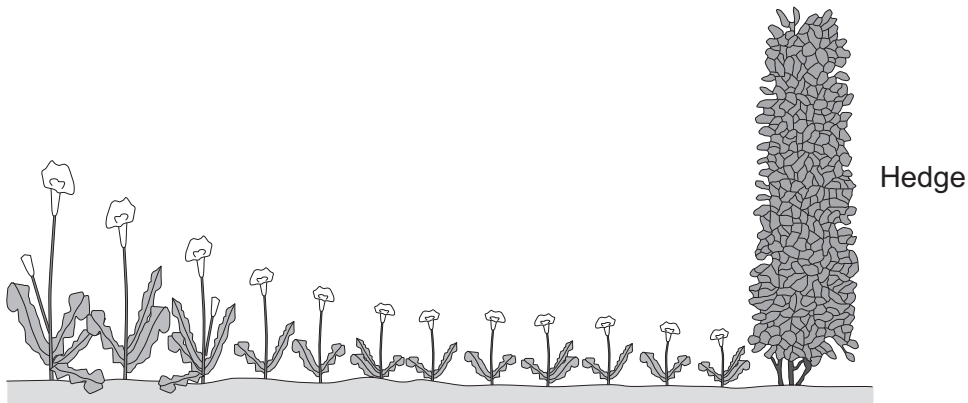
.....

(1 mark)

4



2 The drawing shows plants growing near a hedge in a garden.



2 (a) The plants near the hedge are much smaller than the plants further away from the hedge.

Complete the sentence to give the reason why.

The plants compete with the hedge for

and.....

(2 marks)

2 (b) The gardener uses chemicals in his garden.

fertilisers	herbicides	pesticides
-------------	------------	------------

Which **one** of the three chemicals in the above box does the gardener use:

2 (b) (i) to kill weeds (1 mark)

2 (b) (ii) to kill insects that feed on the plants? (1 mark)

2 (c) The gardener decides to take out the hedge and put up a fence. How would taking out the hedge affect the animals in the area?

.....
.....

Give **one** reason for your answer.

.....
.....

(2 marks)

6

Turn over ►



- 3** Kangaroos have brown coats. The two parent kangaroos in the photograph produced a baby kangaroo with a white coat.



- 3 (a)** Use words from the box to complete the sentences.

asexual	characteristic	chromosome
mutation	nucleus	sexual

The baby kangaroo was produced by reproduction.

The coat colour of the adult kangaroo is a

The different coat colour of the baby kangaroo is the result of a

..... of a gene.

The gene is found on a thread-like structure called a

(4 marks)

- 3 (b)** Some animals similar to kangaroos are endangered species.

Cloning is one way of making sure that endangered species do not die out.

The flowchart on the opposite page shows one way of cloning an animal.

The four statements needed to complete the flowchart are numbered **1**, **2**, **3** and **4**.

Complete the flow chart by writing the **number** of the correct statement in the empty box.

Each number should be used **once** only.



- 1 Give a small electric shock
- 2 Transfer nucleus from body cell
- 3 Remove nucleus from egg cell
- 4 Insert embryo into womb of female

Remove egg cell from ovary



.....



The egg cell is now empty



.....



The egg cell now has the nucleus of a body cell



.....



Ball of cells



.....



Cloned animal

(3 marks)

7

Turn over ►



4 Our diet affects our health.

4 (a) **List A** gives the names of three different conditions.

List B gives information about the effect of these conditions on the body.

Draw a line from each condition in **List A** to the correct effect on the body in **List B**.

List A
Condition

List B
Effect on body

Diabetes

High blood pressure

High level of salt in food

Arthritis

Lack of food

Irregular periods

High blood sugar

(3 marks)

4 (b) A doctor advises an obese woman to lose weight.

Give **two** different things the obese woman could do to lose weight.

1

.....

2

.....

(2 marks)



Body mass index (BMI) is a measure of a person's obesity category.

- 4 (c) A person's BMI is calculated using the formula

$$\text{BMI} = \frac{\text{body mass}}{\text{height} \times \text{height}}$$

- 4 (c) (i) A woman has a body mass of 90 kg and a height of 1.8 m.

Calculate her height \times height.

.....

$$\text{height} \times \text{height} = \text{..... m}^2$$

Use your answer to calculate her BMI.

.....

$$\text{BMI} = \text{.....}$$

(3 marks)

- 4 (c) (ii) The table shows the relationship between a person's BMI and the obesity category.

BMI	Obesity category
less than 18.5	underweight
18.5–24.9	normal
25.0–29.9	overweight
30.0 and over	obese

Use your answer from part (c)(i) to give the obesity category of the woman.

Obesity category (1 mark)

9

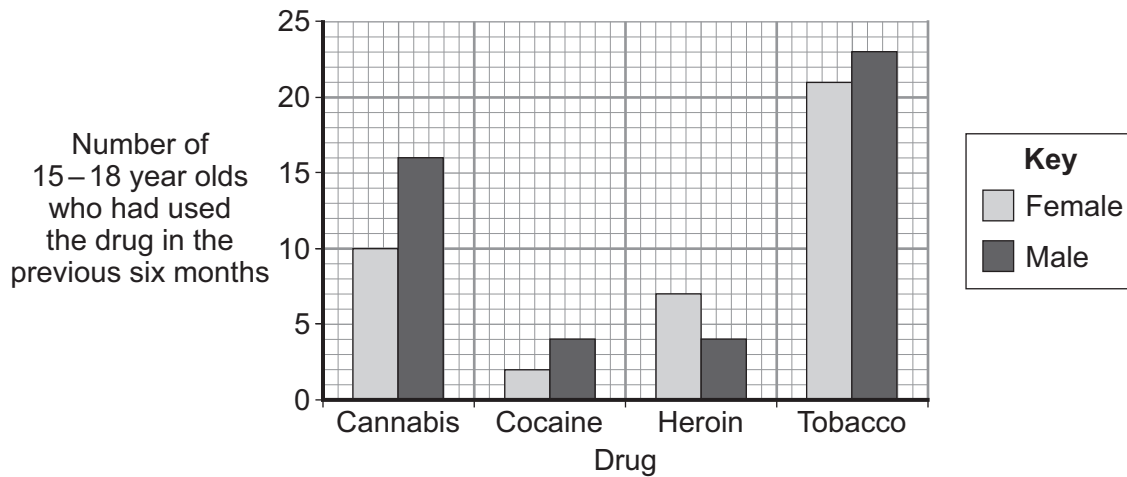
Turn over ►



5 Scientists did a survey of drug use by people aged 15 to 18.

The scientists asked 50 females and 50 males to fill in questionnaires about drugs they had used in the previous six months.

The chart shows the results of the survey.



5 (a) (i) How many of the 15–18 year-olds had used cocaine in the previous six months?

.....
(1 mark)

5 (a) (ii) What proportion of the 15–18 year old females had used cannabis in the previous six months?

.....
(1 mark)

5 (b) The pattern of drug use by females and males for one drug was different from the pattern for the other three drugs.

For which drug was this pattern different from the other three drugs?

.....
(1 mark)



5 (c) The data in the chart might be unreliable.

Suggest **one** reason why.

.....
.....

(1 mark)

5 (d) 15–18 year olds are advised not to smoke cannabis.

Give **one** reason why.

.....
.....

(1 mark)

5

Turn over for the next question

Turn over ►



6 An animal called *Tiktaalik* became extinct about 360 million years ago.

The photograph shows the fossilised skeleton of *Tiktaalik* and a model of what scientists think *Tiktaalik* looked like.



6 (a) Scientists found only the fossilised skeleton of *Tiktaalik*.

Explain why.

.....

.....

.....

.....

(2 marks)

6 (b) Scientists think that *Tiktaalik* lived mostly in water, but that it was one of the first animals to be able to move onto land.

Use evidence from the photograph to suggest why.

.....

.....

.....

.....

(2 marks)

4



7 Read the article.

Parents all over the world advise children to ‘wrap up warm or you’ll catch a cold’.

Scientists at Cardiff University recruited 180 volunteers to take part in an investigation to find out if the advice was true. The investigation took place during the city’s common cold season.

Half of the volunteers put their feet in bowls of ice cold water for 20 minutes. The other volunteers sat with their feet in empty bowls.

Over the next few days, almost a third of the volunteers who put their feet into cold water developed colds. Fewer than one in ten of the other volunteers developed colds.

7 (a) Draw a ring around the correct answer to complete the sentence.

The advice ‘wrap up warm or you’ll catch a cold’ is an example of

- hearsay.
- a hypothesis.
- a prediction.

(1 mark)

7 (b) What was the experimental control in the investigation?

.....

(1 mark)

7 (c) The scientists did **not** prove that the advice ‘wrap up warm or you’ll catch a cold’ is true. Explain why.

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

(3 marks)

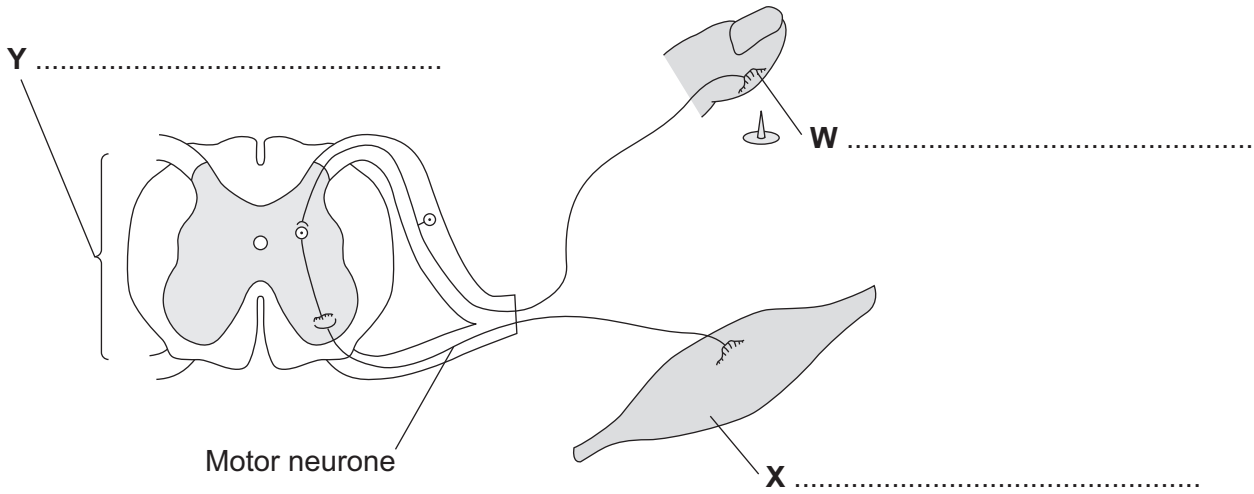
5

Turn over for the next question

Turn over ►



8 The diagram shows the structures involved in a reflex action.



8 (a) On the diagram, name the structures labelled **W**, **X** and **Y**. (3 marks)

8 (b) The control of blood sugar level is an example of an action controlled by hormones.

Give **two** ways in which a reflex action is different from an action controlled by hormones.

1

.....

.....

.....

2

.....

.....

.....

(2 marks)

5

END OF QUESTIONS

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