AQA GCSE BIOLOGY (4411)

BIOLOGY



EXAM QUESTION PACK

UNIT B1 FOUNDATION TIER BLY1F PAPERS

STEMUP

These questions belong to AQA, not to us.

The examination questions, mark schemes and examiner reports in this pack were written and published by AQA. They are past assessment materials, reproduced here so that students can revise from them.

What we do not own

STEMUP is not affiliated with AQA and does not own, and makes no claim to own, any of the question, mark scheme or examiner report material in this pack. AQA has not endorsed, approved or been involved in the production of it. AQA and the qualification titles used here belong to their respective owners and appear for identification only.

Where to find the originals

AQA publishes its past papers, mark schemes and examiner reports free of charge. Always check the current specification at aqa.org.uk before you revise, because content and wording can change between series.

If you hold the rights to any material in this pack and would like it amended or removed, contact admin@stemup.co.uk and we will act on it.

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	

AQA

General Certificate of Secondary Education
Foundation Tier
June 2012

Science B
Unit Biology B1

BLY1F

F

Biology
Unit Biology B1

Written Paper

Tuesday 12 June 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.

Do not write outside the box

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

1 Many animals and plants are adapted to stop other organisms eating them.

1 (a) The photograph shows part of a plant stem.



Suggest how this plant is adapted to stop animals eating it.

Adaptation

.....

Describe how the adaptation helps to stop animals eating the plant.

.....

.....

(2 marks)

Do not write outside the box

1 (b) The photograph shows an insect on a plant twig.



Suggest how this insect is adapted to stop animals eating it.

Adaptation

.....

Describe how the adaptation helps to stop animals eating the insect.

.....

.....

(2 marks)

Question 1 continues on the next page

Do not write outside the box

1 (c) The photograph shows some insects.

These insects are bright red.



Suggest how these insects are adapted to stop animals eating them.

Adaptation

.....

Describe how the adaptation helps to stop animals eating the insects.

.....

.....

(2 marks)

6

Do not write outside the box

2 (a) **List A** gives the names of three substances. The substances can help ill people.

List B gives information about the three substances.

Draw a line from each substance in **List A** to the correct information in **List B**.

List A Substance	**List B Information**
	White blood cells produce this substance
Antibiotic	
	This substance is used to kill bacteria
Antitoxin	
	This substance lowers blood cholesterol levels
Painkiller	
	This substance relieves only the symptoms of a disease

(3 marks)

2 (b) Complete the sentences.

A vaccine contains an ..... form of a pathogen.
(1 mark)

The MMR vaccine protects children against measles,

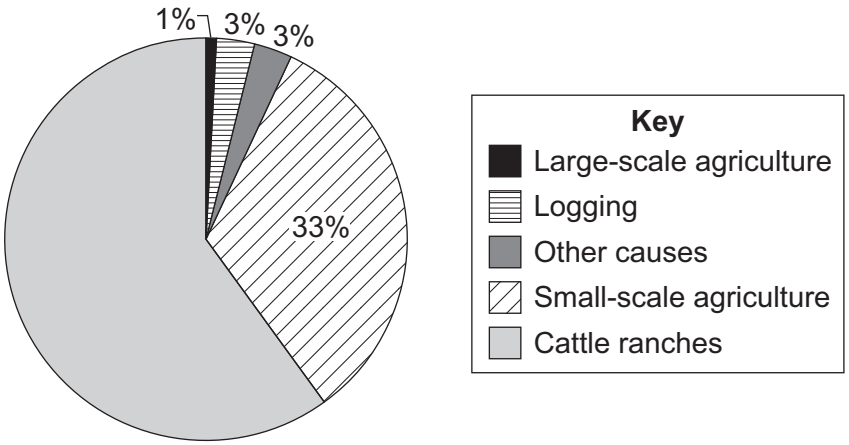
mumps and ..... .
(1 mark)

5

Do not write outside the box

3 Large-scale deforestation is taking place in Brazil.

The pie chart shows the causes of deforestation in Brazil.



3 (a) Calculate the percentage of forest that has been destroyed for cattle ranches.

Show clearly how you work out your answer.

.....

.....

Percentage = ...

(2 marks)

3 (b) Cattle give off large amounts of methane into the atmosphere.

The methane causes the Earth's temperature to increase.

Give **two** effects of the temperature increase on the environment.

1 .....

.....

2 .....

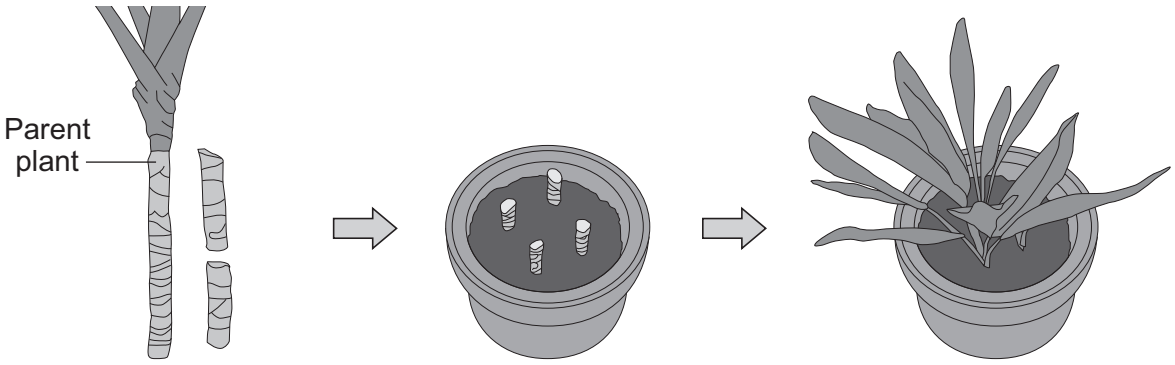
.....

(2 marks)

4

Do not write outside the box

4 (a) The drawings show one way of producing new plants. The new plants are identical to the parent plant.



1 Pieces are cut from a stem

2 Pieces of stem are pushed into damp soil

3 The pieces grow into new plants

Use words from the box to complete the sentences.

asexual	**characteristics**	**clones**	**engineering**	**genes**	**sexual**

The colour and shape of the leaves are known as ..... .

The information for leaf colour is stored in parts of chromosomes

called ..... .

The new plants are known as ..... .

The new plants have been produced by ..... reproduction.

(4 marks)

4 (b) (i) Name **one** other way of producing plants that are identical to their parents.

.....

(1 mark)

4 (b) (ii) Name **one** way of producing animals that are identical to each other.

.....

(1 mark)

6

Turn over ▶

Do not write outside the box

5 (a) **List A** gives the names of three hormones.

List B gives information about the three hormones.

Draw a line from each substance in **List A** to the correct information in **List B**.

List A **Hormone**	**List B** **Information**
	Used in some contraceptive pills to stop eggs maturing
FSH	
	Used as a fertility drug to make eggs mature
LH	
	Causes the lining of the womb to break down
Oestrogen	
	Stimulates the release of eggs in IVF

(3 marks)

Do not write outside the box

5 (b) The table gives information about three methods of giving hormones to stop a woman becoming pregnant.

	The 'pill'	The 'patch'	The 'implant'
How the hormone is given	Swallowed each day for 21 days out of every 28 days.	Stuck onto the skin. Each patch lasts three weeks. There is a one week gap between each patch.	Needs an operation to put it under the skin. Lasts for up to 5 years.

Use the information in the table to answer these questions.

5 (b) (i) Which of the three methods is likely to be the most reliable?

.....

(1 mark)

5 (b) (ii) Explain why you chose this method.

.....

.....

(1 mark)

5 (b) (iii) Give **one** disadvantage of the method you have chosen.

.....

.....

(1 mark)

6

Turn over for the next question

Do not write outside the box

There are no questions printed on this page

DO NOT WRITE ON THIS PAGE
ANSWER IN THE SPACES PROVIDED

Do not write outside the box

6 Obesity is linked to several diseases.

6 (a) Name **two** diseases linked to obesity.

1 .....

2 .....

(2 marks)

6 (b) Scientists trialled a new slimming drug.

The table shows their results after one year.

Percentage change in mass of each volunteer	Number of volunteers
gained mass or lost 0 to 3.9 %	1900
lost 4.0 to 4.9 %	1100
lost 5.0 to 9.9 %	1500
lost 10 % or more	1500

6 (b) (i) Calculate the proportion of the volunteers who lost 10 % or more of their mass.

You should first calculate the total number of volunteers, then work out the proportion.

.....

.....

Proportion of volunteers = ...

(2 marks)

6 (b) (ii) The National Health Service (NHS) gave permission for the drug to be used.

Use information from the table to suggest a reason why the NHS gave permission for the drug to be used.

.....

.....

(1 mark)

5

Turn over ▶

Do not write outside the box

7 (a) **List A** gives the names of three stages in trialling a new drug.

List B gives information about the three stages.

Draw a line from each stage in **List A** to the correct information in **List B**.

List A **Stage**	**List B** **Information**
	Used to find if the drug is toxic
Tests on humans including a placebo	
	The first stage in the clinical trials of the drug
Tests on humans using very small quantities of the drug	
	Used to find the optimum dose of the drug
Tests on animals	
	Used to prove that the drug is effective on humans

(3 marks)

Do not write outside the box

7 (b) Read the passage.

Daily coffee dose delays development of Alzheimer's in humans.

Alzheimer's is a brain disease that causes memory loss in elderly people. Scientists studied 56 mice that had been genetically engineered to develop Alzheimer's.

Before treatment all the mice did badly in memory tests.

Half the mice were given a daily dose of caffeine in their drinking water. The dose was equivalent to the amount of caffeine in six cups of coffee for a human.

The other mice were given ordinary water.

After two months, the caffeine-drinking mice did better in memory tests than the mice drinking ordinary water.

The headline for the passage is not justified.

Explain why as fully as possible.

.....

.....

.....

.....

.....

.....

.....

.....

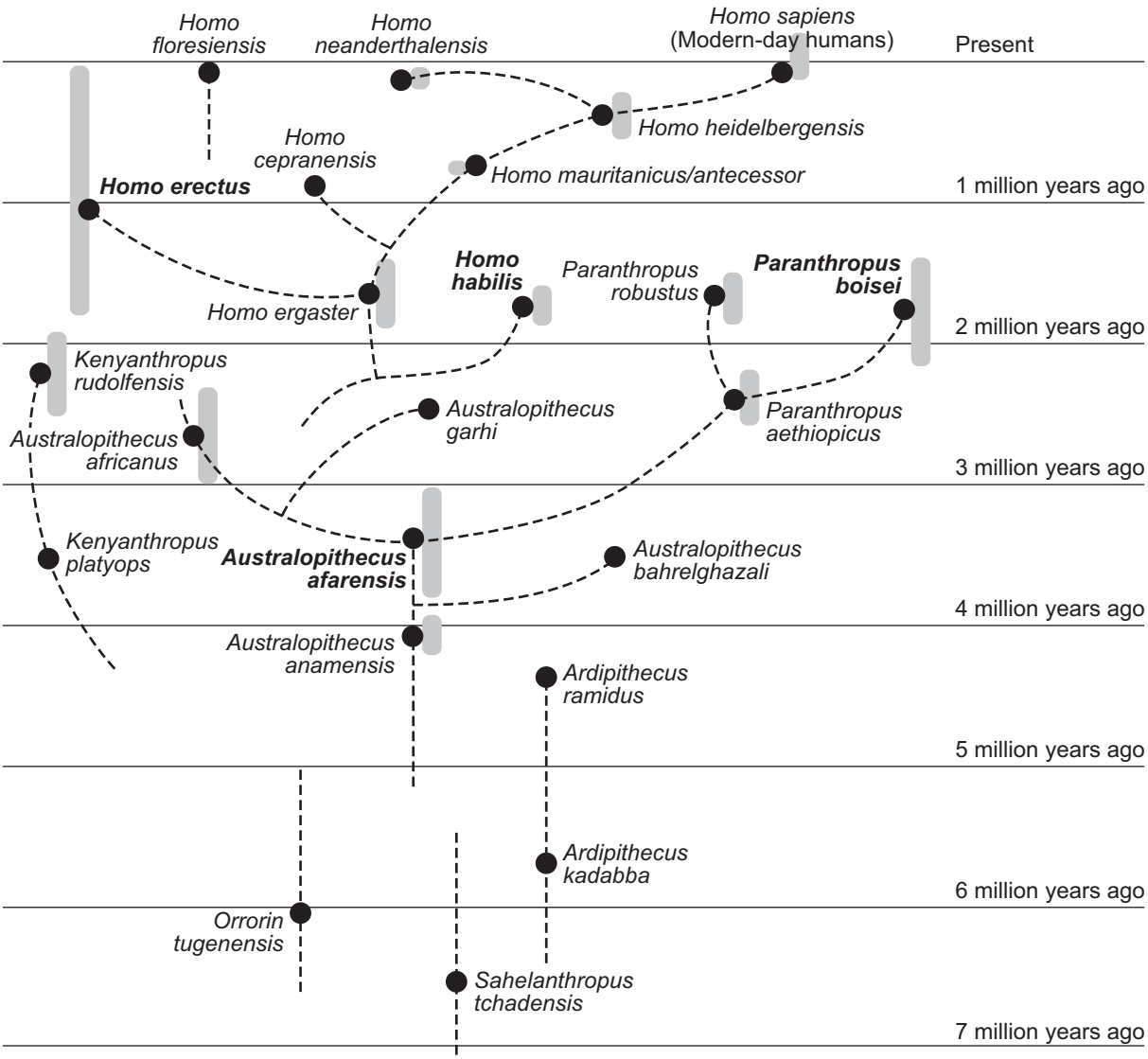
(3 marks)

6

Turn over for the next question

Do not write outside the box

8 The diagram shows an evolutionary tree for humans.
The diagram is based on a study of fossils.



8 (a) When did *Australopithecus afarensis* first appear?

..... million years ago.
(1 mark)

8 (b) Which species was the direct ancestor of *Paranthropus boisei*?

.....
(1 mark)

Do not write outside the box

8 (c) Which species is most closely related to *Homo habilis*?

.....

(1 mark)

8 (d) About 250 fossils of *Homo erectus* have been found. About 50 of these fossils have been found in China.

A Chinese scientist has suggested the hypothesis that Chinese people evolved from *Homo erectus*.

Most scientists do **not** agree with this hypothesis.

Use the information above and information from the diagram to suggest **two** reasons why.

1 .....

.....

2 .....

.....

(2 marks)

8 (e) Darwin suggested the theory of natural selection. It was a long time before this theory was accepted by most scientists.

Give **two** reasons why it took a long time.

1 .....

.....

2 .....

.....

(2 marks)

7

END OF QUESTIONS

Do not write outside the box

There are no questions printed on this page

DO NOT WRITE ON THIS PAGE
ANSWER IN THE SPACES PROVIDED

ACKNOWLEDGEMENT OF COPYRIGHT-HOLDERS AND PUBLISHERS

Permission to reproduce all copyright material has been applied for. In some cases, efforts to contact the copyright-holders have been unsuccessful and AQA will be happy to rectify any omissions of acknowledgements in future papers if notified.

Question 1 Photograph: Plant © Thinkstock
Photograph: Stick Insect © Rhett A Butler/wildmadagascar.org
Photograph: Milkweed bugs © 2011 Gary Valle, PhotographyontheRun.com

Question 8 Hominid “Family Tree” © Anne and Bernard Spitzer, American Museum of Natural History

Copyright © 2012 AQA and its licensors. All rights reserved.

Version : 10/08/2012

General Certificate of Secondary Education

Science B 4462 / Biology 4411

BLY1F Unit Biology 1

Mark Scheme

2012 examination – June series

STEMUP.CO.UK

Mark schemes are prepared by the Principal Examiner and considered, together with the relevant questions, by a panel of subject teachers. This mark scheme includes any amendments made at the standardisation meeting attended by all examiners and is the scheme which was used by them in this examination. The standardisation meeting ensures that the mark scheme covers the students' responses to questions and that every examiner understands and applies it in the same correct way. As preparation for the standardisation meeting each examiner analyses a number of students' scripts: alternative answers not already covered by the mark scheme are discussed at the meeting and legislated for. If, after this meeting, examiners encounter unusual answers which have not been discussed at the meeting they are required to refer these to the Principal Examiner.

It must be stressed that a mark scheme is a working document, in many cases further developed and expanded on the basis of students' reactions to a particular paper. Assumptions about future mark schemes on the basis of one year's document should be avoided; whilst the guiding principles of assessment remain constant, details will change, depending on the content of a particular examination paper.

Further copies of this Mark Scheme are available to download from the AQA Website: www.aqa.org.uk

Copyright © 2012 AQA and its licensors. All rights reserved.

COPYRIGHT
AQA retains the copyright on all its publications. However, registered schools / colleges for AQA are permitted to copy material from this booklet for their own internal use, with the following important exception: AQA cannot give permission to schools / colleges to photocopy any material that is acknowledged to a third party even for internal use within the school / college.

Set and published by the Assessment and Qualifications Alliance.

The Assessment and Qualifications Alliance (AQA) is a company limited by guarantee registered in England and Wales (company number 3644723) and a registered charity (registered charity number 1073334).
Registered address: AQA, Devas Street, Manchester M15 6EX

MARK SCHEME

Information to Examiners

1. General

The mark scheme for each question shows:

- the marks available for each part of the question
- the total marks available for the question
- the typical answer or answers which are expected
- extra information to help the Examiner make his or her judgement and help to delineate what is acceptable or not worthy of credit or, in discursive answers, to give an overview of the area in which a mark or marks may be awarded.

The extra information is aligned to the appropriate answer in the left-hand part of the mark scheme and should only be applied to that item in the mark scheme.

At the beginning of a part of a question a reminder may be given, for example: where consequential marking needs to be considered in a calculation; or the answer may be on the diagram or at a different place on the script.

In general the right hand side of the mark scheme is there to provide those extra details which confuse the main part of the mark scheme yet may be helpful in ensuring that marking is straightforward and consistent.

2. Emboldening

2.1 In a list of acceptable answers where more than one mark is available 'any **two** from' is used, with the number of marks emboldened. Each of the following lines is a potential mark.

2.2 A bold **and** is used to indicate that both parts of the answer are required to award the mark.

2.3 Alternative answers acceptable for a mark are indicated by the use of **or**. (Different terms in the mark scheme are shown by a / ; eg allow smooth / free movement.)

3. Marking points

3.1 Marking of lists

This applies to questions requiring a set number of responses, but for which students have provided extra responses. The general principle to be followed in such a situation is that 'right + wrong = wrong'.

Each error/contradiction negates each correct response. So, if the number of error/contradictions equals or exceeds the number of marks available for the question, no marks can be awarded.

However, responses considered to be neutral (indicated as * in example 1) are not penalised.

STEMUP.CO.UK

Example 1: What is the pH of an acidic solution? (1 mark)

Student	Response	Marks awarded
1	4,8	0
2	green, 5	0
3	red*, 5	1
4	red*, 8	0

Example 2: Name two planets in the solar system. (2 marks)

Student	Response	Marks awarded
1	Neptune, Mars, Moon	1
2	Neptune, Sun, Mars, Moon	0

3.2 Use of chemical symbols / formulae

If a student writes a chemical symbol / formula instead of a required chemical name, full credit can be given if the symbol / formula is correct and if, in the context of the question, such action is appropriate.

3.3 Marking procedure for calculations

Full marks can be given for a correct numerical answer, as shown in the column 'answers', without any working shown.

However if the answer is incorrect, mark(s) can be gained by correct substitution / working and this is shown in the 'extra information' column;

3.4 Interpretation of 'it'

Answers using the word 'it' should be given credit only if it is clear that the 'it' refers to the correct subject.

3.5 Errors carried forward

Any error in the answers to a structured question should be penalised once only.

Papers should be constructed in such a way that the number of times errors can be carried forward are kept to a minimum. Allowances for errors carried forward are most likely to be restricted to calculation questions and should be shown by the abbreviation e.c.f. in the marking scheme.

3.6 Phonetic spelling

The phonetic spelling of correct scientific terminology should be credited **unless** there is a possible confusion with another technical term.

3.7 Brackets

(…..) are used to indicate information which is not essential for the mark to be awarded but is included to help the examiner identify the sense of the answer required.

STEMUP.CO.UK

BLY1F

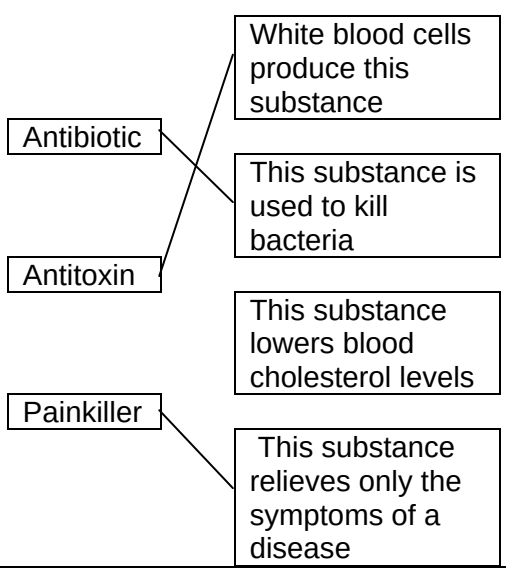
Question 1

question	answers	extra information	mark
1(a)		answer to be marked as a whole	
	has thorns / prickles / points	accept sharp points	1
	(these) hurt animal	allow frighten animal **only** accept prevent animal eating leaves if qualified by 'hurting' or 'frightening'	1
1(b)		answer to be marked as a whole	
	camouflaged / looks like twig / disguised	allow blends in ignore too small to see	1
	(animal) cannot **see / detect** / recognise it	allow animal does not eat twigs **only** accept prevents animal eating it if qualified by 'seeing' or 'wrong food'	1
1(c)		answer to be marked as a whole	
	red / colour		1
	warns that insect might be poisonous / dangerous	allow inedible / tastes bad	1
Total			**6**

STEMUP.CO.UK

BLY1F

Question 2

question	answers	extra information	mark
2(a)		**1** mark for each correct line mark each line from left hand box two lines from left hand box cancels mark for that box	3
2(b)	inactive rubella	allow weak / dead / un-living / safe apply list principle, but ignore measles and mumps	1 1
Total			**5**

STEMUP.CO.UK

BLY1F

Question 3

question	answers	extra information	mark
3(a)	60	correct answer gains **2** marks if answer incorrect evidence of using 40 gains **1** mark	2
3(b)	any **two** from • climate change / described e.g. hotter summers / drought / seasons change • rise in sea levels / flooding • glacier melting / ice caps melting • forest fires • habitat destruction • effect on organisms eg extinction / migration	ignore temperature rise / global warming allow other environmental effects	2
Total			**4**

STEMUP.CO.UK

BLY1F

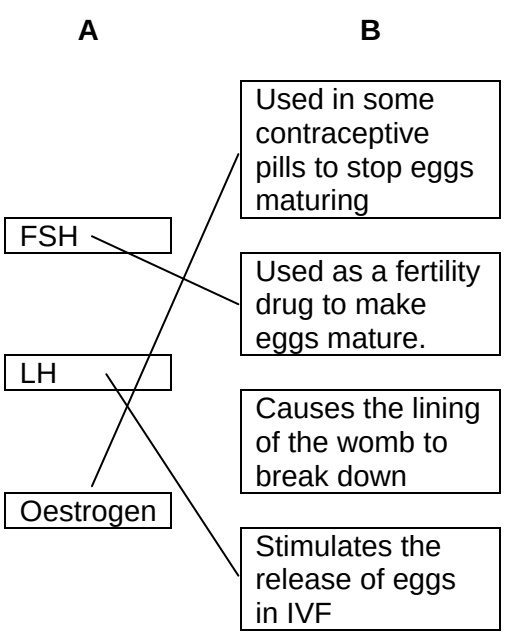
Question 4

question	answers	extra information	mark
4(a)	characteristics		1
	genes		1
	clones		1
	asexual		1
4(b)(i)	tissue culture	accept other asexual methods eg runners / plantlets / dividing accept use of (named) organ e.g. root / leaf ignore cloning / asexual / stem cuttings / reproduction / genetic engineering do **not** accept seeds / sexual reproduction	1
4(b)(ii)	embryo transplant / splitting **or** (adult cell / fusion) cloning	ignore asexual do **not** accept clones do **not** accept sexual reproduction ignore genetic engineering	1
Total			**6**

STEMUP.CO.UK

BLY1F

Question 5

question	answers	extra information	mark
5(a)		mark each line from left hand box two lines from left hand box cancels mark for that box	3

Question 5 continues on the next page . . .

STEMUP.CO.UK

BLY1F

Question 5 continued

question	answers	extra information	mark
5(b)(i)	implant		1
5(b)(ii)	any **one** from: • lasts for 5 years / long(est) • cannot forget to take / replace it / lose it • (hormone) there all the time	allow explanation for their method in (b)(i) ignore expense ignore STDs ignore side effects	1
5(b)(iii)	any **one** from: • needs surgery / operation • painful • infection • have to wait five years for a child **or** more difficult to have a change of mind	accept correct disadvantage for wrong method in 5bi allow it could go wrong ignore expense ignore STDs ignore side effects	1
Total			**6**

STEMUP.CO.UK

BLY1F

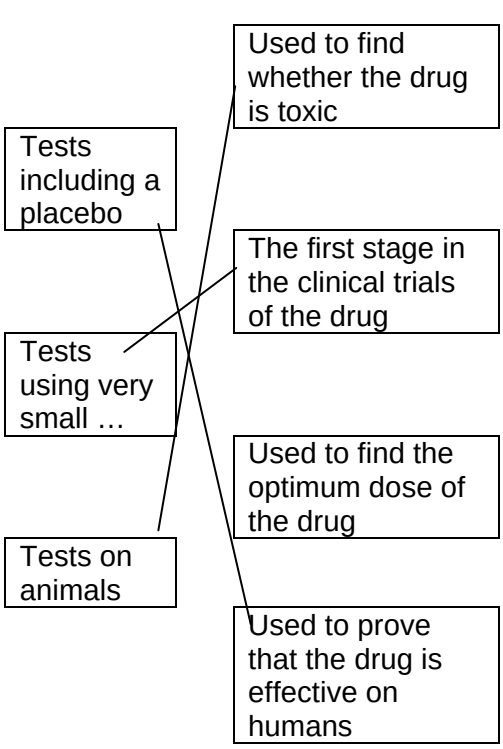
Question 6

question	answers	extra information	mark
6(a)	any **two** from: • arthritis • diabetes • high blood pressure • heart disease / heart condition / heart attack / blood vessel disease	ignore eating disorder ignore cancer accept worn joints accept high blood sugar ignore cholesterol allow blood clots / strokes	2
6(b)(i)	$\frac{1}{4}$ **or** 0.25 **or** 25%	correct answer gains **2** marks if answer incorrect, evidence of 1500 ÷ 6000 gains **1** mark 25 without % gains **1** mark	2
6(b)(ii)	majority / most / high proportion of people in trial lost mass / weight	ignore good results / it worked	1
Total			**5**

STEMUP.CO.UK

BLY1F

Question 7

question	answers	extra information	mark
7(a)		**1** mark for each correct line mark each line from left hand box two lines from left hand box cancels mark for that box	3

Question 7 continues on the next page . . .

STEMUP.CO.UK

BLY1F

Question 7 continued

question	answers	extra information	mark
7(b)	any **three** from: • reference to reliability, eg only a small number of mice tested **or** trial too short **or** investigation not repeated • reference to control, eg mice given caffeine not coffee **or** 6 cups (equivalence) is more than 1 dose • (and) the effect on mice might not be same as on humans • (also) text suggests that the treatment improves memory loss (rather than delays it) **or** mice already have memory loss **or** experiment only showed improvement in memory **or** does not show **delays** Alzheimer's **or** experiment not done on old mice	Students have been informed that the headline is not justified allow only tested on mice accept text suggests disease cured allow reference to the fact that mice engineered to have it	3
Total			**6**

STEMUP.CO.UK

BLY1F

Question 8

question	answers	extra information	mark
8(a)	3.75	accept answers in range 3.6 – 3.9	1
8(b)	(Paranthropus) aethiopicus		1
8(c)	(Homo) ergaster		1
8(d)	any **two** from: • Homo erectus fossils found in other parts of the world • (too many) gaps in fossil record • Homo erectus on different branch of 'tree' **or** no evidence of other 'humans' developing from Homo erectus **or** no link shown between Homo erectus to Homo sapiens / modern humans **or** (fossils show that) H. sapiens evolved from H. heidelbergensis / H. mauritanicus / H. ergaster	ignore references to H. floresiensis or not enough data allow **only** 50 fossils found in China ignore the two species were alive at the same time allow diagram shows they are not closely related	2

Question 8 continues on the next page . . .

STEMUP.CO.UK

BLY1F

Question 8 continued

question	answers	extra information	mark
8(e)	any **two** from: • 'religious' reasons • insufficient evidence at that time • Darwin was not a respected / well known scientist • mechanism of inheritance / variation not known at that time	 allow people did not wish to believe they had evolved from apes allow took a long time to get evidence **or** communications not as good at that time ignore **no** evidence / could not prove it ignore references to Lamarck allow (people) did not know about genes / genetics / DNA / chromosomes / mutations	2
Total			**7**

UMS Conversion Calculator: www.aqa.org.uk/umsconversion

STEMUP.CO.UK

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

F

Biology
Unit Biology B1

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.

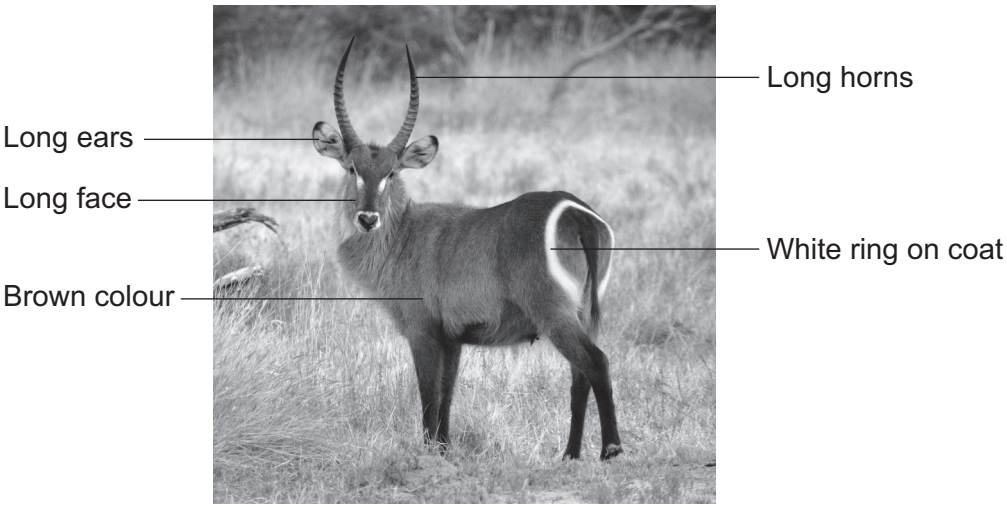
STEMUP.CO.UK

Do not write outside the box

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?

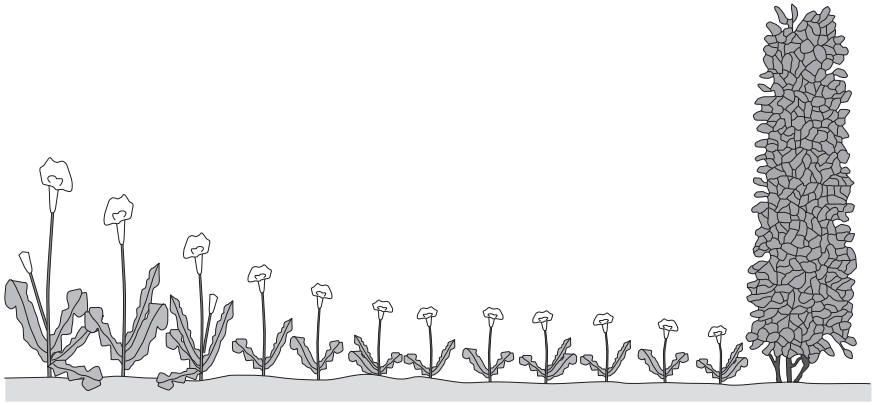
.....

(1 mark)

4

Do not write outside the box

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 ▶

Do not write outside the box

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.

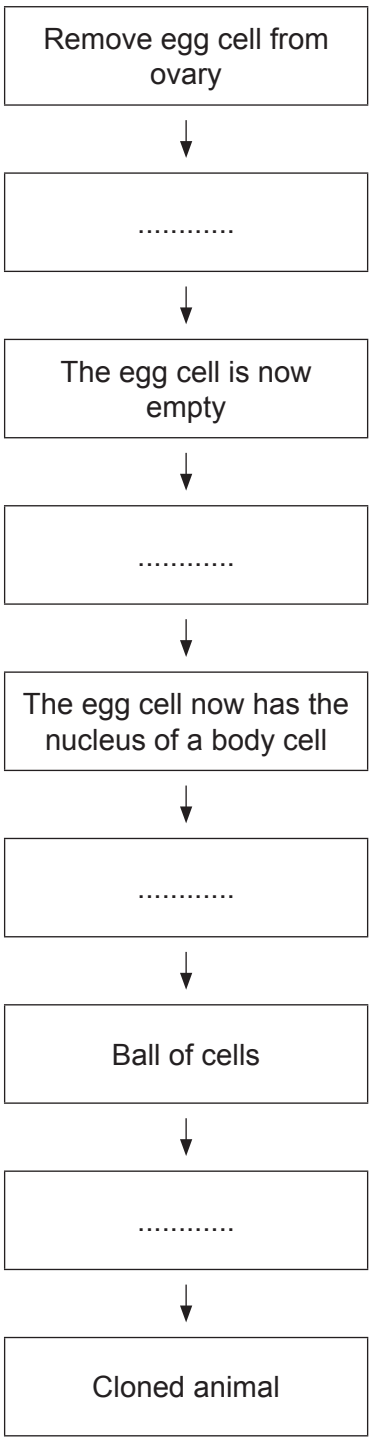
Do not write outside the box

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



(3 marks)

7

Do not write outside the box

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**
	High blood pressure
Diabetes	
	Arthritis
High level of salt in food	
	Irregular periods
Lack of food	
	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)

Do not write outside the box

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 × height.

.....

height × height = ... m^2

Use your answer to calculate her BMI.

.....

BMI = ...

(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

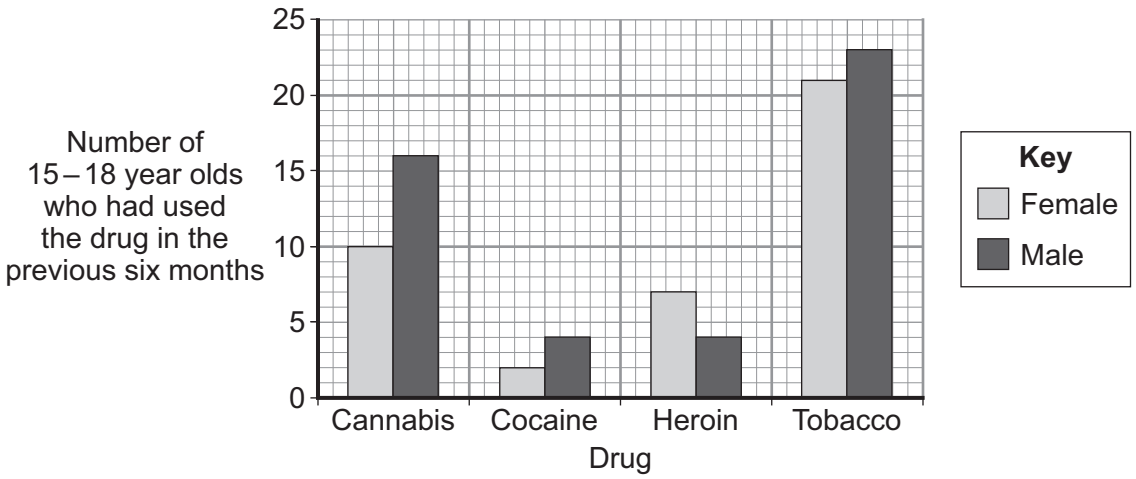
STEMUP.CO.UK

Do not write outside the box

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)

Do not write outside the box

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)

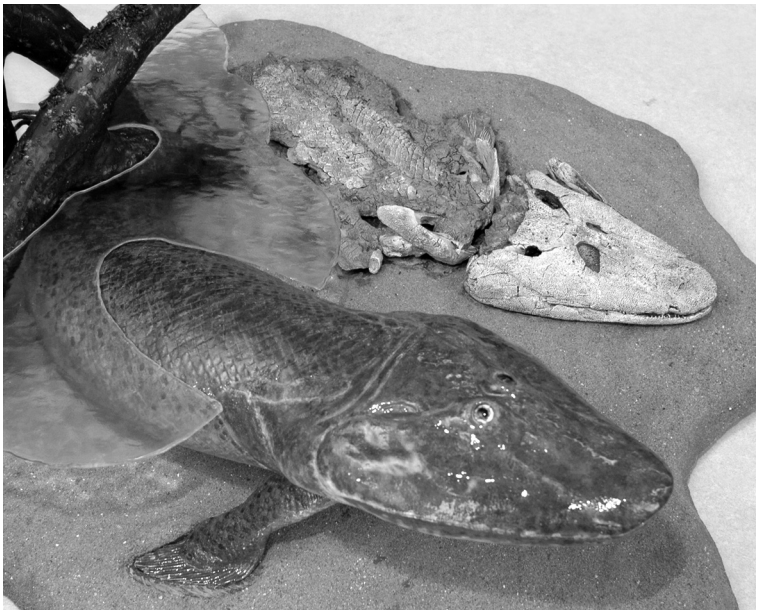
5

Turn over for the next question

Do not write outside the box

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

Do not write outside the box

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.

.....

.....

.....

.....

.....

.....

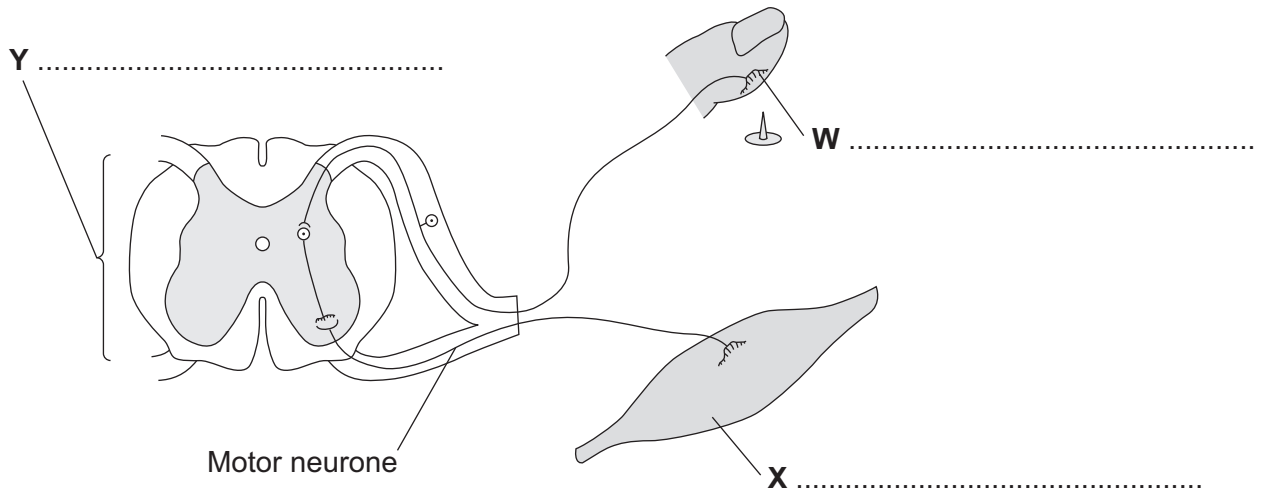
(3 marks)

5

Turn over for the next question

Do not write outside the box

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

ACKNOWLEDGEMENT OF COPYRIGHT-HOLDERS AND PUBLISHERS

Question 1 Photograph: © Thinkstock.com
Question 3 Photograph: © KATIA CHRISTODOULOU/Corbis
Question 6 Photograph: © Courtesy of NEIL SHUBIN, University of Chicago

Copyright © 2012 AQA and its licensors. All rights reserved.

Version : 07/03/2012

General Certificate of Secondary Education

Science B 4462 / Biology 4411

BLY1F Unit Biology 1

Mark Scheme

2012 examination – January series

STEMUP.CO.UK

Mark schemes are prepared by the Principal Examiner and considered, together with the relevant questions, by a panel of subject teachers. This mark scheme includes any amendments made at the standardisation meeting attended by all examiners and is the scheme which was used by them in this examination. The standardisation meeting ensures that the mark scheme covers the students' responses to questions and that every examiner understands and applies it in the same correct way. As preparation for the standardisation meeting each examiner analyses a number of students' scripts: alternative answers not already covered by the mark scheme are discussed at the meeting and legislated for. If, after this meeting, examiners encounter unusual answers which have not been discussed at the meeting they are required to refer these to the Principal Examiner.

It must be stressed that a mark scheme is a working document, in many cases further developed and expanded on the basis of students' reactions to a particular paper. Assumptions about future mark schemes on the basis of one year's document should be avoided; whilst the guiding principles of assessment remain constant, details will change, depending on the content of a particular examination paper.

Further copies of this Mark Scheme are available to download from the AQA Website: www.aqa.org.uk

Copyright © 2012 AQA and its licensors. All rights reserved.

COPYRIGHT
AQA retains the copyright on all its publications. However, registered schools / colleges for AQA are permitted to copy material from this booklet for their own internal use, with the following important exception: AQA cannot give permission to schools / colleges to photocopy any material that is acknowledged to a third party even for internal use within the school / college.

Set and published by the Assessment and Qualifications Alliance.

The Assessment and Qualifications Alliance (AQA) is a company limited by guarantee registered in England and Wales (company number 3644723) and a registered charity (registered charity number 1073334).
Registered address: AQA, Devas Street, Manchester M15 6EX

MARK SCHEME

Information to Examiners

1. General

The mark scheme for each question shows:

- the marks available for each part of the question
- the total marks available for the question
- the typical answer or answers which are expected
- extra information to help the Examiner make his or her judgement and help to delineate what is acceptable or not worthy of credit or, in discursive answers, to give an overview of the area in which a mark or marks may be awarded.

The extra information is aligned to the appropriate answer in the left-hand part of the mark scheme and should only be applied to that item in the mark scheme.

At the beginning of a part of a question a reminder may be given, for example: where consequential marking needs to be considered in a calculation; or the answer may be on the diagram or at a different place on the script.

In general the right hand side of the mark scheme is there to provide those extra details which confuse the main part of the mark scheme yet may be helpful in ensuring that marking is straightforward and consistent.

2. Emboldening

2.1 In a list of acceptable answers where more than one mark is available 'any **two** from' is used, with the number of marks emboldened. Each of the following lines is a potential mark.

2.2 A bold **and** is used to indicate that both parts of the answer are required to award the mark.

2.3 Alternative answers acceptable for a mark are indicated by the use of **or**. (Different terms in the mark scheme are shown by a / ; eg allow smooth / free movement.)

3. Marking points

3.1 Marking of lists

This applies to questions requiring a set number of responses, but for which students have provided extra responses. The general principle to be followed in such a situation is that 'right + wrong = wrong'.

Each error/contradiction negates each correct response. So, if the number of error/contradictions equals or exceeds the number of marks available for the question, no marks can be awarded.

However, responses considered to be neutral (indicated as * in example 1) are not penalised.

STEMUP.CO.UK

Example 1: What is the pH of an acidic solution? (1 mark)

Student	Response	Marks awarded
1	4,8	0
2	green, 5	0
3	red*, 5	1
4	red*, 8	0

Example 2: Name two planets in the solar system. (2 marks)

Student	Response	Marks awarded
1	Pluto, Mars, Moon	1
2	Pluto, Sun, Mars, Moon	0

3.2 Use of chemical symbols / formulae

If a student writes a chemical symbol / formula instead of a required chemical name, full credit can be given if the symbol / formula is correct and if, in the context of the question, such action is appropriate.

3.3 Marking procedure for calculations

Full marks can be given for a correct numerical answer, as shown in the column 'answers', without any working shown.

However if the answer is incorrect, mark(s) can be gained by correct substitution / working and this is shown in the 'extra information' column;

3.4 Interpretation of 'it'

Answers using the word 'it' should be given credit only if it is clear that the 'it' refers to the correct subject.

3.5 Errors carried forward

Any error in the answers to a structured question should be penalised once only.

Papers should be constructed in such a way that the number of times errors can be carried forward are kept to a minimum. Allowances for errors carried forward are most likely to be restricted to calculation questions and should be shown by the abbreviation e.c.f. in the marking scheme.

3.6 Phonetic spelling

The phonetic spelling of correct scientific terminology should be credited **unless** there is a possible confusion with another technical term.

3.7 Brackets

(…..) are used to indicate information which is not essential for the mark to be awarded but is included to help the examiner identify the sense of the answer required.

STEMUP.CO.UK

BLY 1F

Question 1

question	answers	extra information	mark
1(a)	brown (colour)		1
1(b)	(long) ears		1
1(c)	(long) horns		1
1(d)	(white) ring		1
Total			**4**

STEMUP.CO.UK

BLY1F

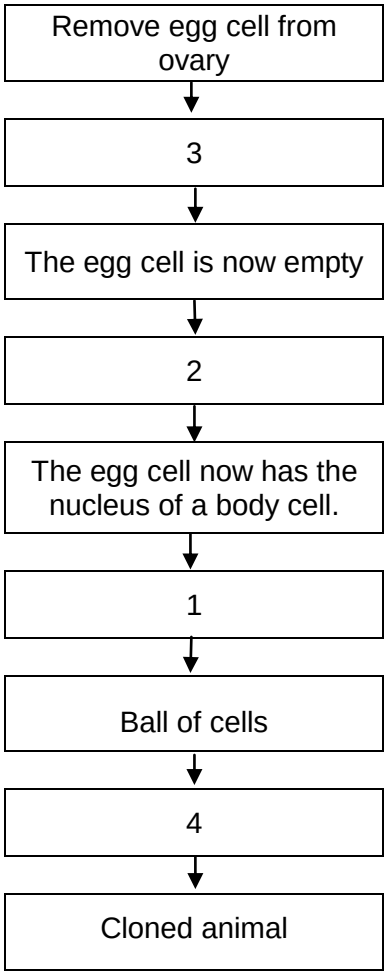
Question 2

question	answers	extra information	mark
2(a)	any **two** from: • light / sunlight • water • nutrients / ions / salts / minerals • space	 ignore Sun ignore food	2
2(b)(i)	herbicides		1
2(b)(ii)	pesticides		1
2(c)	any **two** from: • habitat destroyed • numbers / species / biodiversity reduced • less food / fewer breeding sites	mark as a whole allow animals die / move away allow fewer homes / nowhere to live ignore would keep animals out	2
Total			**6**

STEMUP.CO.UK

BLY1F

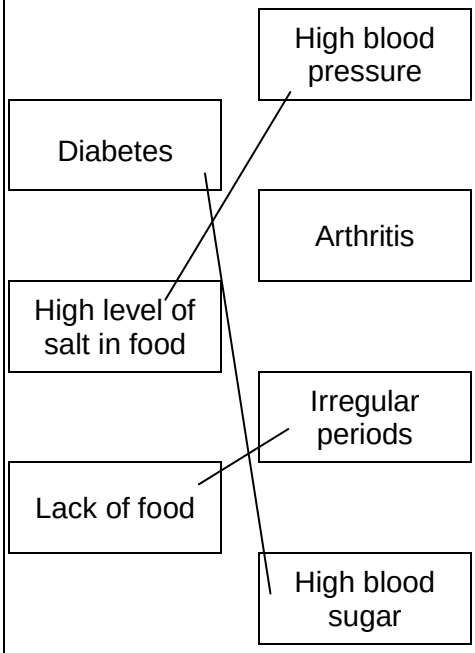
Question 3

question	answers	extra information	mark
3(a)	sexual characteristic mutation chromosome	this order only	1 1 1 1
3(b)		four correct gains **3** marks two or three correct gains **2** marks one correct gains **1** mark accept correct connection between statement and box	3
Total			**7**

STEMUP.CO.UK

BLY1F

Question 4

question	answers	extra information	mark
4(a)		**1** mark for each correct line mark each line from left hand box two lines from left hand box cancels mark for that box	3
4(b)	reference to diet / less food / healthier food / balanced diet reference to exercise / activity		1 1
4(c)(i)	27.77 / 27.78 / 27.8 / 27.7•	correct BMI gains **3** marks accept 2 or more 7s after decimal point for **3** marks 27.7 gains **2** marks if answer incorrect: allow **1** mark for 3.24 allow **1** mark for correct answer based on incorrect (height)^2	3
4(c)(ii)	overweight	allow ecf from (c)(i) if no attempt at (c)(i) no mark can be awarded for (c)(ii)	1
Total			**9**

STEMUP.CO.UK

BLY1F

Question 5

question	answers	extra information	mark
5(a)(i)	6		1
5(a)(ii)	1/5 **or** 10/50 **or** one fifth **or** 20% **or** 1 in 5 **or** 0.2 **or** 1:4 **or** 1 to 4	do **not** allow 1:5 **or** 1 to 5	1
5(b)	heroin	apply list principle	1
5(c)	people not honest in answers	allow small sample / people from same area do **not** accept unequal numbers of men and women	1
5(d)	might lead to mental illness / named **or** might lead to more addictive / hard drugs / named hard drugs	ignore cancer / lung disease / tar / damages brain cells accept gateway drug ignore addictive / slows reactions	1
Total			**5**

STEMUP.CO.UK

BLY1F

Question 6

question	answers	extra information	mark
6(a)	(soft) body parts / other parts / named parts	accept flesh	1
	decayed / decomposed / rotted / eaten **or** bones do not decay / decompose / rot / get eaten	ignore disintegrated / dissolved ignore microorganisms	1
6(b)	any **one** aquatic feature from: eg • streamlined body shape • long tail • eyes on top of head • scales • fins / paddles / flippers / webbed feet	ignore gills	1
	any **one** terrestrial feature from: • (front) legs / limbs / hands • could lift front end upwards	ignore feet accept for **2** marks eg fin / flipper can be used for walking **or** fins like legs	1
Total			**4**

STEMUP.CO.UK

BLY1F

Question 7

question	answers	extra information	mark
7(a)	hearsay		1
7(b)	(volunteers with feet in) empty bowls	accept bowl with no (iced) water do **not** accept mention of bowl with iced water	1
7(c)	any **three** from: • only some of those whose feet were in cold water caught colds • some controls caught colds • only feet were cold in experimental group • only kept feet in cold water for 20 minutes • insufficient evidence for 'proof' / only showed increased risk • don't know activities of individuals before / after the investigation (eg exposure to cold virus) / reference to immune system	ignore control variables, eg age, gender allow (control) not wrapped up warm allow small sample size allow investigation done in 'cold season'	3
Total			**5**

STEMUP.CO.UK

BLY1F

Question 8

question	answers	extra information	mark
8(a)	Y – spinal cord / central nervous system / CNS	do **not** accept spine ignore nerve / nervous system / coordinator ignore grey / white matter	1
	W – receptor / nerve ending	ignore sensory / neurone / stimulus	1
	X – effector / muscle	allow gland	1
8(b)	any **two** from: eg • reflex action quicker • effect of reflex action over shorter period • hormone involves blood system <u>and</u> reflex involves neurones / nerve cells • reflex involves impulses <u>and</u> hormone involves chemicals • reflex action affects only one part of the body	accept reverse argument for each marking point ignore nervous system / nerves ignore involves brain ignore outside / inside stimuli	2
Total			**5**

UMS Conversion Calculator: www.aqa.org.uk/umsconversion

STEMUP.CO.UK

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	
9	
TOTAL	

General Certificate of Secondary Education
Foundation Tier
June 2011

Science B
Unit Biology B1

BLY1F

F

Biology
Unit Biology B1

Written Paper

Tuesday 7 June 2011 1.30 pm to 2.15 pm

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.

STEMUP.CO.UK

Do not write outside the box

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

1 The photographs show some ways in which humans affect the environment.

1 (a) Coal-burning power stations give off smoke. The smoke contains many different gases.



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

1 (a) (i) The gas which causes global warming is

carbon dioxide.

oxygen.

sulfur dioxide.

(1 mark)

1 (a) (ii) The gas which causes acid rain is

methane.

oxygen.

sulfur dioxide.

(1 mark)

1 (b) The photograph shows a quarry.



Do not write outside the box

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

1 (b) (i) Quarrying

- releases methane into the atmosphere.
- increases biodiversity.
- reduces land available for animals and plants.

(1 mark)

1 (b) (ii) Quarrying can be reduced by recycling

- metals.
- paper.
- plastic

(1 mark)

1 (c) The photograph shows a farmer spraying fruit trees.



Chemicals in the spray kill insects on the trees.

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

1 (c) (i) The spray contains

- fertiliser.
- herbicide.
- pesticide.

(1 mark)

1 (c) (ii) The chemical in the spray might also

- kill other animals.
- kill plants.
- increase biodiversity.

(1 mark)

6

Do not write outside the box

2 An animal's feet are adapted to the animal's way of life.

The photographs show the feet of four different animals.

Draw a line from each photograph of feet to the correct adaptation.

Photograph	Adaptation
	Running very fast
	Swimming
	Flying
	Catching and holding prey
	Supporting a very heavy body

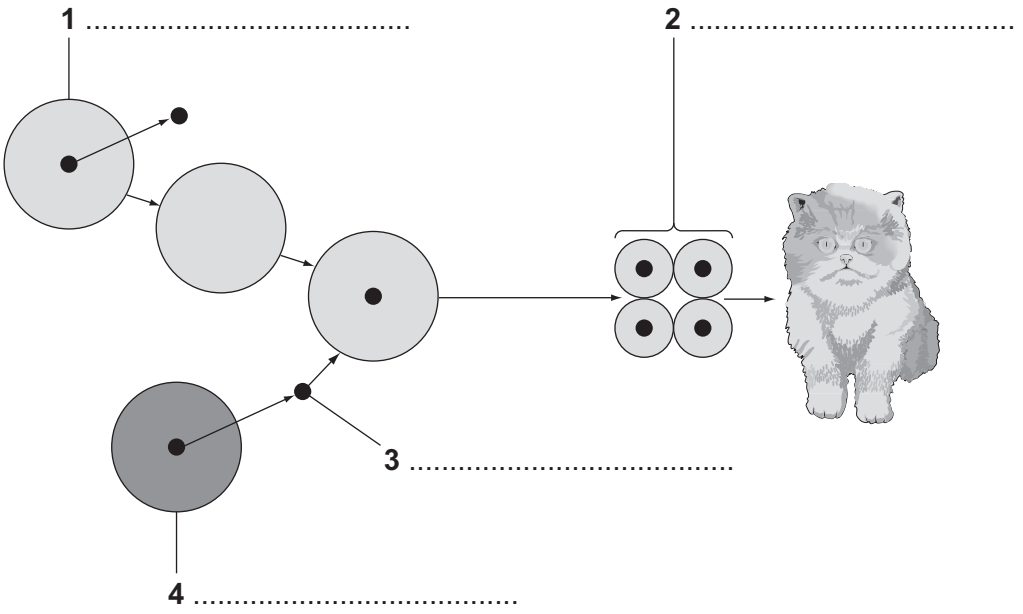
(4 marks)

4

Do not write outside the box

3 It is possible to clone pets.

The diagram shows one way of cloning a pet cat, using the nucleus from a cat skin cell.



embryo	**egg**	**nucleus**	**skin cell**	**sperm**

3 (a) Use words from the box to label structures **1**, **2**, **3** and **4** on the diagram.

(4 marks)

3 (b) The cloning of humans is not allowed.

Tick (✓) **one** box to complete the sentence.

One **ethical** reason for banning the cloning of humans is that . . .

the method used in animal cloning has not been evaluated. ☐

the method is very expensive. ☐

the child created by cloning would not have been able to give permission. ☐

(1 mark)

5

Turn over ▶

Do not write outside the box

4 The photograph shows a new-born baby.



4 (a) New-born babies have reflex actions. The reflex actions help new-born babies to survive.

Draw a line from each reflex action to the way in which it helps the baby to survive.

Reflex action	How the reflex action helps the baby
If milk goes down the baby's windpipe the baby coughs.	Helps the baby to hold on to the mother
If the mother touches the palm of the baby's hand, the baby clenches its fist.	Prevents the baby from choking
If the mother strokes the baby's mouth, the baby begins to suck.	Helps to protect some of the baby's receptors
If a bright light shines on the baby, the baby's eyes shut.	Helps the baby to crawl
	Helps the baby to feed

(4 marks)

Do not write outside the box

4 (b) Which **two** of the following may be effectors in reflex actions?

Tick (✓) **two** boxes.

Brain ☐

Glands ☐

Motor neurones ☐

Muscles ☐

Sensory neurones ☐

(2 marks)

6

Turn over for the next question

Do not write outside the box

5 Caffeine is a *recreational* drug found in drinks such as coffee and cola.

5 (a) What is meant by a *recreational drug*?

.....

.....

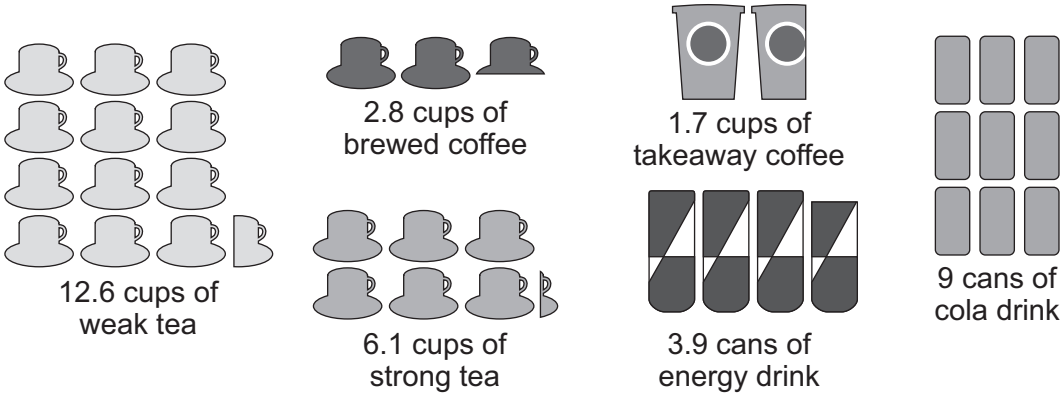
(1 mark)

5 (b) Scientists investigated the effect on the brain of drinking large amounts of caffeine.

They chose students whose drinks contained caffeine equal to at least seven cups of instant coffee each day.

The diagram compares the amount of caffeine in different drinks.

Seven cups of instant coffee a day equals:



5 (b) (i) Seven cups of instant coffee contain 315 mg of caffeine.

How much caffeine is there in **one** cup of instant coffee?

.....

Amount of caffeine ..... mg

(1 mark)

Do not write outside the box

5 (b) (ii) Which drink in the diagram contains the highest amount of caffeine?

Tick (✓) **one** box.

A cup of weak tea ☐

A cup of takeaway coffee ☐

A can of cola ☐

(1 mark)

5 (c) Caffeine may cause hallucinations.

One example of a hallucination is hearing voices that are not there.

The scientists found that students who drank more than seven cups of instant coffee per day were three times more likely to have hallucinations than students who drank one cup or less.

Which is the best conclusion?

Tick (✓) **one** box.

Drinking caffeine causes hallucinations. ☐

It is dangerous to drink caffeine. ☐

There is a link between drinking caffeine and hallucinations. ☐

(1 mark)

4

Turn over for the next question

Do not write outside the box

6 Hormones control the menstrual cycle.

6 (a) Name **two** of the hormones involved in the menstrual cycle.

1 .....

2 .....

(2 marks)

6 (b) Hormones are used in some types of contraception.

Complete the sentence.

When used as contraceptives, hormones stop ..... becoming mature.

(1 mark)

6 (c) There are several ways of using hormones as contraceptives.

These include:

- taking a contraceptive pill each day for 21 days of the menstrual cycle
- using a contraceptive implant.

The contraceptive implant is put under the skin of a woman's arm.

The implant releases contraceptive hormones for three years before the implant needs to be replaced.

6 (c) (i) Suggest **one** advantage of using this implant rather than taking contraceptive pills.

.....

.....

(1 mark)

6 (c) (ii) Suggest **one** disadvantage of using this implant rather than taking contraceptive pills.

.....

.....

(1 mark)

5

Do not write outside the box

7 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.

7 (a) More Soay sheep are now able to survive winter than 25 years ago.

What change in the climate may have helped more Soay sheep to survive winters?

.....

.....

(1 mark)

7 (b) Complete the sentences.

7 (b) (i) Soay sheep show variation in size because of differences in their

..... .

(1 mark)

7 (b) (ii) The change in the size of the Soay sheep over 25 years can be explained by Darwin's theory of ..... .

(1 mark)

3

Turn over ▶

Do not write outside the box

8 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 a 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.

8 (a) Give **two** control variables in this investigation.

1 .....

2 .....

(2 marks)

8 (b) What would the placebo be in this investigation?

.....

.....

(1 mark)

8 (c) The trial gave reliable results.

Give **one** reason why.

.....

.....

(1 mark)

8 (d) The trial was stopped 7 months early.

Give **one** reason why.

.....

.....

(1 mark)

Do not write outside the box

8 (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.

.....

.....

(1 mark)

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

Substance	**Concentration in blood in mg per 100 cm^3 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.

.....

.....

.....

.....

(2 marks)

8

Turn over for the next question

Do not write outside the box

9 The body's immune system protects us from diseases.

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

.....

.....

.....

.....

.....

.....

.....

.....

.....

(4 marks)

4

END OF QUESTIONS

Do not write outside the box

There are no questions printed on this page

DO NOT WRITE ON THIS PAGE
ANSWER IN THE SPACES PROVIDED

Do not write outside the box

There are no questions printed on this page

DO NOT WRITE ON THIS PAGE
ANSWER IN THE SPACES PROVIDED

ACKNOWLEDGEMENT OF COPYRIGHT-HOLDERS AND PUBLISHERS

Question 1(a)	Photograph: © Thinkstockphotos.co.uk
Question 1(b)	Photograph: © Thinkstockphotos.co.uk
Question 1(c)	Photograph: © David Thurber/AgStock Images/Corbis
Question 2	Photographs: © Thinkstockphotos.co.uk
Question 4	Photograph: © Thinkstockphotos.co.uk
Question 5(b)	Data source: *Personality and Individual Differences* Volume 46 pages 562–564, *Caffeine, stress, and proneness to psychosis-like experiences: A preliminary investigation*, Simon R. Jones, and Charles Fernyhough, Durham University, 2009 Graphics: © Metro
Question 7	Photograph: © Ashley Cooper/Corbis
Question 8	Source: *Justification for the Use of statins in Primary prevention: an Intervention Trial Evaluating Rosuvastatin*, AstraZeneca UK Limited

Copyright © 2011 AQA and its licensors. All rights reserved.

Version: 04/08/2011



General Certificate of Secondary Education

Science B 4462 / Biology 4411

BLY1F Unit Biology 1

Mark Scheme

2011 examination – June series

STEMUP.CO.UK

Mark schemes are prepared by the Principal Examiner and considered, together with the relevant questions, by a panel of subject teachers. This mark scheme includes any amendments made at the standardisation meeting attended by all examiners and is the scheme which was used by them in this examination. The standardisation meeting ensures that the mark scheme covers the candidates' responses to questions and that every examiner understands and applies it in the same correct way. As preparation for the standardisation meeting each examiner analyses a number of candidates' scripts: alternative answers not already covered by the mark scheme are discussed at the meeting and legislated for. If, after this meeting, examiners encounter unusual answers which have not been discussed at the meeting they are required to refer these to the Principal Examiner.

It must be stressed that a mark scheme is a working document, in many cases further developed and expanded on the basis of candidates' reactions to a particular paper. Assumptions about future mark schemes on the basis of one year's document should be avoided; whilst the guiding principles of assessment remain constant, details will change, depending on the content of a particular examination paper.

Further copies of this Mark Scheme are available to download from the AQA Website: www.aqa.org.uk

Copyright © 2011 AQA and its licensors. All rights reserved.

COPYRIGHT
AQA retains the copyright on all its publications. However, registered centres for AQA are permitted to copy material from this booklet for their own internal use, with the following important exception: AQA cannot give permission to centres to photocopy any material that is acknowledged to a third party even for internal use within the centre.

Set and published by the Assessment and Qualifications Alliance.

The Assessment and Qualifications Alliance (AQA) is a company limited by guarantee registered in England and Wales (company number 3644723) and a registered charity (registered charity number 1073334).
Registered address: AQA, Devas Street, Manchester M15 6EX

MARK SCHEME

Information to Examiners

1. General

The mark scheme for each question shows:

- the marks available for each part of the question
- the total marks available for the question
- the typical answer or answers which are expected
- extra information to help the Examiner make his or her judgement and help to delineate what is acceptable or not worthy of credit or, in discursive answers, to give an overview of the area in which a mark or marks may be awarded.

The extra information is aligned to the appropriate answer in the left-hand part of the mark scheme and should only be applied to that item in the mark scheme.

At the beginning of a part of a question a reminder may be given, for example: where consequential marking needs to be considered in a calculation; or the answer may be on the diagram or at a different place on the script.

In general the right hand side of the mark scheme is there to provide those extra details which confuse the main part of the mark scheme yet may be helpful in ensuring that marking is straightforward and consistent.

2. Emboldening

2.1 In a list of acceptable answers where more than one mark is available 'any **two** from' is used, with the number of marks emboldened. Each of the following lines is a potential mark.

2.2 A bold **and** is used to indicate that both parts of the answer are required to award the mark.

2.3 Alternative answers acceptable for a mark are indicated by the use of **or**. (Different terms in the mark scheme are shown by a / ; eg allow smooth / free movement.)

3. Marking points

3.1 Marking of lists

This applies to questions requiring a set number of responses, but for which candidates have provided extra responses. The general principle to be followed in such a situation is that 'right + wrong = wrong'.

Each error/contradiction negates each correct response. So, if the number of error/contradictions equals or exceeds the number of marks available for the question, no marks can be awarded.

However, responses considered to be neutral (indicated as * in example 1) are not penalised.

STEMUP.CO.UK

Example 1: What is the pH of an acidic solution? (1 mark)

Candidate	Response	Marks awarded
1	4,8	0
2	green, 5	0
3	red*, 5	1
4	red*, 8	0

Example 2: Name two planets in the solar system. (2 marks)

Candidate	Response	Marks awarded
1	Pluto, Mars, Moon	1
2	Pluto, Sun, Mars, Moon	0

3.2 Use of chemical symbols / formulae

If a candidate writes a chemical symbol / formula instead of a required chemical name, full credit can be given if the symbol / formula is correct and if, in the context of the question, such action is appropriate.

3.3 Marking procedure for calculations

Full marks can be given for a correct numerical answer, as shown in the column 'answers', without any working shown.

However if the answer is incorrect, mark(s) can be gained by correct substitution / working and this is shown in the 'extra information' column;

3.4 Interpretation of 'it'

Answers using the word 'it' should be given credit only if it is clear that the 'it' refers to the correct subject.

3.5 Errors carried forward

Any error in the answers to a structured question should be penalised once only.

Papers should be constructed in such a way that the number of times errors can be carried forward are kept to a minimum. Allowances for errors carried forward are most likely to be restricted to calculation questions and should be shown by the abbreviation e.c.f. in the marking scheme.

3.6 Phonetic spelling

The phonetic spelling of correct scientific terminology should be credited **unless** there is a possible confusion with another technical term.

3.7 Brackets

(…..) are used to indicate information which is not essential for the mark to be awarded but is included to help the examiner identify the sense of the answer required.

STEMUP.CO.UK

BLY 1F

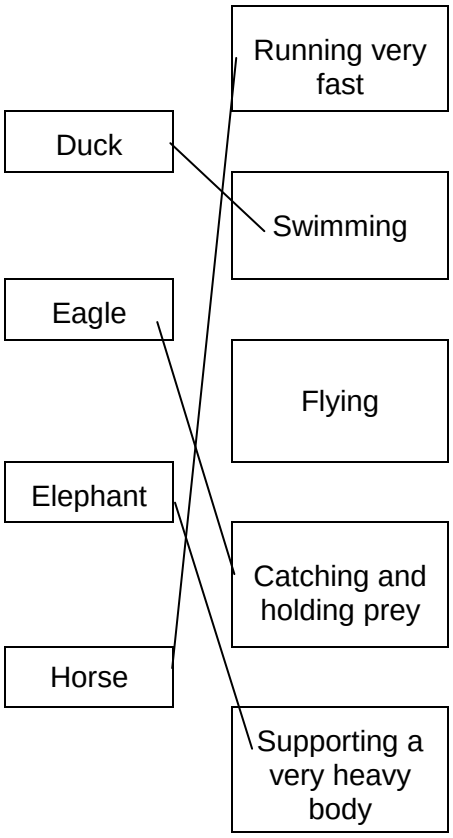
Question 1

question	answers	extra information	mark
1(a)(i)	carbon dioxide		1
1(a)(ii)	sulfur dioxide		1
1(b)(i)	reduces land available for animals and plants		1
1(b)(ii)	metals		1
1(c)(i)	pesticide		1
1(c)(ii)	kill other animals		1
Total			**6**

STEMUP.CO.UK

BLY1F

Question 2

question	answers	extra information	mark
2		all four correct = **4** marks three correct = **3** marks two correct = **2** marks one correct = **1** mark extra line from a statement cancels the mark	4
Total			**4**

STEMUP.CO.UK

BLY1F

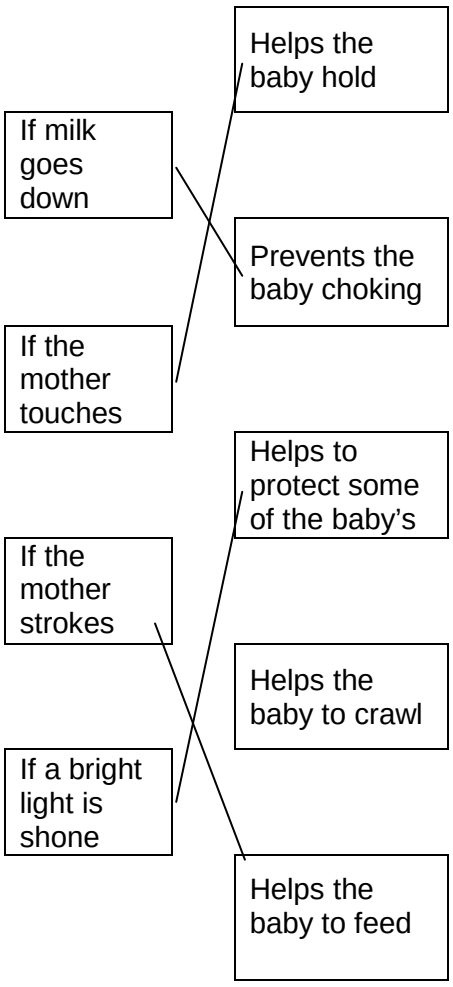
Question 3

question	answers	extra information	mark
3(a)	**1** egg **2** embryo **3** nucleus **4** skin cell		1 1 1 1
3(b)	the child created by cloning would not have been able to give permission	extra boxes ticked cancels the mark	1
Total			**5**

STEMUP.CO.UK

BLY1F

Question 4

question	answers	extra information	mark
4(a)		all four correct = **4** marks three correct = **3** marks two correct = **2** marks one correct = **1** mark extra line from a statement cancels the mark	4
4(b)	glands muscles	**1** mark for each correct tick each extra box ticked cancels **1** mark	1 1
Total			**6**

STEMUP.CO.UK

BLY1F

Question 5

question	answers	extra information	mark
5(a)	a drug taken for pleasure / fun	allow not taken as medicine ignore recreational / legal / harmless / specific effects on body	1
5(b)(i)	45		1
5(b)(ii)	a cup of takeaway coffee		1
5(c)	There is a link between drinking caffeine and hallucinations.	extra boxes ticked cancels the mark	1
Total			**4**

STEMUP.CO.UK

BLY1F

Question 6

question	answers	extra information	mark
6(a)	any **two** from: • FSH • LH • oestrogen	 do **not** accept FHS do **not** accept LSH allow progesterone as alternative to any hormone	2
6(b)	egg(s) / egg cell(s) / ova	do **not** accept ovaries do **not** accept fertilised eggs	1
6(c)(i)	any **one** from: • don't have to take (pill) every day • can't forget to take • more reliable • lasts 3 years / lasts longer • hormone level in blood more constant	ignore faster ignore side effects ignore cost	1
6(c)(ii)	any **one** from: • eg painful (to insert) / uncomfortable / causes rash • woman can't take it out • more difficult to stop treatment • needs to be removed if woman decides to become pregnant	ignore cost ignore side effects unqualified allow have to wait three years to become pregnant	1
Total			**5**

STEMUP.CO.UK

BLY1F

Question 7

question	answers	extra information	mark
7(a)	warmer / dryer	allow greenhouse effect / global warming ignore wind	1
7(b)(i)	genes / alleles / chromosomes / DNA / genetic material / genetics	allow inheritance allow nutrition / food / metabolism / growth <u>rate</u> ignore environment	1
7(b)(ii)	natural selection / evolution	allow survival of the fittest	1
Total			**3**

STEMUP.CO.UK

BLY1F

Question 8

question	answers	extra information	mark
8(a)	any **two** from: • (high) CRP / protein • (no) heart condition • (not high) LDL • over 50 / age • number of tablets (each day)	allow health ignore time ignore placebo / rosuvastatin ignore number of people	2
8(b)	any **one** from: • tablet with no drug • tablet that has no effect • tablet without chemicals • tablet that people thought contained statin **or** reference to psychological effect	allow fake (pill) / dummy (pill) / sugar / chalk (pill) allow drug that has no effect ignore vitamin / mineral pill ignore control / different statin	1
8(c)	17802 / large number of people **or** enough people	ignore control group / fair test / control variables ignore time / repeats	1

Question 8 continues on the next page

STEMUP.CO.UK

Question 8 continued . . .

question	answers	extra information	mark
8(d)	any **one** from: • placebo group at risk of heart attack **or** to allow statin to be given to everyone • statin group 54% less likely to get heart attack **or** showed that statin worked **or** showed trial (very) successful • sufficient information gained / results conclusive • unethical / unfair to carry on trial	ignore cost ignore reliable ignore got results early	1
8(e)	to avoid bias **or** show impartiality **or** show results independent	allow manufacturers could cheat ignore reliability ignore could be sued / blamed if trial went wrong ignore manufacturer would know which group got statin / placebo	1
8(f)	any **two** from: • reduction in LDL • reduction in (saturated) fats • reduces deposition of fat / cholesterol / LDL in walls of blood vessels **or** blood vessels less likely to be blocked with fat / cholesterol / LDL	allow improves LDL:HDL balance **or** LDL and HDL concentrations equal ignore less cholesterol ignore more HDL do **not** accept less HDL	2
Total			**8**

STEMUP.CO.UK

BLY1F

Question 9

question	answers	extra information	mark
9	(wbc) ingest / digest pathogens / bacteria / viruses	allow eat germs ignore swallow germs ignore ingest the disease ignore attack / kill the disease	1
	(wbc) produce antibodies		1
	(wbc) produce antitoxins		1
	any **one** from: • (antibodies) destroy or kill pathogens / bacteria / viruses / germs • (antitoxins) counteract / destroy / neutralise toxins / poisons • reasonable reference to memory cells **or** rapid production of antibodies upon re-infection	 ignore destroy / kill disease ignore attack / fight pathogens ignore attack / killing toxins	1
Total			**4**

The AQA UMS Conversion Calculator is available on the **Results statistics** page of the AQA Website.

STEMUP.CO.UK

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 2011

Science B
Unit Biology B1

BLY1F

F

Biology
Unit Biology B1

Written Paper

Thursday 13 January 2011 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.



STEMUP.CO.UK

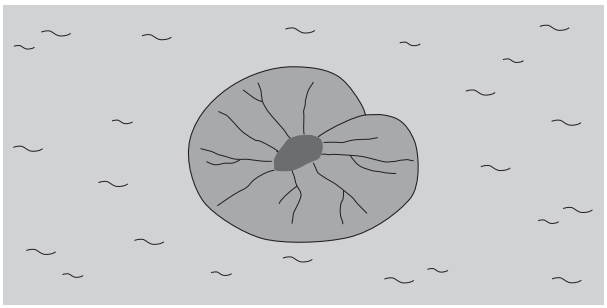
Do not write outside the box

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

1 Plants are adapted for survival in many different ways.

Use information from the drawings to answer each question.

1 (a) This plant lives in ponds. The leaves of the plant float on the surface of the water.



The leaf of this plant is adapted for floating on water.

Suggest how.

.....

.....

(1 mark)

1 (b) This plant lives in areas where a lot of snow falls.



The triangular shape helps the tree to survive in snowy conditions.

Suggest how.

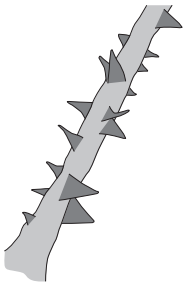
.....

.....

(1 mark)

Do not write outside the box

1 (c) This plant has sharp thorns on the stem.



Thorns help this plant survive.

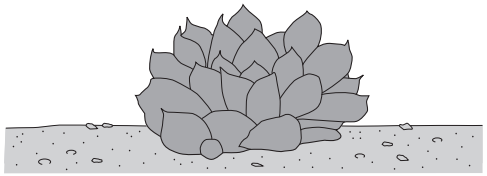
Suggest how.

.....

.....

(1 mark)

1 (d) This plant lives in very dry areas.



The swollen leaves help this plant to survive in very dry places.

Suggest how.

.....

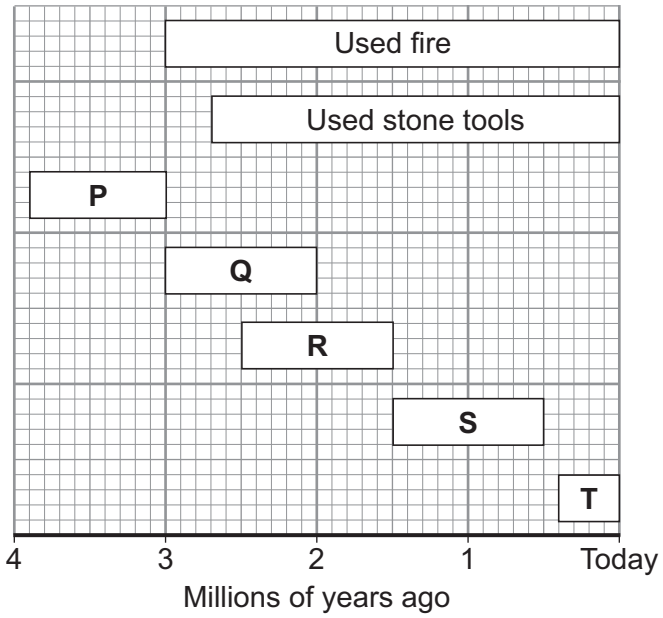
.....

(1 mark)

4

Do not write outside the box

2 The diagram shows a time line for the evolution of humans.



The letters **P**, **Q**, **R** and **S** show human ancestors.
The letter **T** shows modern humans.

2 (a) (i) How many millions of years ago did humans first use fire? ☐ millions of years ago

(1 mark)

2 (a) (ii) Which human ancestor, **P**, **Q**, **R** or **S**, was the first ancestor to use tools? ☐

(1 mark)

2 (a) (iii) For how many millions of years did human ancestor **R** live on Earth? ☐

(1 mark)

2 (b) How do we know that human ancestors **P**, **Q**, **R** and **S** lived on Earth?

.....

.....

(1 mark)

Do not write outside the box

2 (c) Which scientist suggested that humans have evolved from ape-like ancestors?

Draw a ring around **one** answer.

Darwin **Mendel** **Semmelweiss**

(1 mark)

5

Turn over for the next question

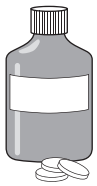
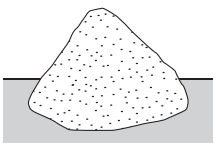
Do not write outside the box

3 Drugs affect our bodies.

3 (a) **List A** gives the names of four different substances.

List B gives information about different substances.

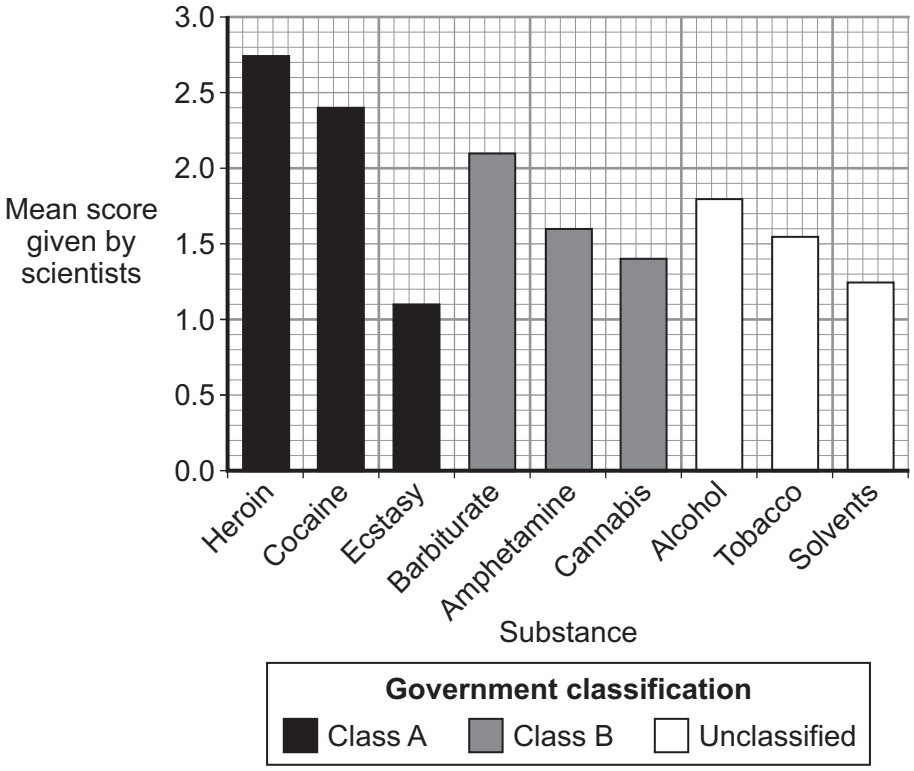
Draw **one** line from each substance in **List A** to the correct information about the substance in **List B**.

List A Substance	**List B Information**
Alcohol 	Used to treat bacterial diseases
Antibiotic 	A very addictive drug
Heroin 	May cause lung cancer
Cigarette smoke 	May cause babies to be born with abnormal limbs
	May cause liver disease

(4 marks)

Do not write outside the box

3 (b) A group of scientists was asked to say how much harm recreational drugs cause.
The scientists used a scale of 1–3, with 3 being the most harmful.
Their results are shown on the graph.
The government classifies drugs into three groups.
The groups are shown in the key below the graph.



3 (b) (i) Name the drug which **scientists** think is least harmful.

.....

(1 mark)

3 (b) (ii) In the government classification, class A drugs are the most harmful and unclassified drugs are the least harmful.

Does the government classification agree with the scientists' classification for **all** the drugs?

Draw a ring around your answer. **Yes / No**

Give **one** piece of evidence from the graph to support your answer.

.....

.....

(1 mark)

Question 3 continues on the next page

Turn over ▶

Do not write outside the box

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

People use recreational drugs

- to cure disease.
- to prevent diseases.
- for pleasure.

(1 mark)

7

Do not write outside the box

4 We can now produce organisms with the characteristics we want the organisms to have.

List A gives the names of four ways of producing organisms.

List B gives information about the ways of producing organisms.

Draw **one** line from each way of producing organisms in **List A** to the correct information in **List B**.

List A **Ways of producing organisms**	**List B** **Information**
	Taking part of the stem from a plant, then putting this part of the stem in wet soil in a plant pot.
Embryo transplantation	
	Growing groups of cells from a plant on special jelly.
Genetic engineering	
	Transferring genes from one organism to a different organism.
Taking cuttings	
	Growing plants from seeds in a garden.
Tissue culture	
	Separating groups of cells from a very young developing animal then putting the groups of cells into host mothers.

(4 marks)

4

Do not write outside the box

5 A balanced diet is needed to keep the body healthy.

5 (a) Obesity (being overweight) is linked to several diseases and conditions.

Which **three** of the following are strongly linked to obesity?

Tick (✓) **three** boxes.

Diabetes ☐

Irregular periods in women ☐

Heart disease ☐

Lung cancer ☐

Arthritis ☐

Lower resistance to infection ☐

(3 marks)

5 (b) The table gives information about six lunchtime meals.

	Meal	Energy in kilojoules	Fat in g (including saturated fat in g)	Salt in g	Sugar in g
A	Bacon double cheeseburger and regular fries	3241	40.0 (17.0)	1.4	5.0
B	3 pieces of chicken and regular fries	3626	47.1 (10.8)	3.5	1.4
C	New potato salad with smoked salmon and spinach	873	7.4 (1.5)	1.3	2.8
D	Meat feast pizza	3680	40.0 (14)	4.4	13.0
E	Poached salmon sandwich	1584	14.3 (2.3)	1.4	5.4
F	Club sandwich in Italian white bread	1380	5.4 (1.8)	2.3	5.8

Do not write outside the box

5 (b) (i) Which meal, **A**, **B**, **C**, **D**, **E** or **F**, contains least sugar? ☐

(1 mark)

5 (b) (ii) Which meal, **A**, **B**, **C**, **D**, **E** or **F**, contains most energy? ☐

(1 mark)

5 (c) The recommended daily amount of fat for a woman is 80g.

A woman eats meal **D**.

What proportion of the recommended daily amount of fat does she get?

.....

.....

(1 mark)

5 (d) (i) Which meal, **A**, **B**, **C**, **D, E** or **F**, is the healthiest? ☐

(1 mark)

5 (d) (ii) Give **two** reasons for your answer.

1 .....

.....

2 .....

.....

(2 marks)

9

Turn over for the next question

Do not write outside the box

6 The photograph shows water buffalo.
The water buffalo are being used to get a field ready for growing rice.



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

6 (a) Rice crops add to global warming because rice produces

methane.
oxygen.
sulfur dioxide.

(1 mark)

6 (b) Waste from the buffalo is spread on the rice fields.

This means that the farmer needs to use less

fertiliser.
herbicide.
pesticide.

(1 mark)

6 (c) Using buffalo instead of a tractor helps to save

biodiversity.
fuel.
trees.

(1 mark)

6 (d) Global warming is caused by

acid rain.
the greenhouse effect.
toxic chemicals.

(1 mark)

4

Do not write outside the box

7 In-vitro fertilisation (IVF) is used to help some women get pregnant.

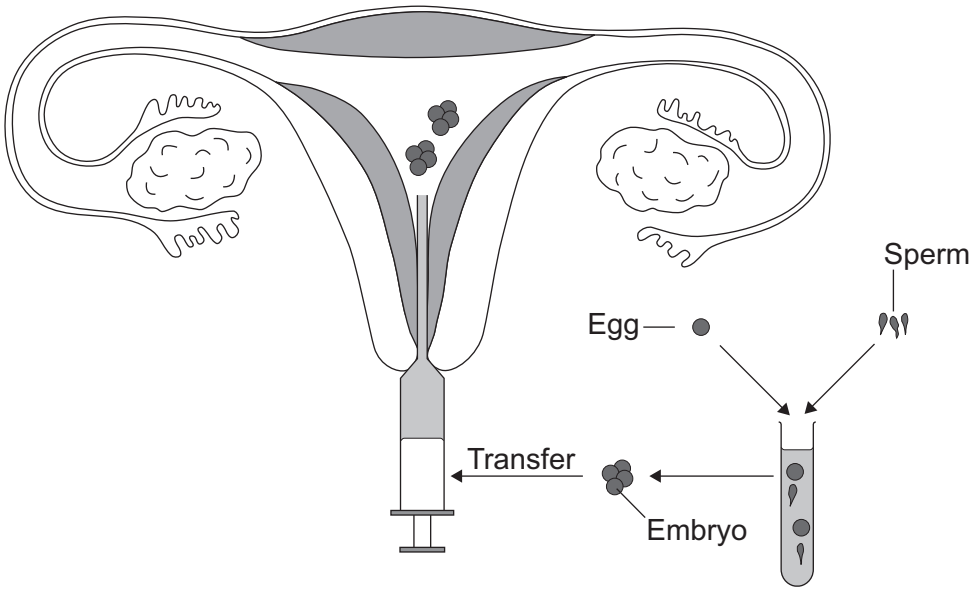
7 (a) Name the **two** hormones used in IVF treatment.

1 .....

2 .....

(2 marks)

7 (b) The diagram shows the process of IVF.



Describe the process of IVF. Use information from the diagram to help you.

.....

.....

.....

.....

.....

.....

.....

.....

.....

(4 marks)

6

Turn over ▶

Do not write outside the box

8 In the winter wild birds cannot find food easily.
A student carried out an investigation to find the best kind of food to put out for wild birds in winter.

- She nailed six black dishes to a piece of wood.
- She put 100g of a different type of seed into each dish.
- She placed the piece of wood in her garden.
- She observed the birds that visited each of the dishes before school, after school and at weekends.
- At the end of the investigation, she weighed the amount of each type of seed remaining.
- She also calculated the percentage of each type of seed that was eaten by the birds.

8 (a) Name **two** control variables in this investigation.

1 .....

2 .....

(2 marks)

8 (b) **Table 1** shows the number of bird visits to each dish of seeds that she recorded.

Table 1

Bird species	Number of visits to each dish of seeds					
	Corn	Niger	Safflower	Sunflower	Peanut	Millet
Morning Dove	12	10	6	13	2	10
Red-bellied Woodpecker	1	0	0	1	4	0
Dark-eyed Junco	3	6	1	4	0	3
Northern Cardinal	0	0	1	1	2	0
American Goldfinch	0	31	5	18	0	0
House Finch	1	5	23	19	1	3
House Sparrow	16	1	0	4	0	11
Total visits	33	53	36	60	9	27

8 (b) Which type of seed had visits from the greatest number of **different** bird species?

.....

(1 mark)

Do not write outside the box

8 (c) **Table 2** shows:

- the percentage of each type of seed eaten
- the percentage of fat in each type of seed.

Table 2

Type of seed	Percentage eaten	Percentage of fat
Corn	68	2
Niger	77	40
Safflower	86	3
Sunflower	91	35
Peanut	4	48
Millet	99	2

8 (c) (i) The girl concluded that the most popular seeds for the birds were the seeds with the highest percentage of fat.

Was her conclusion justified by the data in **Table 2**?

Draw a ring round your answer. **Yes / No**
Give a reason for your answer.

.....

.....

(1 mark)

8 (c) (ii) Most winter bird food for sale in shops contains niger and sunflower seeds.
Use the information in **Table 1** and **Table 2** to suggest **two** reasons why.

1 .....

.....

2 .....

.....

(2 marks)

6

END OF QUESTIONS

Do not write outside the box

There are no questions printed on this page

DO NOT WRITE ON THIS PAGE
ANSWER IN THE SPACES PROVIDED

ACKNOWLEDGEMENT OF COPYRIGHT-HOLDERS AND PUBLISHERS

Question 3 House of Commons Science and Technology Committee *Drug classification: making a hash of it?* July 2006
Parliamentary material is reproduced with the permission of the Controller of HMSO on behalf of Parliament
Question 6 Photo © Carl & Ann Purcell/CORBIS
Question 8 Courtesy American Museum of Natural History © 2008

Copyright © 2011 AQA and its licensors. All rights reserved.

Version : 28/02/2011

General Certificate of Secondary Education

Science B 4462 / Biology 4411

BLY 1F Unit Biology 1

Mark Scheme

2011 examination – January series

STEMUP.CO.UK

Mark schemes are prepared by the Principal Examiner and considered, together with the relevant questions, by a panel of subject teachers. This mark scheme includes any amendments made at the standardisation meeting attended by all examiners and is the scheme which was used by them in this examination. The standardisation meeting ensures that the mark scheme covers the candidates' responses to questions and that every examiner understands and applies it in the same correct way. As preparation for the standardisation meeting each examiner analyses a number of candidates' scripts: alternative answers not already covered by the mark scheme are discussed at the meeting and legislated for. If, after this meeting, examiners encounter unusual answers which have not been discussed at the meeting they are required to refer these to the Principal Examiner.

It must be stressed that a mark scheme is a working document, in many cases further developed and expanded on the basis of candidates' reactions to a particular paper. Assumptions about future mark schemes on the basis of one year's document should be avoided; whilst the guiding principles of assessment remain constant, details will change, depending on the content of a particular examination paper.

Further copies of this Mark Scheme are available to download from the AQA Website: www.aqa.org.uk

Copyright © 2011 AQA and its licensors. All rights reserved.

COPYRIGHT
AQA retains the copyright on all its publications. However, registered centres for AQA are permitted to copy material from this booklet for their own internal use, with the following important exception: AQA cannot give permission to centres to photocopy any material that is acknowledged to a third party even for internal use within the centre.

Set and published by the Assessment and Qualifications Alliance.

The Assessment and Qualifications Alliance (AQA) is a company limited by guarantee registered in England and Wales (company number 3644723) and a registered charity (registered charity number 1073334).
Registered address: AQA, Devas Street, Manchester M15 6EX

MARK SCHEME

Information to Examiners

1. General

The mark scheme for each question shows:

- the marks available for each part of the question
- the total marks available for the question
- the typical answer or answers which are expected
- extra information to help the Examiner make his or her judgement and help to delineate what is acceptable or not worthy of credit or, in discursive answers, to give an overview of the area in which a mark or marks may be awarded.

The extra information is aligned to the appropriate answer in the left-hand part of the mark scheme and should only be applied to that item in the mark scheme.

At the beginning of a part of a question a reminder may be given, for example: where consequential marking needs to be considered in a calculation; or the answer may be on the diagram or at a different place on the script.

In general the right hand side of the mark scheme is there to provide those extra details which confuse the main part of the mark scheme yet may be helpful in ensuring that marking is straightforward and consistent.

2. Emboldening

2.1 In a list of acceptable answers where more than one mark is available 'any **two** from' is used, with the number of marks emboldened. Each of the following lines is a potential mark.

2.2 A bold **and** is used to indicate that both parts of the answer are required to award the mark.

2.3 Alternative answers acceptable for a mark are indicated by the use of **or**. (Different terms in the mark scheme are shown by a / ; eg allow smooth / free movement.)

3. Marking points

3.1 Marking of lists

This applies to questions requiring a set number of responses, but for which candidates have provided extra responses. The general principle to be followed in such a situation is that 'right + wrong = wrong'.

Each error/contradiction negates each correct response. So, if the number of error/contradictions equals or exceeds the number of marks available for the question, no marks can be awarded.

However, responses considered to be neutral (indicated as * in example 1) are not penalised.

STEMUP.CO.UK

Example 1: What is the pH of an acidic solution? (1 mark)

Candidate	Response	Marks awarded
1	4,8	0
2	green, 5	0
3	red*, 5	1
4	red*, 8	0

Example 2: Name two planets in the solar system. (2 marks)

Candidate	Response	Marks awarded
1	Pluto, Mars, Moon	1
2	Pluto, Sun, Mars, Moon	0

3.2 Use of chemical symbols / formulae

If a candidate writes a chemical symbol / formula instead of a required chemical name, full credit can be given if the symbol / formula is correct and if, in the context of the question, such action is appropriate.

3.3 Marking procedure for calculations

Full marks can be given for a correct numerical answer, as shown in the column 'answers', without any working shown.

However if the answer is incorrect, mark(s) can be gained by correct substitution / working and this is shown in the 'extra information' column;

3.4 Interpretation of 'it'

Answers using the word 'it' should be given credit only if it is clear that the 'it' refers to the correct subject.

3.5 Errors carried forward

Any error in the answers to a structured question should be penalised once only.

Papers should be constructed in such a way that the number of times errors can be carried forward are kept to a minimum. Allowances for errors carried forward are most likely to be restricted to calculation questions and should be shown by the abbreviation e.c.f. in the marking scheme.

3.6 Phonetic spelling

The phonetic spelling of correct scientific terminology should be credited **unless** there is a possible confusion with another technical term.

3.7 Brackets

(…..) are used to indicate information which is not essential for the mark to be awarded but is included to help the examiner identify the sense of the answer required.

STEMUP.CO.UK

BLY 1F

Question 1

question	answers	extra information	mark
1(a)	large area	allow thin / large / big / flat / light allow adaptations that cannot be seen eg internal air spaces	1
1(b)	*(*shape means that*)* snow falls off		1
1(c)	protect / stop it being eaten		1
1(d)	stores*/* absorbs water (from other parts of the plant)	ignore absorbs water from soil / air ignore nutrients	1
Total			**4**

BLY1F

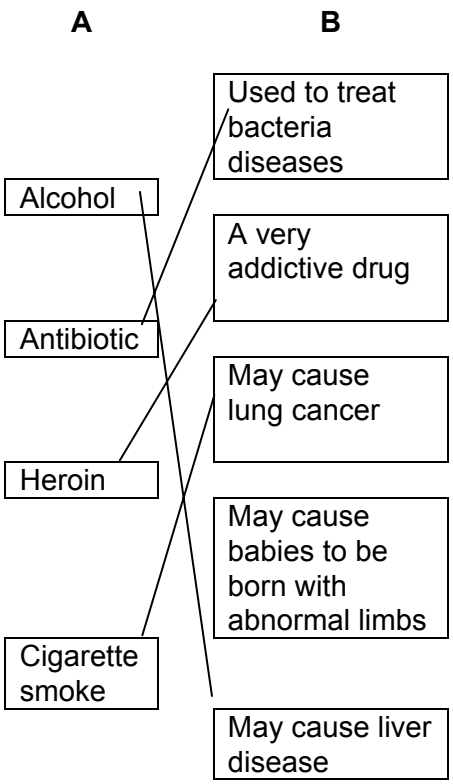
Question 2

question	answers	extra information	mark
2(a)(i)	3		1
2(a)(ii)	Q		1
2(a)(iii)	1		1
2(b)	from fossils / bones	allow artefacts / named artefacts / drawings / evidence of fires	1
2(c)	Darwin		1
Total			**5**

STEMUP.CO.UK

BLY1F

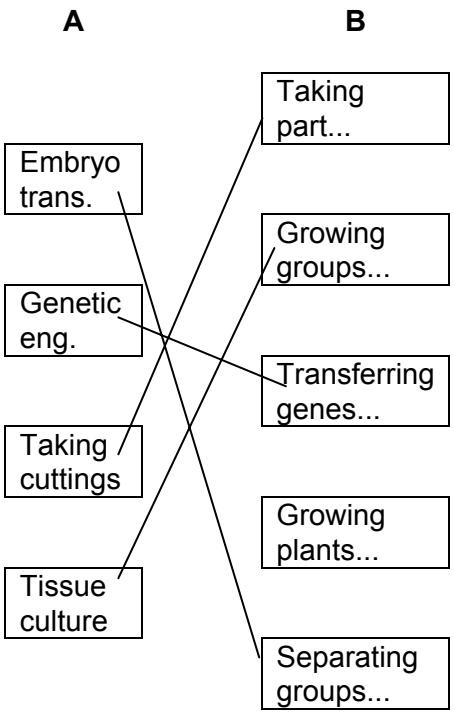
Question 3

question	answers	extra information	mark
3(a)		**1** mark for each correct line mark each line from left hand box two lines from left hand box cancels mark for that box	4
3(b)(i)	ecstasy		1
3(b)(ii)	(no) any **one** correct difference eg Ecstasy in Class A but least harmful according to scientists	accept reference to figures	1
3(c)	for pleasure		1
Total			**7**

STEMUP.CO.UK

BLY1F

Question 4

question	answers	extra information	mark
4		**1** mark for each correct line mark each line from left hand box two lines from left hand box cancels mark for that box	4
Total			**4**

STEMUP.CO.UK

BLY1F

Question 5

question	answers	extra information	mark
5(a)	diabetes heart disease arthritis	deduct **1** mark for each box over 3 ticked	1 1 1
5(b)(i)	B		1
5(b)(ii)	D		1
5(c)	1/2 **or** equivalent fraction **or** half **or** 50%		1
5(d)(i)	C		1
5(d)(ii)	any **two** from: • least / low (saturated) fat • low / least salt • least energy / least kilojoules	ignore unqualified references to figures ignore references to sugar	2
Total			**9**

BLY1F

Question 6

question	answers	extra information	mark
6(a)	methane		1
6(b)	fertiliser		1
6(c)	fuel		1
6(d)	the greenhouse effect		1
Total			**4**

STEMUP.CO.UK

BLY1F

Question 7

question	answers	extra information	mark
7(a)	FSH / follicle stimulating hormone LH / luteinizing hormone	allow FHS either order	1 1
7(b)	any **four** from: • egg(s) collected from ovary • (eggs) mixed with sperm **or** fertilisation occurs • fertilised egg divides • embryo formed • *(*embryos*)* inserted into womb / uterus • FSH matures egg **and** LH releases eggs	 allow eggs and sperm put into tube ignore references to vagina	4
Total			**6**

STEMUP.CO.UK

BLY1F

Question 8

question	answers	extra information	mark
8(a)	any **two** from: • colour of dish **or** all dishes black • (same) amount of each seed • position of dishes **or** all dishes in same place / garden • time observed / visited / left	ignore size of dish ignore wood	2
8(b)	sunflower		1
8(c)(i)	(No) named seed does not fit pattern **or** millet / safflower / corn eaten a lot but have little fat **or** the seed with the highest percentage eaten has least fat	 accept converse	1
8(c)(ii)	table 1 mark • highest number of visitors **or** large range of visitors table 2 mark • high percentage eaten **or** contain high fat for energy / insulation	allow separate references to sunflower and niger allow most popular allow most eaten	 1 1
Total			**6**

STEMUP.CO.UK

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	
9	
TOTAL	

General Certificate of Secondary Education
Foundation Tier
June 2010

Science B
Unit Biology B1

BLY1F

F

Biology
Unit Biology B1

Written Paper

Wednesday 9 June 2010 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.

STEMUP.CO.UK

Do not write outside the box

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

Do not write outside the box

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 ▶

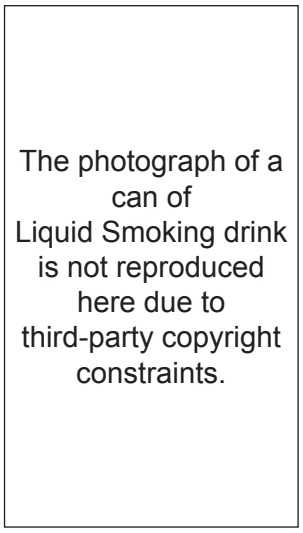
Do not write outside the box

There are no questions printed on this page

DO NOT WRITE ON THIS PAGE
ANSWER IN THE SPACES PROVIDED

Do not write outside the box

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.

1 .....

.....

2 .....

.....

(2 marks)

3 (b) Why do cigarette smokers need a *fix*?

.....

.....

(1 mark)

3

Turn over ▶

Do not write outside the box

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 box to complete the sentences about inheritance in rabbits.

characteristic	**chromosome**	**gene**	**gamete**

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

(1 mark)

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

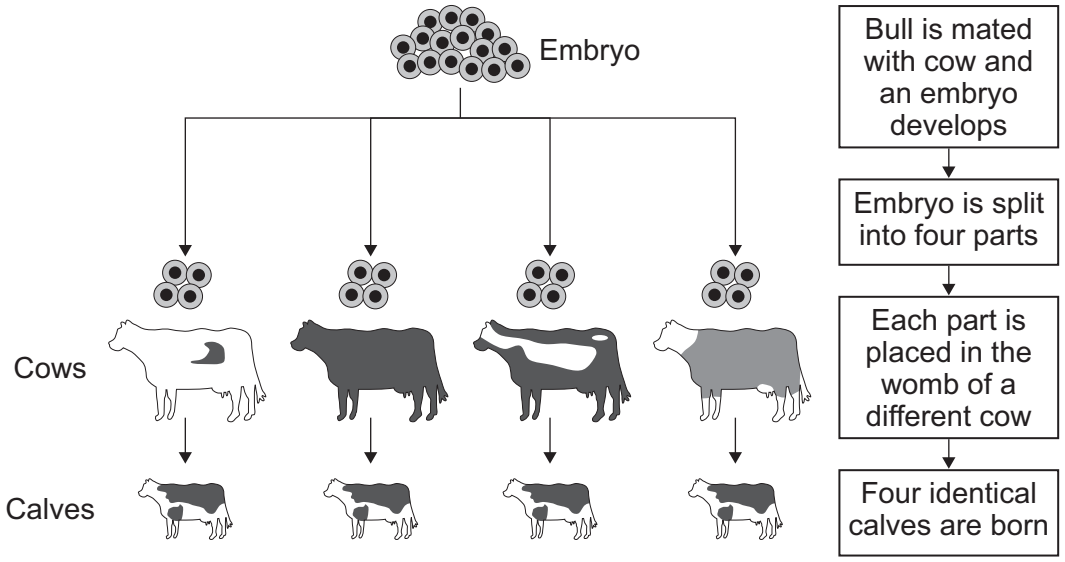
(1 mark)

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

(1 mark)

Do not write outside the box

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



Use words from the box to complete the sentences.

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 ..... .

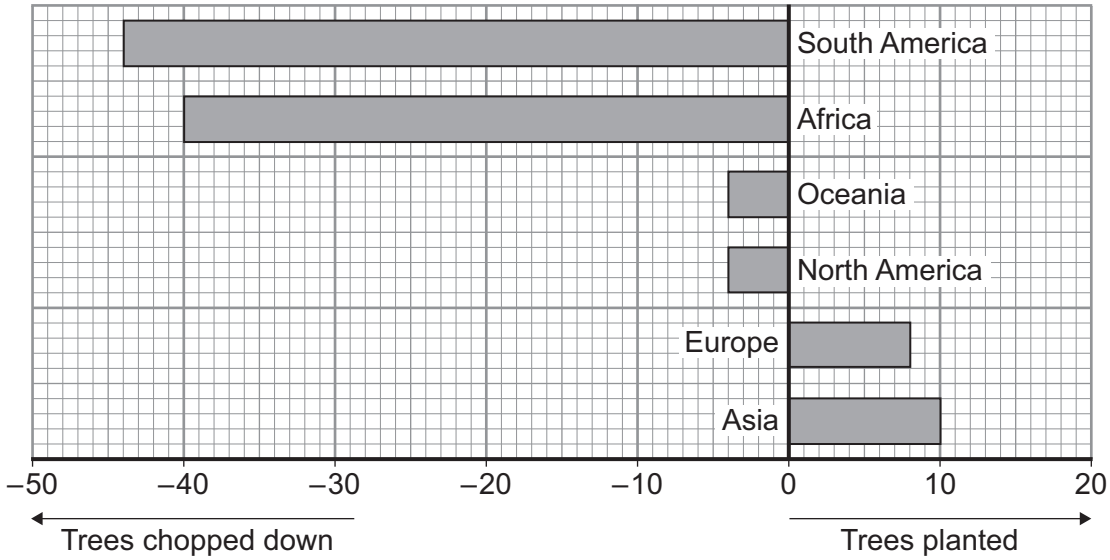
(3 marks)

6

Do not write outside the box

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.



Change in area of forest in thousands of km^2 per year

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

Area = ... thousand km^2

(1 mark)

5 (a) (ii) Use **Steps 1**, **2** and **3** to calculate the total change to the area of forest each year.

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

Do not write outside the box

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

(3 marks)

5 (b) Draw a ring around the correct answer to complete each sentence.

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

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

(1 mark)

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

- lichens.
- microorganisms.
- plants.

(1 mark)

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

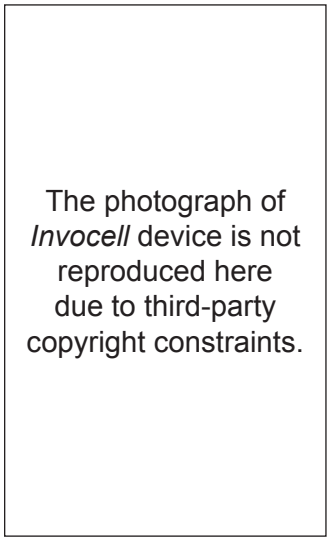
- carbon dioxide.
- methane.
- oxygen.

(1 mark)

7

Do not write outside the box

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

Do not write outside the box

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.

1 .....

.....

2 .....

.....

(2 marks)

6 (b) Give **two** disadvantages of *Invocell* IVF treatment compared with standard IVF treatment.

1 .....

.....

2 .....

.....

(2 marks)

4

Turn over for the next question

Do not write outside the box

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.

Suggest an explanation for this.

.....

.....

.....

.....

.....

(2 marks)

Do not write outside the box

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?

Global warming ☐

Natural selection ☐

Sustainability ☐

(1 mark)

7 (c) (ii) Which scientist proposed this theory?

Darwin ☐

Lamarck ☐

Semmelweiss ☐

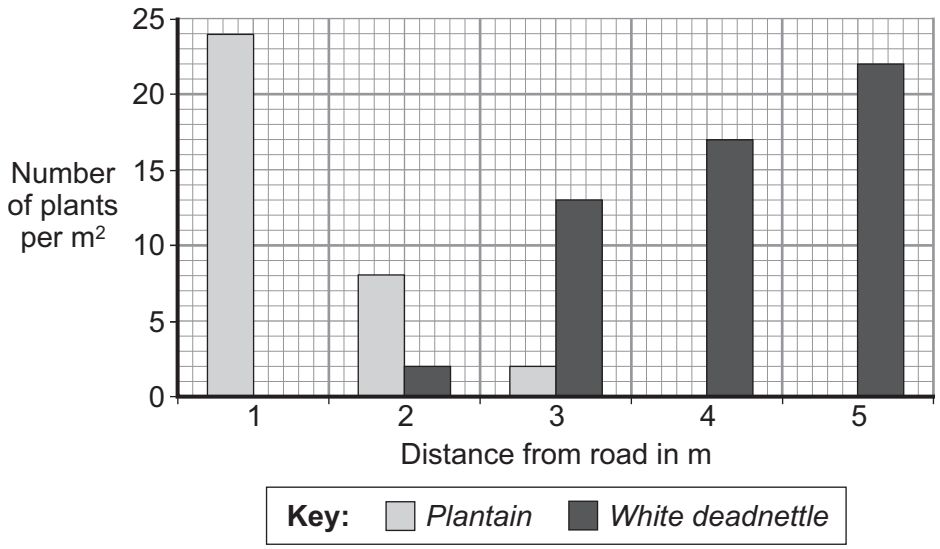
(1 mark)

5

Turn over for the next question

Do not write outside the box

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)

Do not write outside the box

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

Turn over for the next question

Do not write outside the box

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

ACKNOWLEDGEMENT OF COPYRIGHT-HOLDERS AND PUBLISHERS

Permission to reproduce all copyright material has been applied for. In some cases, efforts to contact copyright-holders have been unsuccessful and AQA will be happy to rectify any omissions of acknowledgements in future papers if notified.

Question 1 www.cafepress.co.uk
Question 2 Photo: BRIAN P. KENNEY, Oxford Scientific
Question 3 www.liquidsmoking.com
Question 4 Photo: © COREY HOCHACHKA/Design Pics/Corbis
Question 6 www.invo-bioscience.com
Question 7 Photo: © DAVID A. NORTHCOTT/Corbis

Copyright © 2010 AQA and its licensors. All rights reserved.

Version: 09/08/2010

General Certificate of Secondary Education

Science B 4462 / Biology 4411

BLY1F Unit Biology 1

Mark Scheme

2010 Examination – June Series

STEMUP.CO.UK

Mark schemes are prepared by the Principal Examiner and considered, together with the relevant questions, by a panel of subject teachers. This mark scheme includes any amendments made at the standardisation meeting attended by all examiners and is the scheme which was used by them in this examination. The standardisation meeting ensures that the mark scheme covers the candidates' responses to questions and that every examiner understands and applies it in the same correct way. As preparation for the standardisation meeting each examiner analyses a number of candidates' scripts: alternative answers not already covered by the mark scheme are discussed at the meeting and legislated for. If, after this meeting, examiners encounter unusual answers which have not been discussed at the meeting they are required to refer these to the Principal Examiner.

It must be stressed that a mark scheme is a working document, in many cases further developed and expanded on the basis of candidates' reactions to a particular paper. Assumptions about future mark schemes on the basis of one year's document should be avoided; whilst the guiding principles of assessment remain constant, details will change, depending on the content of a particular examination paper.

Further copies of this Mark Scheme are available to download from the AQA Website: www.aqa.org.uk

Copyright © 2010 AQA and its licensors. All rights reserved.

COPYRIGHT
AQA retains the copyright on all its publications. However, registered centres for AQA are permitted to copy material from this booklet for their own internal use, with the following important exception: AQA cannot give permission to centres to photocopy any material that is acknowledged to a third party even for internal use within the centre.

Set and published by the Assessment and Qualifications Alliance.

The Assessment and Qualifications Alliance (AQA) is a company limited by guarantee registered in England and Wales (company number 3644723) and a registered charity (registered charity number 1073334).
Registered address: AQA, Devas Street, Manchester M15 6EX

Marking Guidance for Examiners

GCSE Science Papers

1. General

The mark scheme for each question shows:

- the marks available for each part of the question
- the total marks available for the question
- the typical answer or answers which are expected
- extra information to help the Examiner make his or her judgement and help to delineate what is acceptable or not worthy of credit or, in discursive answers, to give an overview of the area in which a mark or marks may be awarded.

The extra information is aligned to the appropriate answer in the left-hand part of the mark scheme and should only be applied to that item in the mark scheme.

At the beginning of a part of a question a reminder may be given, for example:

where consequential marking needs to be considered in a calculation;

or the answer may be on the diagram or at a different place on the script.

In general the right hand side of the mark scheme is there to provide those extra details which confuse the main part of the mark scheme yet may be helpful in ensuring that marking is straightforward and consistent.

2. Emboldening

2.1 In a list of acceptable answers where more than one mark is available 'any **two** from' is used, with the number of marks emboldened. Each of the following lines is a potential mark.

2.2 A bold **and** is used to indicate that both parts of the answer are required to award the mark.

2.3 Alternative answers acceptable for a mark are indicated by the use of **or**. (Different terms in the mark scheme are shown by a / ; eg allow smooth / free movement.)

3. Marking points

3.1 Marking of lists

This applies to questions requiring a set number of responses, but for which candidates have provided extra responses. The general principle to be followed in such a situation is that 'right + wrong = wrong'.

Each error/contradiction negates each correct response. So, if the number of error/contradictions equals or exceeds the number of marks available for the question, no marks can be awarded.

However, responses considered to be neutral (indicated as * in example 1) are not penalised.

STEMUP.CO.UK

Example 1: What is the pH of an acidic solution? (1 mark)

Candidate	Response	Marks awarded
1	4,8	0
2	green, 5	0
3	red*, 5	1
4	red*, 8	0

Example 2: Name two planets in the solar system. (2 marks)

Candidate	Response	Marks awarded
1	Pluto, Mars, Moon	1
2	Pluto, Sun, Mars, Moon	0

3.2 Use of chemical symbols / formulae

If a candidate writes a chemical symbol / formula instead of a required chemical name, full credit can be given if the symbol / formula is correct and if, in the context of the question, such action is appropriate.

3.3 Marking procedure for calculations

Full marks can be given for a correct numerical answer, as shown in the column 'answers', without any working shown.

However if the answer is incorrect, mark(s) can be gained by correct

substitution / working and this is shown in the 'extra information' column;

3.4 Interpretation of 'it'

Answers using the word 'it' should be given credit only if it is clear that the 'it' refers to the correct subject.

3.5 Errors carried forward

Any error in the answers to a structured question should be penalised once only.

Papers should be constructed in such a way that the number of times errors can be carried forward are kept to a minimum. Allowances for errors carried forward are most likely to be restricted to calculation questions and should be shown by the abbreviation e.c.f. in the marking scheme.

3.6 Phonetic spelling

The phonetic spelling of correct scientific terminology should be credited **unless** there is a possible confusion with another technical term.

3.7 Brackets

(…..) are used to indicate information which is not essential for the mark to be awarded but is included to help the examiner identify the sense of the answer required.

STEMUP.CO.UK

BLY 1F

Question 1

question	answers	extra information	mark
1(a)	proteins		1
1(b)	heart disease		1
1(c)	high blood pressure		1
1(d)	irregular periods		1
Total			**4**

STEMUP.CO.UK

BLY 1F

Question 2

question	answers	extra information	mark
2(a)	digging /getting to insects		1
2(b)	catching insects / food / insects stick to the tongue		1
2(c)	hear insects / predators		1
2(d)	stop soil / dust / insects getting in		1
Total			**4**

STEMUP.CO.UK

BLY 1F

Question 3

question	answers	extra information	mark
3(a)	any **two** from: • tar / carcinogen **or** causes cancer • other correctly named disease • blood carries less oxygen /contains carbon monoxide • low birth mass • allow references to effect on cilia / mucus build up	 eg bronchitis / emphysema / heart disease / blood vessel disease allow harms unborn baby	2
3(b)	any **one** from: • addicted to tobacco / nicotine • withdrawal symptoms • body chemistry altered	 ignore needs / relies on / dependent	1
Total			**3**

STEMUP.CO.UK

BLY 1F

Question 4

question	answers	extra information	mark
4(a)(i)	characteristic		1
4(a)(ii)	gene		1
4(a)(iii)	gamete		1
4(b)	sexual asexual clones		1 1 1
Total			**6**

STEMUP.CO.UK

BLY 1F

Question 5

question	answers	extra information	mark
5(a)(i)	40	accept –40 or +40	1
5(a)(ii)	**Step 1** 92 **Step 2** 18 **Step 3** 74	 correct subtraction of answer in **step 2** from answer in **step 1** gains **1** mark correct answer 74 with no working gains **3** marks ignore sign	1 1 1
5(b)(i)	both animals and plants		1
5(b)(ii)	microorganisms		1
5(b)(iii)	carbon dioxide		1
Total			**7**

STEMUP.CO.UK

BLY 1F

Question 6

question	answers	extra information	mark
6(a)	costs less no / less equipment needed		1 1
6(b)	any **two** from: • lower success rate / only 19.7% success rate • not all cases can be treated **or** only 50% of cases can be treated • embryo can't be seen until third day		2
Total			**4**

STEMUP.CO.UK

BLY 1F

Question 7

question	answers	extra information	mark
7(a)	predation / eaten	ignore competition	1
7(b)	could run faster / jump higher / climb better to escape / or escape describe		1 1
7(c)(i)	natural selection		1
7(c)(ii)	Darwin		1
Total			**5**

STEMUP.CO.UK

BLY 1F

Question 8

question	answers	extra information	mark
8(a)(i)	quadrat / grid	allow suitable description in a(i) or a(ii) allow quadrant	1
8(a)(ii)	any **two** from: • use a transect / description • sample every metre • count plants (in quadrat)	allow measure distance of the test or sample site from road ignore random placing of quadrat	2
8(a)(iii)	the nearer to the road, the more (plantain) plants	accept the more dead nettles the less plantains	1

Question 8 continues on the next page

STEMUP.CO.UK

BLY 1F

Question 8 continued

question	answers	extra information	mark
8(b)(i)	any **two** factors from: eg • grow better / survive away from road • sensitive to pollutant / named pollutant / dust / fumes • (roadside) weedkillers • trampling /damage / turbulence • grass cutting • competition • aspect eg hillier **or** give **one** mark for a factor and **one** mark for its effect eg dust (from road) (1) reduces photosynthesis (1) **or** 'loses' in competition (1) for light / water / nutrients / minerals / ions / space / soil (1)	ignore carbon dioxide as pollutant ignore food for plants	2

Question 8 continues on the next page

STEMUP.CO.UK

BLY 1F

Question 8 continued

question	answers	extra information	mark
8(b)(ii)	any **two** factors eg • can withstand pollution • competition • aspect eg flat **or** give **one** mark for a factor and **one** mark for its effect eg use carbon dioxide (from traffic) (1) enhances photosynthesis (1) **or** 'wins' in competition (1) for light / water / nutrients / minerals / ions / space (1)	ignore distribution allow grows better in polluted air ignore 'prefer' pollution ignore food for plants	2
Total			**8**

STEMUP.CO.UK

BLY 1F

Question 9

question	answers	extra information	mark
9(a)	worldwide **or** several countries (outbreak)	ignore affects large numbers of people	1
9(b)	any **three** from • new strain of flu / virus changes / virus different • vaccination not effective **or** new vaccine not yet developed • antiviral drugs not effective / not yet developed • *people* not immune to it • virus not recognised by white blood cells / antibodies **or** antibodies / antitoxins not effective • people / animals travel between countries / abroad spreading infection	ignore mutation allow resistant / immune to vaccine allow drugs / treatment not effective do **not** allow antibiotics not effective allow people not resistant accept no antibodies / antitoxins ignore white blood cells / antibodies fighting off	*3*
Total			**4**

STEMUP.CO.UK

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	
TOTAL	

General Certificate of Secondary Education
Foundation Tier
January 2010

Science B
Unit Biology B1

BLY1F

F

Biology
Unit Biology B1

Written Paper

Thursday 14 January 2010 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. 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 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.

STEMUP.CO.UK

There are no questions printed on this page

DO NOT WRITE ON THIS PAGE
ANSWER IN THE SPACES PROVIDED

Areas outside the box will not be scanned for marking

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

1 The photograph shows teenagers enjoying burgers and cola at a party.



1 (a) Which part of the body contains receptors which enable a teenager to:

1 (a) (i) see the burgers

.....

(1 mark)

1 (a) (ii) smell the burgers

.....

(1 mark)

1 (a) (iii) taste the burgers?

.....

(1 mark)

Question 1 continues on the next page

Turn over ▶

Areas outside the box will not be scanned for marking

1 (b) (i) A teenager drinks a can of sugary cola every day. After a year, he is likely to be 6 kg heavier than a similar teenager who drinks low-sugar cola.

Give **one** reason why.

.....

.....

.....

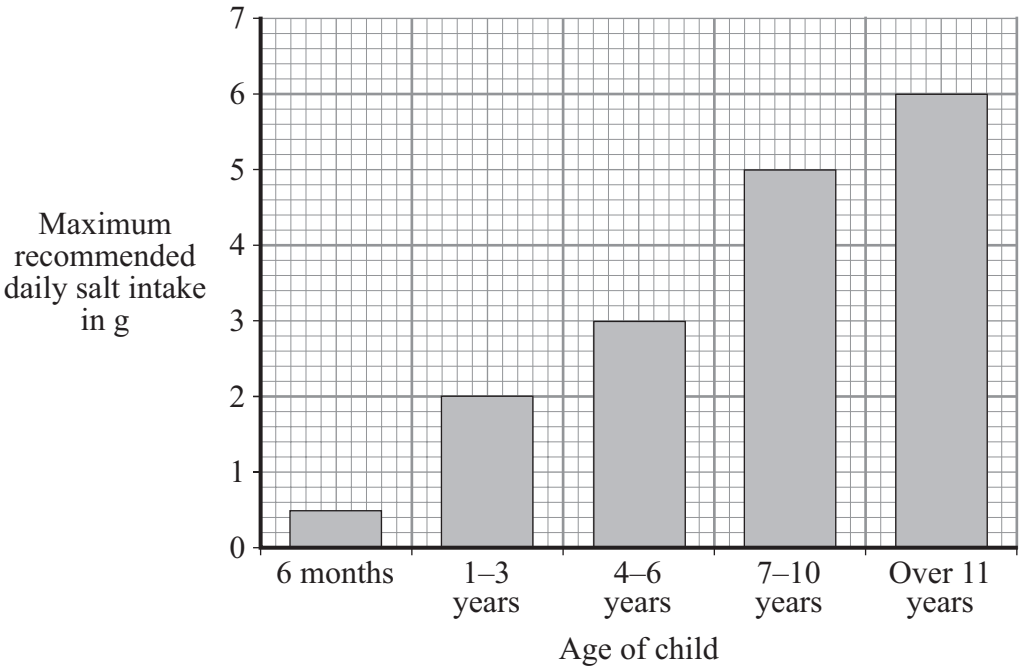
(1 mark)

1 (b) (ii) Name **one** disease linked to obesity.

.....

(1 mark)

1 (c) The graph shows the maximum recommended daily salt intake for children of different ages.



1 (c) (i) What is the maximum recommended daily salt intake for a 6 month-old child?

..... g

(1 mark)

Areas outside the box will not be scanned for marking

1 (c) (ii) A 6 year-old child has burger, beans and crisps for lunch.

The table shows the mass of salt in each of these foods.

Food	Mass of salt in g
Burger	0.8
Beans	0.9
Crisps	1.4

How much more salt has the 6 year-old child eaten than the maximum recommended daily mass?

Show clearly how you work out your answer.

.....

.....

.....

..... g

(2 marks)

1 (c) (iii) Name **one** health problem linked to too much salt in the diet.

.....

(1 mark)

9

Turn over for the next question

Areas outside the box will not be scanned for marking

2 The photograph shows a snowy owl.



- The snowy owl lives in the Arctic.
- It eats small mammals such as mice.

How does each of the following adaptations help the snowy owl to survive?

2 (a) Its feathers are white.

.....

.....

(1 mark)

2 (b) It has a thick covering of feathers.

.....

.....

(1 mark)

Areas outside the box will not be scanned for marking

2 (c) It makes no sound when it flies.

.....

.....

(1 mark)

2 (d) It has long, sharp claws.

.....

.....

(1 mark)

4

Turn over for the next question

Areas outside the box will not be scanned for marking

3 Vaccines protect us against diseases.

3 (a) Against which **three** diseases does the MMR vaccine protect us?

Tick (✓) **three** boxes.

Malaria ☐

Measles ☐

Meningitis ☐

Mumps ☐

Rabies ☐

Rubella ☐

(3 marks)

3 (b) Draw a ring around the correct word to complete the sentence.

Vaccines cause white blood cells to produce

antibodies.

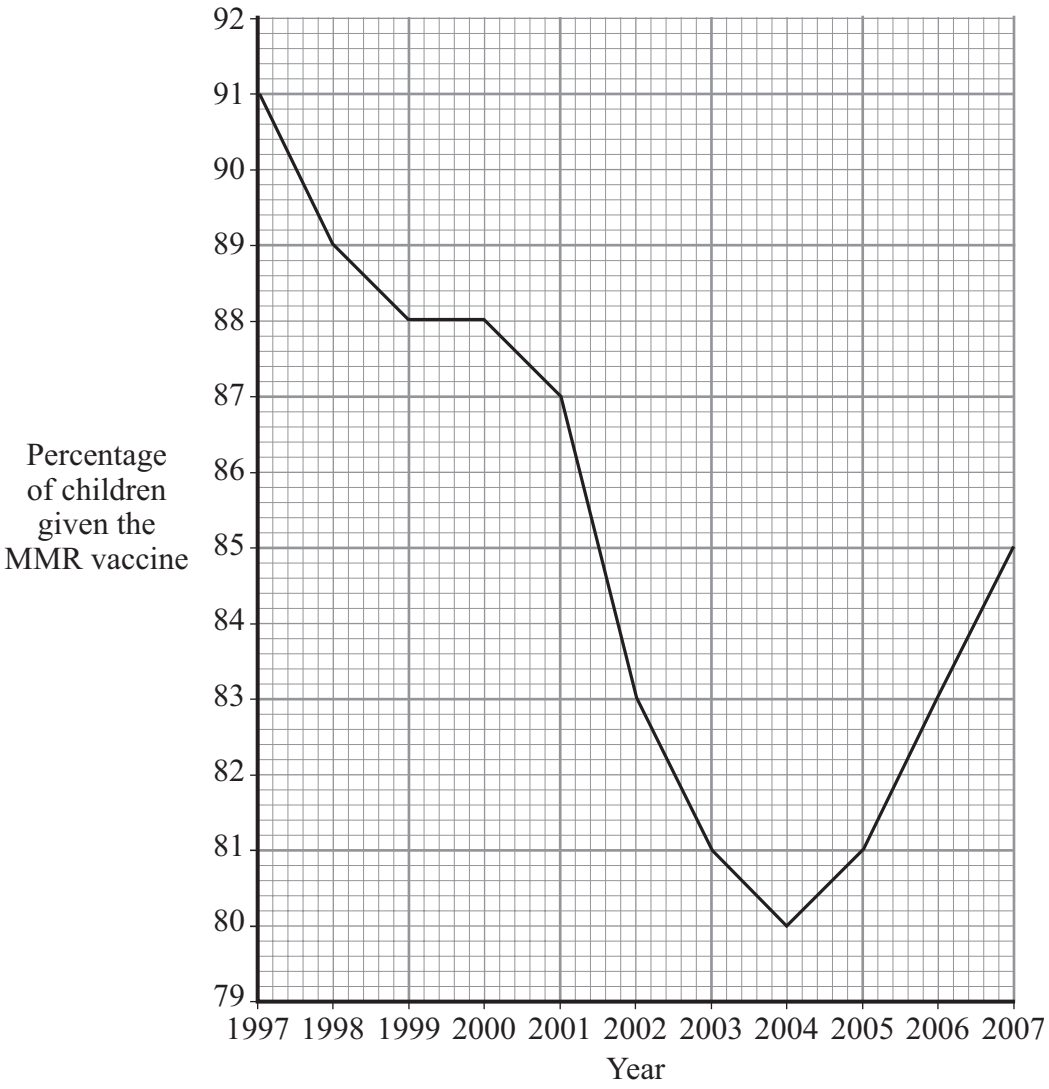
cholesterol.

penicillin.

(1 mark)

Areas outside the box will not be scanned for marking

The graph shows the percentage of children given the MMR vaccine in the UK between 1997 and 2007.



3 (c) (i) Describe the pattern shown by the data on the graph.

.....

.....

.....

.....

(2 marks)

3 (c) (ii) Suggest **one** explanation for the change in the percentage of children given the MMR vaccine between 1997 and 2004.

.....

.....

(1 mark)

7

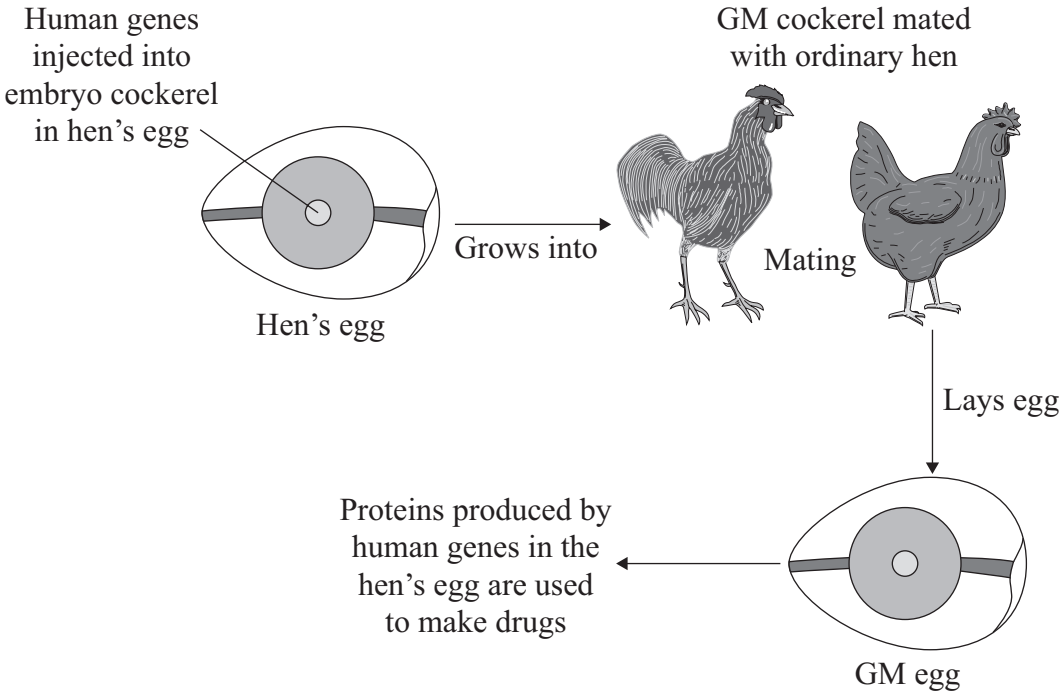
Turn over ▶

Areas outside the box will not be scanned for marking

4 Scientists have discovered how to produce genetically modified (GM) hens' eggs.

Some proteins produced in GM eggs can be used as drugs to treat humans.

The diagram shows how this is done.



4 (a) Which type of reproduction is involved when the cockerel mates with the hen?

Tick (✓) **one** box.

Asexual ☐

Cloning ☐

Sexual ☐

(1 mark)

4 (b) From which part of a human are the genes cut?

Tick (✓) **one** box.

Chromosome ☐

Embryo ☐

Gland ☐

(1 mark)

Areas outside the box will not be scanned for marking

4 (c) Read the information about genetically modified animals.

- GM animals might escape and breed with wild animals.
- Genetic modification can produce fast-growing animals for food.
- Genetic modification can be used to clone animals in danger of extinction.
- Using GM animals can reduce the number of animals used in medical research.
- Animals have the right to be free from genetic modification.

Use **only** this information to answer these questions.

4 (c) (i) Give **two** reasons why many people are in favour of genetically modified animals.

1 .....

.....

2 .....

.....

(2 marks)

4 (c) (ii) Give **two** reasons why many people are against genetically modified animals.

1 .....

.....

2 .....

.....

(2 marks)

6

Turn over for the next question

Areas outside the box will not be scanned for marking

5 Medicinal drugs are used to treat diseases.

5 (a) Draw **one** line from each drug to its correct use.

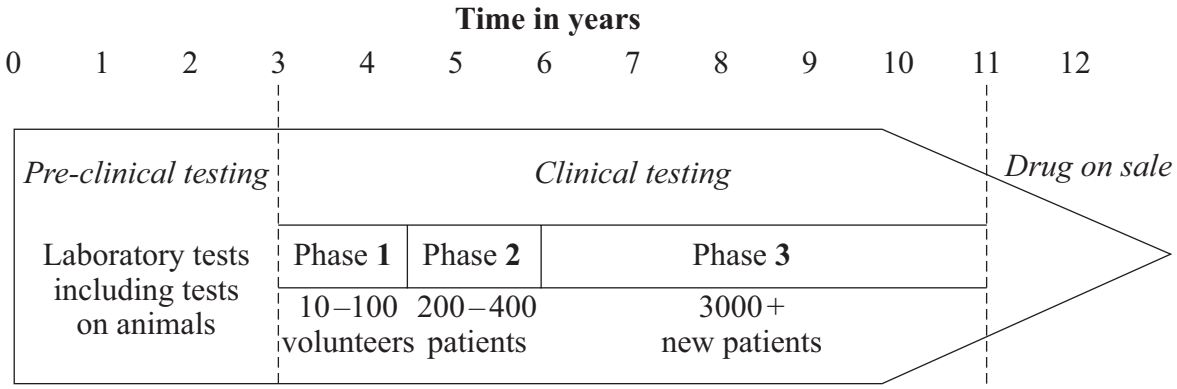
Drug	**Use**
Painkiller	Used as a fertility drug
Statin	Used to relieve disease symptoms
Thalidomide	Used to treat leprosy
	Used to lower blood cholesterol

(3 marks)

Areas outside the box will not be scanned for marking

5 (b) New drugs need to be tested before going on sale.

The diagram shows a time line for the testing of a new drug.



5 (b) (i) How long do trials on humans take? ..... years

(1 mark)

5 (b) (ii) What is the minimum number of humans the drug is tested on throughout *clinical testing*?

.....

(1 mark)

5 (c) Draw a ring around the correct answer to complete each sentence.

5 (c) (i) A new drug is first tested in the laboratory to find

if it is toxic.

if it is cost effective.

the optimum dose.

(1 mark)

5 (c) (ii) The drug is then tested on a few volunteers to find

if it is cost effective.

if it has side effects.

the optimum dose.

(1 mark)

7

Turn over ▶

Areas outside the box will not be scanned for marking

6 Charles Darwin proposed the theory of natural selection.

6 (a) What is meant by natural selection?

.....

.....

.....

.....

(2 marks)

6 (b) The drawings show stages in the evolution of the human skeleton.

All the drawings are to the same scale.



Ape-like ancestor ⟶ Modern human

Use information from the drawings to describe **two** trends in the evolution of the human skeleton.

1 .....

.....

2 .....

.....

(2 marks)

Areas outside the box will not be scanned for marking

6 (c) Darwin said that humans had evolved from ape-like ancestors.
Many people disagreed with him at the time.

Give **two** reasons why.

1 .....

.....

2 .....

.....

(2 marks)

6 (d) Lamarck's theory of evolution stated that useful changes which occur in an organism during its lifetime will be inherited by its offspring.

Give **one** way in which Darwin's theory differs from Lamarck's.

.....

.....

(1 mark)

7

Turn over for the next question

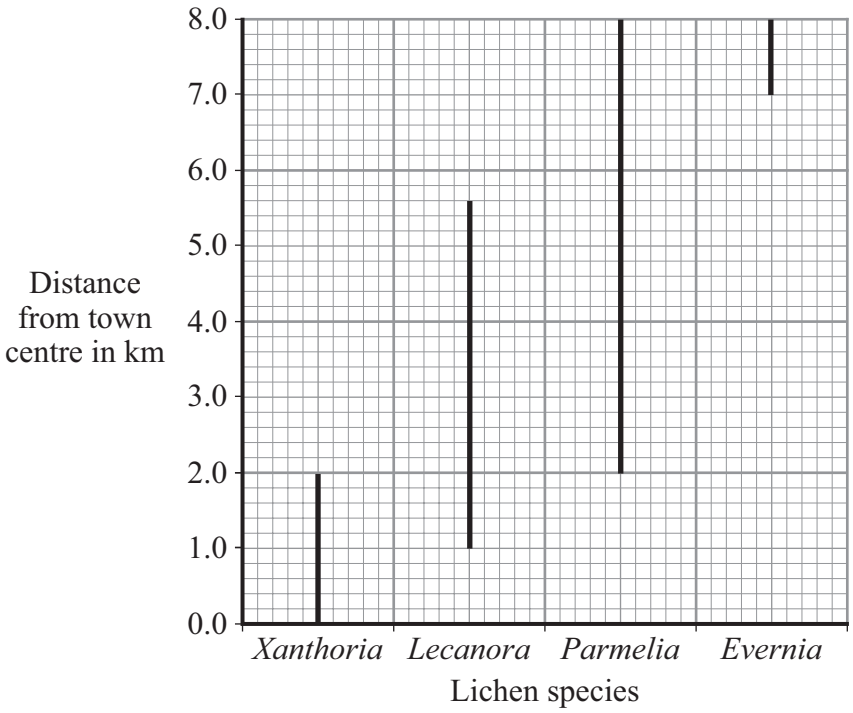
Areas outside the box will not be scanned for marking

7 Lichens are sensitive to the amount of sulfur dioxide in the atmosphere. They are used as indicator species for the amount of air pollution. Air pollution is generally higher in town centres than in the countryside.

Students investigated the relationship between lichen species and distance from a town centre.

- On a map, they drew a transect (line) from the centre of the town to the countryside.
- They examined sites every 200 metres along the transect (line).
- At each site, they recorded the lichen species growing on trees and walls up to a height of 2 metres.

The graph shows their results.
The lines on the graph indicate the range of each lichen species.



7 (a) Give **one** way in which the students could have obtained more accurate results.

.....

.....

(1 mark)

Areas outside the box will not be scanned for marking

7 (b) (i) Which lichen species was found over the greatest range?

.....

(1 mark)

7 (b) (ii) Which lichen species grows only in the least polluted air?

.....

(1 mark)

7 (c) One student concluded 'You can tell how much sulfur dioxide there is in the air by the amount of *Lecanora* growing'.

Give **two** reasons why this is **not** a valid conclusion.

1 .....

.....

2 .....

.....

(2 marks)

5

END OF QUESTIONS

There are no questions printed on this page

DO NOT WRITE ON THIS PAGE
ANSWER IN THE SPACES PROVIDED

There are no questions printed on this page

DO NOT WRITE ON THIS PAGE
ANSWER IN THE SPACES PROVIDED

There are no questions printed on this page

DO NOT WRITE ON THIS PAGE
ANSWER IN THE SPACES PROVIDED

ACKNOWLEDGEMENT OF COPYRIGHT-HOLDERS AND PUBLISHERS

Question 1 Photograph: © Greg Hinsdale/Corbis
Question 2 Photograph: © Herbert Kehrer/zefa/Corbis

Copyright © 2010 AQA and its licensors. All rights reserved.

Version : 09/03/2010

General Certificate of Secondary Education

Science B 4462 / Biology 4411

BLY 1F Unit Biology 1

Mark Scheme

2010 examination – January series

STEMUP.CO.UK

Mark schemes are prepared by the Principal Examiner and considered, together with the relevant questions, by a panel of subject teachers. This mark scheme includes any amendments made at the standardisation meeting attended by all examiners and is the scheme which was used by them in this examination. The standardisation meeting ensures that the mark scheme covers the candidates' responses to questions and that every examiner understands and applies it in the same correct way. As preparation for the standardisation meeting each examiner analyses a number of candidates' scripts: alternative answers not already covered by the mark scheme are discussed at the meeting and legislated for. If, after this meeting, examiners encounter unusual answers which have not been discussed at the meeting they are required to refer these to the Principal Examiner.

It must be stressed that a mark scheme is a working document, in many cases further developed and expanded on the basis of candidates' reactions to a particular paper. Assumptions about future mark schemes on the basis of one year's document should be avoided; whilst the guiding principles of assessment remain constant, details will change, depending on the content of a particular examination paper.

Further copies of this Mark Scheme are available to download from the AQA Website: www.aqa.org.uk

Copyright © 2010 AQA and its licensors. All rights reserved.

COPYRIGHT
AQA retains the copyright on all its publications. However, registered centres for AQA are permitted to copy material from this booklet for their own internal use, with the following important exception: AQA cannot give permission to centres to photocopy any material that is acknowledged to a third party even for internal use within the centre.

Set and published by the Assessment and Qualifications Alliance.

The Assessment and Qualifications Alliance (AQA) is a company limited by guarantee registered in England and Wales (company number 3644723) and a registered charity (registered charity number 1073334).
Registered address: AQA, Devas Street, Manchester M15 6EX
Dr Michael Cresswell Director General

STEMUP.CO.UK

MARK SCHEME

Information to Examiners

1. General

The mark scheme for each question shows:

- the marks available for each part of the question
- the total marks available for the question
- the typical answer or answers which are expected
- extra information to help the Examiner make his or her judgement and help to delineate what is acceptable or not worthy of credit or, in discursive answers, to give an overview of the area in which a mark or marks may be awarded.

The extra information is aligned to the appropriate answer in the left-hand part of the mark scheme and should only be applied to that item in the mark scheme.

At the beginning of a part of a question a reminder may be given, for example: where consequential marking needs to be considered in a calculation; or the answer may be on the diagram or at a different place on the script.

In general the right hand side of the mark scheme is there to provide those extra details which confuse the main part of the mark scheme yet may be helpful in ensuring that marking is straightforward and consistent.

2. Emboldening

2.1 In a list of acceptable answers where more than one mark is available 'any **two** from' is used, with the number of marks emboldened. Each of the following lines is a potential mark.

2.2 A bold **and** is used to indicate that both parts of the answer are required to award the mark.

2.3 Alternative answers acceptable for a mark are indicated by the use of **or**. (Different terms in the mark scheme are shown by a / ; eg allow smooth / free movement.)

3. Marking points

3.1 Marking of lists

This applies to questions requiring a set number of responses, but for which candidates have provided extra responses. The general principle to be followed in such a situation is that 'right + wrong = wrong'.

Each error/contradiction negates each correct response. So, if the number of error/contradictions equals or exceeds the number of marks available for the question, no marks can be awarded.

However, responses considered to be neutral (indicated as * in example 1) are not penalised.

STEMUP.CO.UK

Example 1: What is the pH of an acidic solution? (1 mark)

Candidate	Response	Marks awarded
1	4,8	0
2	green, 5	0
3	red*, 5	1
4	red*, 8	0

Example 2: Name two planets in the solar system. (2 marks)

Candidate	Response	Marks awarded
1	Pluto, Mars, Moon	1
2	Pluto, Sun, Mars, Moon	0

3.2 Use of chemical symbols / formulae

If a candidate writes a chemical symbol / formula instead of a required chemical name, full credit can be given if the symbol / formula is correct and if, in the context of the question, such action is appropriate.

3.3 Marking procedure for calculations

Full marks can be given for a correct numerical answer, as shown in the column 'answers', without any working shown.

However if the answer is incorrect, mark(s) can be gained by correct substitution / working and this is shown in the 'extra information' column;

3.4 Interpretation of 'it'

Answers using the word 'it' should be given credit only if it is clear that the 'it' refers to the correct subject.

3.5 Errors carried forward

Any error in the answers to a structured question should be penalised once only.

Papers should be constructed in such a way that the number of times errors can be carried forward are kept to a minimum. Allowances for errors carried forward are most likely to be restricted to calculation questions and should be shown by the abbreviation e.c.f. in the marking scheme.

3.6 Phonetic spelling

The phonetic spelling of correct scientific terminology should be credited **unless** there is a possible confusion with another technical term.

3.7 Brackets

(…..) are used to indicate information which is not essential for the mark to be awarded but is included to help the examiner identify the sense of the answer required.

STEMUP.CO.UK

BLY 1F

Question 1

question	answers	extra information	mark
1(a)(i)	eye	ignore sight	1
1(a)(ii)	nose / nostril	ignore smell	1
1(a)(iii)	tongue	allow mouth / taste buds ignore taste	1
1(b)(i)	stores more sugar / food / energy **or** sugar converted to fat	allow sugar builds up (in body) do **not** allow contains fat ignore more sugar in sugary cola ignore drank more sugar ignore sugar fattening	1
1(b)(ii)	arthritis / diabetes / (high) blood pressure / heart disease	ignore cancer allow colon cancer	1
1(c)(i)	0.5 / half	allow 0.45 – 0.55	1
1(c)(ii)	0.1	for correct answer with or without working if incorrect / no answer then evidence of correct method 0.9 + 0.8 + 1.4 – 3 gains **1** mark **or** evidence of 3.1 – wrong column from graph ie 0.5 / 2 / 5/ 6 gains **1** mark	2

Question 1 continues on the next page

STEMUP.CO.UK

BLY1F

Question 1 continued

question	answers	extra information	mark
1(c)(iii)	(high) blood pressure	allow heart disease / hypertension do **not** allow blocked arteries / cholesterol / diabetes / obesity	1
Total			**9**

STEMUP.CO.UK

BLY1F

Question 2

question	answers	extra information	mark
2(a)	camouflage / less visible	ignore insulation	1
2(b)	insulates / keeps warm	allow keeps out cold ignore camouflage	1
2(c)	prey can't hear it / help catch prey / cannot hear it so isn't scared away	ignore predation on owl	1
2(d)	catching / eating / killing prey / perching / defence		1
Total			**4**

STEMUP.CO.UK

BLY1F

Question 3

question	answers	extra information	mark
3(a)	measles mumps rubella		1 1 1
3(b)	antibodies		1
3(c)(i)	any **two** from: • fell • then rose • any reasonable amplification eg until 2004 / to 80% • flattens off *(*between 1999–2000*)*		2
3(c)(ii)	eg fear of side effects **or** cost of vaccine **or** lack of vaccine **or** complacency / disease less common		1
Total			**7**

STEMUP.CO.UK

BLY1F

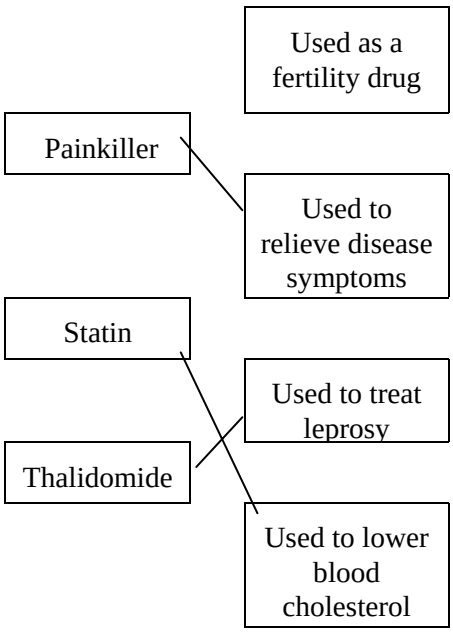
Question 4

question	answers	extra information	mark
4(a)	sexual		1
4(b)	chromosome		1
4(c)(i)	any **two** from: • genetic-engineering can produce fast-growing food animals • genetic engineering can be used to clone animals in danger of extinction • using GM animals can reduce the number of animals used in medical research	ignore answers that do not relate to list	2
4(c)(ii)	GM animals might escape and breed with wild animals animals have the right to be free from genetic modification	ignore answers that do not relate to list	1 1
Total			**6**

STEMUP.CO.UK

BLY1F

Question5

question	answers	extra information	mark
5(a)		all three correct = **3** marks two correct = **2** marks one correct = **1** mark extra line from a statement cancels the mark	3
5(b)(i)	8		1
5(b)(ii)	3210		1
5(c)(i)	if it is toxic		1
5(c)(ii)	if it has side effects		1
Total			**7**

STEMUP.CO.UK

BLY1F

Question 6

question	answers	extra information	mark
6(a)	any **two** from • survival of fittest • amplification of fittest ie has adaptations to survive • go on to breed **or** genes / characteristics passed on to next generation	 allow examples allow examples NB best adapted organisms survive gains **2** marks	2
6(b)	any **two** from eg: • increased height • increased erectness • shorter arms • legs straighter • larger skull • larger pelvis **or** changing shape described • humans walk on two legs / feet	ignore unqualified change eg 'the skull changes shape' allow description of modern human characteristic eg 'modern humans stand up straight' allow description of ape-like characteristics eg ape-like ancestor walked on four legs	2
6(c)	any **two** from: • religious objections • insufficient evidence • mechanism of heredity not known did not know about genes / chromosomes / DNA / mutations • did not like the thought of being descended from apes	 ignore **no** evidence accept could not prove	2

Question 6 continues on next page

STEMUP.CO.UK

BLY1F

Question 6 continued

question	answers	extra information	mark
6(d)	Darwin's theory depends on differences in genes at birth / inborn variation / mutation	allow Darwin's theory depends on genetics ignore reference to time	1
Total			**7**

STEMUP.CO.UK

BLY1F

Question 7

question	answers	extra information	mark
7(a)	any **one** from eg: • shorter distance between samples • sample to greater height • specify the size of each site	ignore repeat investigation / measurements ignore longer transect	1
7(b)(i)	Parmelia		1
7(b)(ii)	Evernia		1
7(c)	any **two** from: • Lecanora does not extend over whole range of transect / does not grow everywhere /does not grow in town centre / does not grow in countryside • Lecanora grows in a range of sulfur dioxide concentrations ***or*** Lecanora only grows in limited range of sulfur dioxide concentrations **or** Lecanora lives over large range of sulfur dioxide concentrations • other factors eg different pollutant might also influence growth of Lecanora • sulfur dioxide / pollutant concentration was not measured • amount of Lecanora not measured	ignore Lecanora does not give accurate measure of sulfur dioxide concentration	2
Total			**5**

STEMUP.CO.UK

Surname		Other Names	
Centre Number			Candidate Number				
Candidate Signature								

For Examiner's Use

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

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. 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.

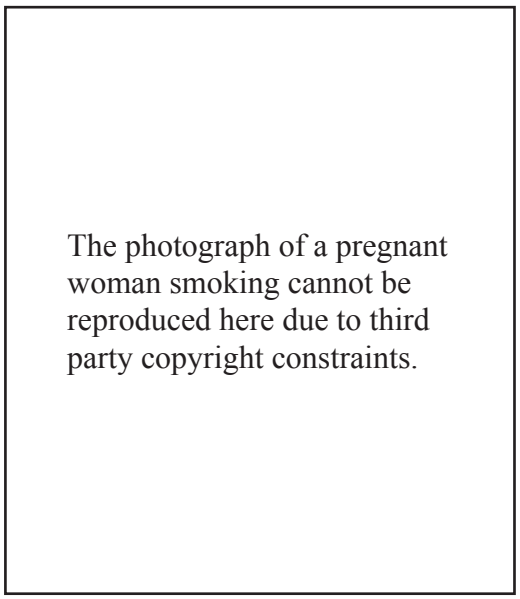
For Examiner's Use			
Question	Mark	Question	Mark
1		6	
2		7	
3			
4			
5			
Total (Column 1) →			
Total (Column 2) →			
TOTAL			
Examiner's Initials			

STEMUP.CO.UK

Areas outside the box will not be scanned for marking

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

1 This poster advises pregnant women to stop smoking.



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

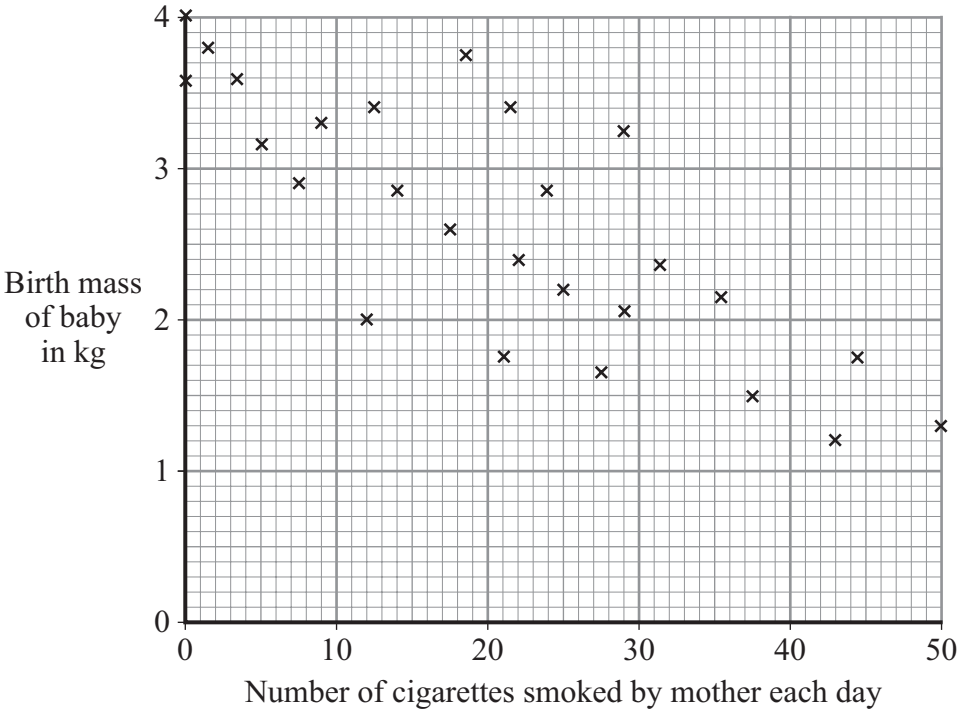
withdrawal symptoms

.

(1 mark)

Areas outside the box will not be scanned for marking

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. ☐

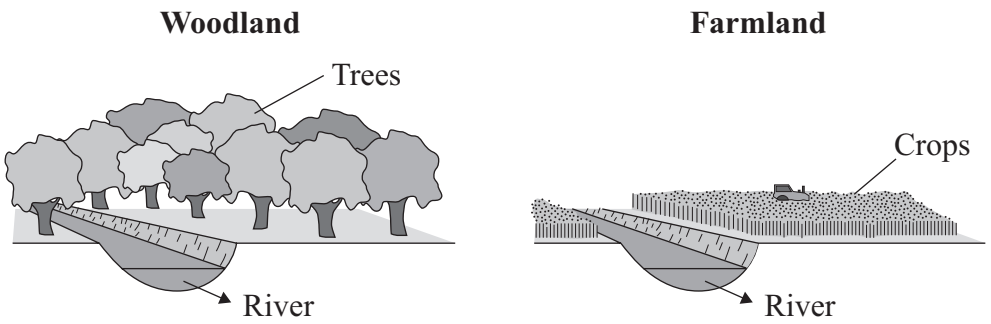
Smoking during pregnancy often reduces the birth mass of babies. ☐

(1 mark)

5

Areas outside the box will not be scanned for marking

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)

Areas outside the box will not be scanned for marking

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.....

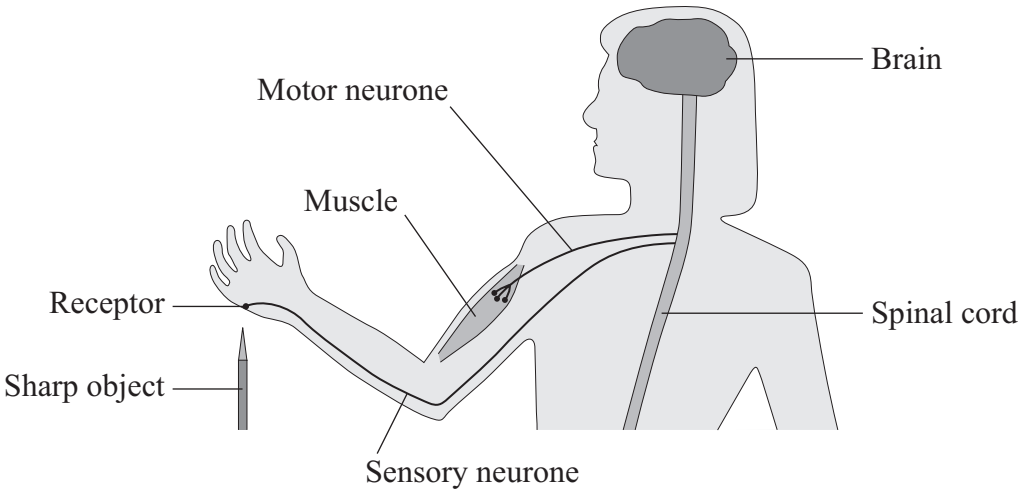
.....

(2 marks)

8

Areas outside the box will not be scanned for marking

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)

Areas outside the box will not be scanned for marking

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

Areas outside the box will not be scanned for marking

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)

Areas outside the box will not be scanned for marking

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**	**List B** **Information**
	Small groups of cells from parts of a plant are grown on a special jelly.
Adult cell cloning	
	Cells from a developing animal are separated before they become specialised and then placed into host mothers.
Embryo transplanting	
	Genes are cut out from chromosomes and inserted into other organisms.
Tissue culture	
	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

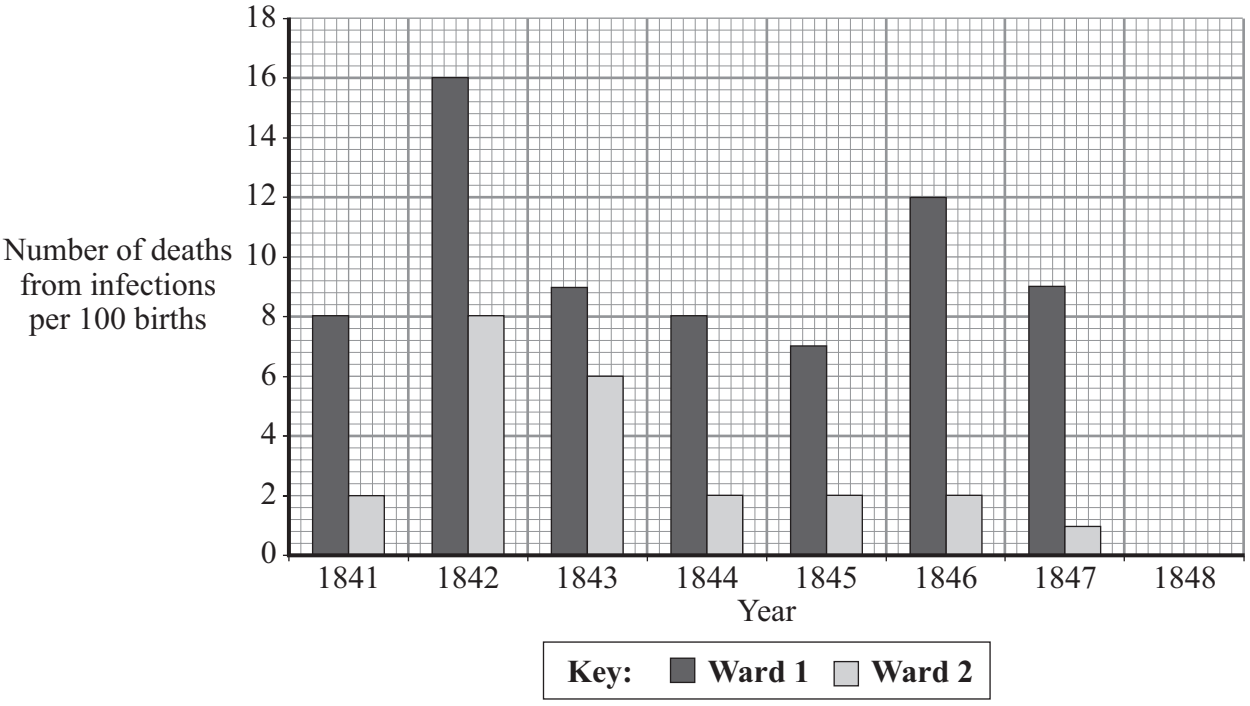
Turn over for the next question

Areas outside the box will not be scanned for marking

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)

Areas outside the box will not be scanned for marking

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

Areas outside the box will not be scanned for marking

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)

Areas outside the box will not be scanned for marking

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 ▶

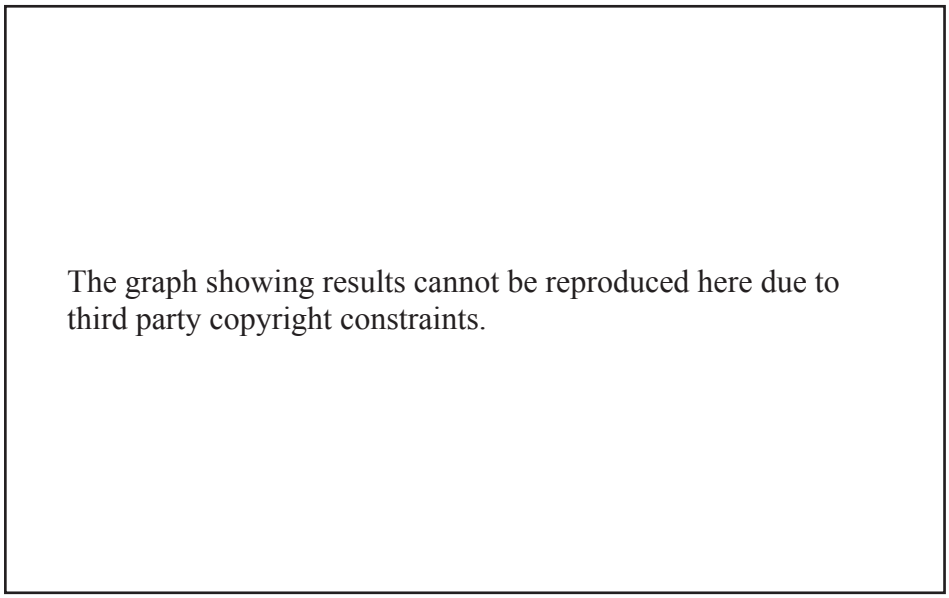
Areas outside the box will not be scanned for marking

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.



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)

Areas outside the box will not be scanned for marking

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

DO NOT WRITE ON THIS PAGE
ANSWER IN THE SPACES PROVIDED

ACKNOWLEDGEMENT OF COPYRIGHT-HOLDERS AND PUBLISHERS

Question 1	Close up shot of a pregnant woman holding a cigarette next to her stomach © 81A Productions/Corbis
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.

Copyright © 2009 AQA and its licensors. All rights reserved.

Version 1.0: 21.07

ASSESSMENT and QUALIFICATIONS ALLIANCE

General Certificate of Secondary Education

Science B 4462 / Biology 4411

BLY1F Unit 1 Biology

Mark Scheme

2009 examination – June series

STEMUP.CO.UK

Mark schemes are prepared by the Principal Examiner and considered, together with the relevant questions, by a panel of subject teachers. This mark scheme includes any amendments made at the standardisation meeting attended by all examiners and is the scheme which was used by them in this examination. The standardisation meeting ensures that the mark scheme covers the candidates' responses to questions and that every examiner understands and applies it in the same correct way. As preparation for the standardisation meeting each examiner analyses a number of candidates' scripts: alternative answers not already covered by the mark scheme are discussed at the meeting and legislated for. If, after this meeting, examiners encounter unusual answers which have not been discussed at the meeting they are required to refer these to the Principal Examiner.

It must be stressed that a mark scheme is a working document, in many cases further developed and expanded on the basis of candidates' reactions to a particular paper. Assumptions about future mark schemes on the basis of one year's document should be avoided; whilst the guiding principles of assessment remain constant, details will change, depending on the content of a particular examination paper.

Further copies of this Mark Scheme are available to download from the AQA Website: www.aqa.org.uk

Copyright © 2009 AQA and its licensors. All rights reserved.

COPYRIGHT
AQA retains the copyright on all its publications. However, registered centres for AQA are permitted to copy material from this booklet for their own internal use, with the following important exception: AQA cannot give permission to centres to photocopy any material that is acknowledged to a third party even for internal use within the centre.

Set and published by the Assessment and Qualifications Alliance.

The Assessment and Qualifications Alliance (AQA) is a company limited by guarantee registered in England and Wales (company number 3644723) and a registered charity (registered charity number 1073334).
Registered address: AQA, Devas Street, Manchester M15 6EX
Dr Michael Cresswell Director General

MARK SCHEME

Information to Examiners

1. General

The mark scheme for each question shows:

- the marks available for each part of the question
- the total marks available for the question
- the typical answer or answers which are expected
- extra information to help the Examiner make his or her judgement and help to delineate what is acceptable or not worthy of credit or, in discursive answers, to give an overview of the area in which a mark or marks may be awarded.

The extra information is aligned to the appropriate answer in the left-hand part of the mark scheme and should only be applied to that item in the mark scheme.

At the beginning of a part of a question a reminder may be given, for example: where consequential marking needs to be considered in a calculation; or the answer may be on the diagram or at a different place on the script.

In general the right hand side of the mark scheme is there to provide those extra details which confuse the main part of the mark scheme yet may be helpful in ensuring that marking is straightforward and consistent.

2. Emboldening

2.1 In a list of acceptable answers where more than one mark is available 'any **two** from' is used, with the number of marks emboldened. Each of the following lines is a potential mark.

2.2 A bold **and** is used to indicate that both parts of the answer are required to award the mark.

2.3 Alternative answers acceptable for a mark are indicated by the use of **or**. (Different terms in the mark scheme are shown by a / ; eg allow smooth / free movement.)

3. Marking points

3.1 Marking of lists

This applies to questions requiring a set number of responses, but for which candidates have provided extra responses. The general principle to be followed in such a situation is that 'right + wrong = wrong'.

Each error/contradiction negates each correct response. So, if the number of error/contradictions equals or exceeds the number of marks available for the question, no marks can be awarded.

However, responses considered to be neutral (indicated as * in example 1) are not penalised.

STEMUP.CO.UK

Example 1: What is the pH of an acidic solution? (1 mark)

Candidate	Response	Marks awarded
1	4,8	0
2	green, 5	0
3	red*, 5	1
4	red*, 8	0

Example 2: Name two planets in the solar system. (2 marks)

Candidate	Response	Marks awarded
1	Pluto, Mars, Moon	1
2	Pluto, Sun, Mars, Moon	0

3.2 Use of chemical symbols / formulae

If a candidate writes a chemical symbol / formula instead of a required chemical name, full credit can be given if the symbol / formula is correct and if, in the context of the question, such action is appropriate.

3.3 Marking procedure for calculations

Full marks can be given for a correct numerical answer, as shown in the column 'answers', without any working shown.

However if the answer is incorrect, mark(s) can be gained by correct substitution / working and this is shown in the 'extra information' column;

3.4 Interpretation of 'it'

Answers using the word 'it' should be given credit only if it is clear that the 'it' refers to the correct subject.

3.5 Errors carried forward

Any error in the answers to a structured question should be penalised once only.

Papers should be constructed in such a way that the number of times errors can be carried forward are kept to a minimum. Allowances for errors carried forward are most likely to be restricted to calculation questions and should be shown by the abbreviation e.c.f. in the marking scheme.

3.6 Phonetic spelling

The phonetic spelling of correct scientific terminology should be credited **unless** there is a possible confusion with another technical term.

3.7 Brackets

(…..) are used to indicate information which is not essential for the mark to be awarded but is included to help the examiner identify the sense of the answer required.

STEMUP.CO.UK

BLY1F

Question 1

question	answers	extra information	mark
1(a)(i)	a legal drug		1
1(a)(ii)	nicotine		1
1(a)(iii)	withdrawal symptoms		1
1(b)(i)	scattergram		1
1(b)(ii)	smoking during pregnancy often reduces the birth mass of babies		1
Total			**5**

STEMUP.CO.UK

BLY1F

Question 2

question	answers	extra information	mark
2(a)(i)	(more) habitats / (greater) variety of habitats / range of food	allow (more) places / trees for homes **or** different places to live allow no pesticides /herbicides / chemicals sprayed allow more food allow safer / can hide allow effects of machinery	1
2(a)(ii)	any **two** from: • building /houses / factories / etc • roads • quarrying • waste dumps / landfill • grazing	ignore timber / uses of wood	2
2(b)(i)	fertilisers		1
2(b)(ii)	pesticides		1
2(b)(iii)	pesticide / herbicide / chemicals / sprays	allow river (through farmland) polluted allow correct effect of fertilisers on river organisms	1

Question 2 continues on the next page…

STEMUP.CO.UK

BLY1F

Question 2 Continued

question	answers	extra information	mark
2(c)	any **two** from • pollution / named pollutant / combustion / cars • dumping waste / litter • raw materials used up **or** reference to quarries / mines • chopping down trees • building / houses / etc • global warming	allow 'not recycling'	2
Total			**8**

STEMUP.CO.UK

BLY1F

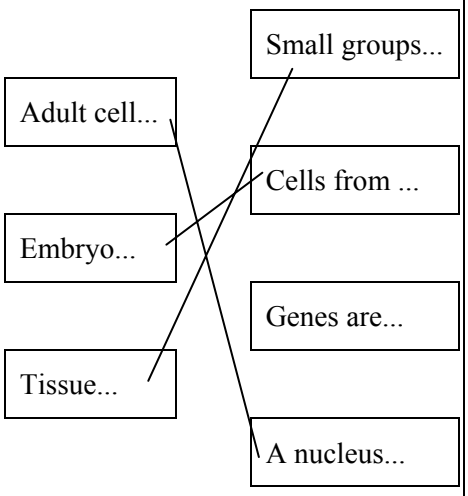
Question 3

question	answers	extra information	mark
3(a)(i)	receptor		1
3(a)(ii)	sensory neurone		1
3(a)(iii)	motor neurone		1
3(a)(iv)	muscle		1
3(b)(i)	eye(s)	allow retina ignore sight	1
3(b)(ii)	ear(s)	ignore hearing do **not** allow ear drum	1
3(b)(iii)	ear(s)	ignore balance	1
Total			**7**

STEMUP.CO.UK

BLY1F

Question 4

question	answers	extra information	mark
4(a)	killed by poachers / killed for tusks		1
	less trees / leaves to eat	ignore feed on lots of leaves	1
	land available disappearing		1
4(b)		all three correct = **3** marks two correct = **2** marks one correct = **1** mark extra line from a statement cancels the mark	max 3
Total			**6**

STEMUP.CO.UK

BLY1F

Question 5

question	answers	extra information	mark
5(a)(i)	12	correct answer with **or** without working if answer incorrect evidence of (number of deaths) × 6 **or** 2 seen gains **1** mark	2
5(a)(ii)	(ward 2) more deaths / infections on ward 1 **or** less deaths / infections on ward 2		1
5(b)(i)	**both** bars correctly plotted	ie plots in spaces between 2.8 and 3.2 **and** 0.8 and 1.2 ignore width and shading	1
5(b)(ii)	less deaths / infections		1
5(b)(iii)	bacteria / germs / microbes / infection killed / washed off	accept less infections passed on	1
Total			**6**

STEMUP.CO.UK

BLY1F

Question 6

question	answers	extra information	mark
6(a)	streamlined / aerodynamic / swept-back / arrow-shaped / dart-shaped wings / tail OR large / long wings	allow pointed / curved wings ignore pointed tail / beak ignore large tail	1
6(b)	no / fewer insects / food (in winter)	allow **too** cold ignore not adapted to cold ignore day length	1
6(c)(i)	any **two** from • feed / hunt at different heights **or** swifts feed higher up • feed / hunt at different times **or** swifts feed at night • arrive / depart at different times		2
6(c)(ii)	nesting sites / territory / habitat	allow homes / space ignore food unqualified allow well qualified food answers eg insects / food near the ground **or** insects / food when it's light **or** insects / food between early May and early August	1
Total			**5**

STEMUP.CO.UK

BLY1F

Question 7

question	answers	extra information	mark
7(a)	any **two** from: • age • gender • mass • number in group • time		2
7(b)	any **two** from: • highest (mean) mass loss on Rosemary Conley **or** Rosemary Conley most effective • least (mean) mass loss in control group **or** mean gain in mass in control group • Slimfast least (mean) loss of programmes **or** Slimfast least effective • all diets resulted in mass loss • large range of mass loss • similar (mean) mass loss with all 4 diets • (mean) mass loss similar in Atkins and Weightwatchers • (only) in Rosemary Conley (did) all lose mass		2

Question 7 continues on next page…

STEMUP.CO.UK

BLY1F

Question 7 Continued

question	answers	extra information	mark
7(c)	(Atkins) costs least mass loss very similar to other diets **or** second highest mass loss **or** as effective as other diets		 1 1
7(d)	any **two** from: • (exercise) increases metabolic rate / respiration • (exercise) needs / uses energy / calories • (this) energy comes from food / fat • less food / energy/ calories converted to fat	ignore sweating allow burns fat / calories do **not** accept energy <u>for</u> respiration	2
Total			**8**

STEMUP.CO.UK

Surname		Other Names	
Centre Number			Candidate Number				
Candidate Signature									

For Examiner's Use

General Certificate of Secondary Education
January 2009

SCIENCE B
Unit Biology B1

BLY1F

F

BIOLOGY
Unit Biology B1

Foundation Tier

Monday 12 January 2009 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. 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		7	
2		8	
3			
4			
5			
6			
Total (Column 1) →			
Total (Column 2) →			
TOTAL			
Examiner's Initials			

STEMUP.CO.UK

Areas outside the box will not be scanned for marking

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

1 The photograph shows a child waiting to cross a road.



© Owen Franken/Corbis

1 (a) Name **two** different sense organs she would use to detect when it is safe to cross the road.

1 .....

2 .....

(2 marks)

1 (b) Which sense organ contains receptors that help the child to keep her balance?

.....

(1 mark)

1 (c) (i) Complete the sentence.

A car driver automatically brakes if a child dashes out into the road.

This is called a ..... action.

(1 mark)

1 (c) (ii) Draw a ring around the correct answer to complete the sentence.

In the nervous system, information passes along cells called

effectors
neurones
synapses

.

(1 mark)

5

Areas outside the box will not be scanned for marking

2 The photograph shows an area where a tropical forest is being cleared.



© Kazuyoshi Nomachi/Corbis

2 (a) Complete the sentences.

People could use timber from the forest for ..... .

The cleared land can be used for ..... .

Clearing forests increases the concentration of ..... in the atmosphere.

This increase causes global ..... .

(4 marks)

2 (b) Clearing forests causes some species to become *extinct*.

2 (b) (i) What is meant by *extinct*?

.....

.....

(1 mark)

2 (b) (ii) It is important to prevent species from becoming extinct.

Give **one** reason why.

.....

.....

(1 mark)

6

Areas outside the box will not be scanned for marking

3 Many substances affect our bodies.

List **A** gives the names of four substances which affect the body.

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

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

List A – Substance	**List B – Information**
Salt	‘Good’ cholesterol
Carbon monoxide	Increases blood cholesterol levels
HDL (High density lipoprotein)	Causes irregular periods in women
Saturated fat	Reduces the amount of oxygen carried by the blood
	Leads to high blood pressure in 30% of the population

(4 marks)

4

Areas outside the box will not be scanned for marking

4 Animals have adaptations that enable them to survive.

4 (a) The photograph shows an echidna.



© Noeline Kelly/Corbis

The echidna has pointed spines on its back.

Explain how these spines might help the echidna to survive.

.....

.....

.....

.....

.....

(2 marks)

Question 4 continues on the next page

Areas outside the box will not be scanned for marking

4 (b) The photograph shows a caterpillar.



© S.J. Krasemann / Peter Arnold / Still Pictures

Explain how the caterpillar's appearance might help it to survive.

.....

.....

.....

.....

.....

(2 marks)

Areas outside the box will not be scanned for marking

4 (c) Draw a ring around the correct answer to complete each sentence.

4 (c) (i) Evolution can be explained by a theory called

genetic engineering

mutation

natural selection

.

(1 mark)

4 (c) (ii) This theory was suggested by a scientist called Charles

Darwin

Lamarck

Semmelweiss

.

(1 mark)

4 (c) (iii) This scientist said that all living things have evolved from

monkeys

dinosaurs

simple life forms

.

(1 mark)

4 (d) Many religious people oppose the theory of evolution.

Give **one** reason why.

.....

.....

(1 mark)

8

Turn over for the next question

Areas outside the box will not be scanned for marking

5 The photographs show a zorse and its parents, a zebra and a horse.

Horse



×

Zebra



↓

Zorse

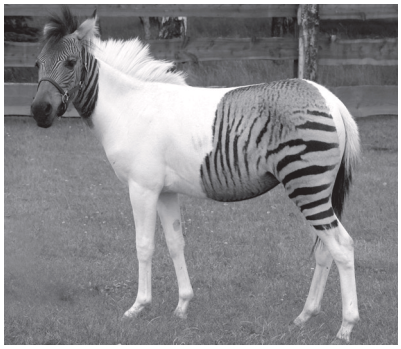


Photo of horse © Arctic-Images/Corbis
Photo of zebra © Arthur Morris/Corbis
Photo of zorse © Udo Richter/epa/Corbis

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

The zorse was produced by

cloning
asexual reproduction
sexual reproduction

.

(1 mark)

Areas outside the box will not be scanned for marking

5 (b) Explain the appearance of the zorse.

Use **both** words from the box in your explanation.

gametes	**genes**

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

(3 marks)

4

Turn over for the next question

Areas outside the box will not be scanned for marking

6 In-vitro fertilisation (IVF) is used to help infertile women to have babies.

The table gives statistics from one clinic that gives IVF treatment.

	Age of women given IVF treatment			
	Under 35 years	35 – 37 years	38 – 39 years	40 – 42 years
Number of women treated	425	208	106	53
Number of single births	90	44	17	1
Number of sets of twins	24	8	4	1
Number of sets of triplets	1	0	0	0

Use data from the table to help you to answer these questions.

6 (a) How many of the women aged 38 – 39 had babies?

.....

.....

(1 mark)

6 (b) What proportion of the treated women aged 35 – 37 had twins?

.....

.....

(1 mark)

6 (c) For which age group was IVF treatment most successful?

.....

.....

(1 mark)

Areas outside the box will not be scanned for marking

6 (d) Give **two** disadvantages of IVF treatment.

1.....

.....

.....

2.....

.....

.....

(2 marks)

5

Turn over for the next question

Areas outside the box will not be scanned for marking

7 The MMR vaccine is used to protect children against measles, mumps and rubella.

7 (a) Complete the sentences about vaccination.

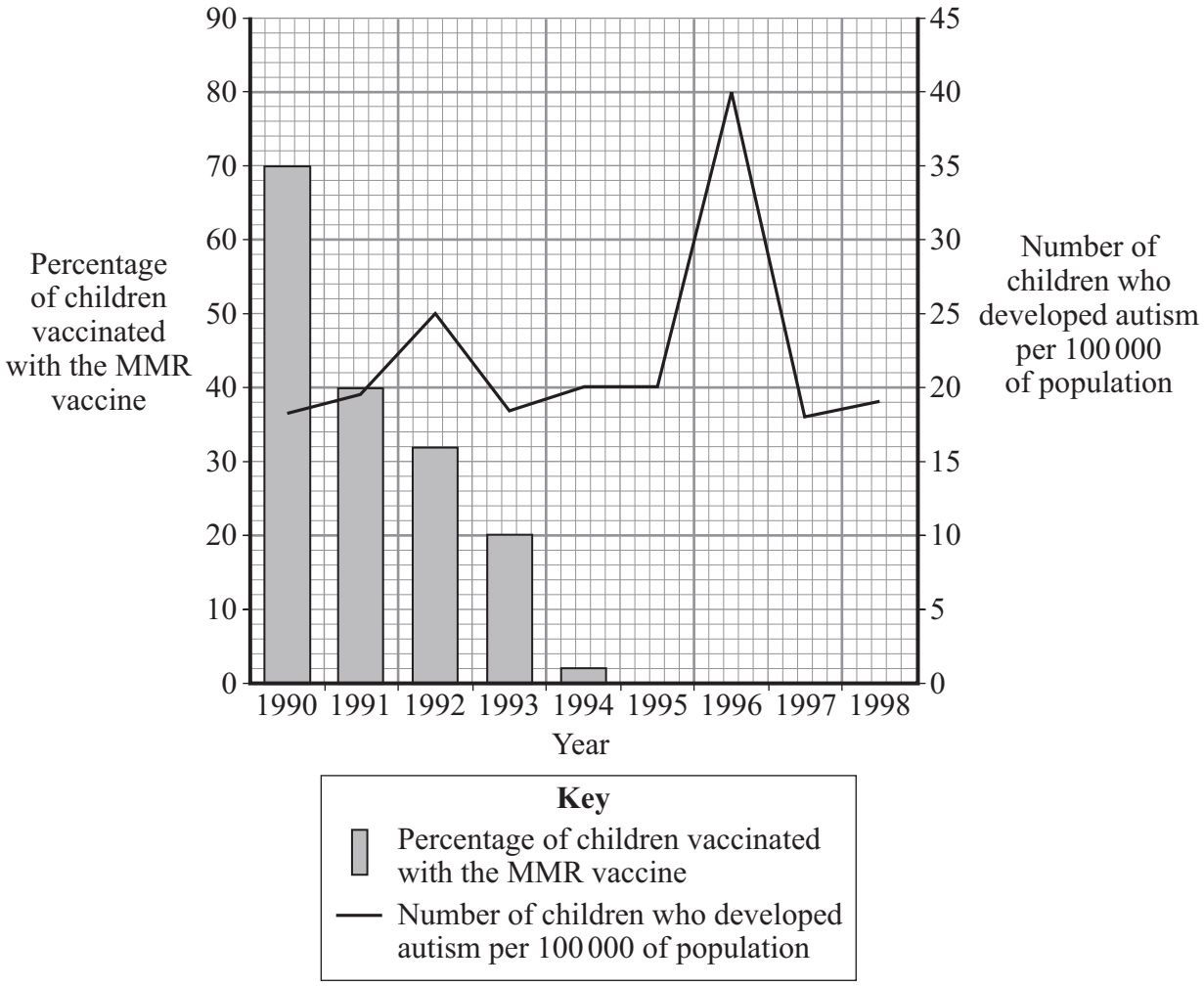
Vaccines stimulate white blood cells to produce ..... .

This makes children ..... to the pathogen.

(2 marks)

7 (b) In the 1990s, many people thought that the MMR vaccine caused autism in some children. As a result, the Japanese government stopped using the MMR vaccine.

The graph gives information about the percentage of children in Japan vaccinated with the MMR vaccine and the number of children who developed autism during the 1990s.



Areas outside the box will not be scanned for marking

7 (b) (i) Describe how the percentage of children vaccinated with the MMR vaccine changed between 1990 and 1995.

.....

.....

.....

.....

.....

(2 marks)

7 (b) (ii) Does the data in the graph support a link between MMR vaccination and autism?

Draw a ring around your answer. **Yes / No**

Explain the reason for your answer.

.....

.....

.....

.....

.....

(2 marks)

6

Turn over for the next question

Areas outside the box will not be scanned for marking

8 Nicotine is the addictive substance in tobacco.
People can be helped to stop smoking by giving them nicotine replacement therapy (NRT).

The table gives the results of trials of different types of NRT.

Type of NRT	Smokers given NRT		Smokers given placebo	
	Number of smokers in trial	Percentage of smokers who gave up smoking	Number of smokers in trial	Percentage of smokers who gave up smoking
Gum	7387	20	9319	12
Patch	7708	14	5969	8
Nasal spray	448	24	439	12
Inhaler	490	14	486	8
Tablet	243	20	245	13

8 (a) (i) What is a placebo?

.....

.....

(1 mark)

8 (a) (ii) Why was a placebo used in these NRT trials?

.....

.....

(1 mark)

8 (b) (i) In which trial was the data most reliable?

.....

(1 mark)

8 (b) (ii) Give the reason for your answer.

.....

.....

.....

(1 mark)

Areas outside the box will not be scanned for marking

8 (c) (i) Which type of NRT was most effective?

.....

(1 mark)

8 (c) (ii) Explain the reasons for your answer.

.....

.....

.....

.....

.....

(2 marks)

7

END OF QUESTIONS

There are no questions printed on this page

DO NOT WRITE ON THIS PAGE
ANSWER IN THE SPACES PROVIDED

Copyright © 2009 AQA and its licensors. All rights reserved.

Version 1: 0109

ASSESSMENT and QUALIFICATIONS ALLIANCE

General Certificate of Secondary Education

Science B 4462/ Biology 4411

BLY1F Unit Biology 1

Mark Scheme

2009 examination – January series

STEMUP.CO.UK

Mark schemes are prepared by the Principal Examiner and considered, together with the relevant questions, by a panel of subject teachers. This mark scheme includes any amendments made at the standardisation meeting attended by all examiners and is the scheme which was used by them in this examination. The standardisation meeting ensures that the mark scheme covers the candidates' responses to questions and that every examiner understands and applies it in the same correct way. As preparation for the standardisation meeting each examiner analyses a number of candidates' scripts: alternative answers not already covered by the mark scheme are discussed at the meeting and legislated for. If, after this meeting, examiners encounter unusual answers which have not been discussed at the meeting they are required to refer these to the Principal Examiner.

It must be stressed that a mark scheme is a working document, in many cases further developed and expanded on the basis of candidates' reactions to a particular paper. Assumptions about future mark schemes on the basis of one year's document should be avoided; whilst the guiding principles of assessment remain constant, details will change, depending on the content of a particular examination paper.

Further copies of this Mark Scheme are available to download from the AQA Website: www.aqa.org.uk

Copyright © 2009. AQA and its licensors. All rights reserved.

COPYRIGHT
AQA retains the copyright on all its publications. However, registered centres for AQA are permitted to copy material from this booklet for their own internal use, with the following important exception: AQA cannot give permission to centres to photocopy any material that is acknowledged to a third party even for internal use within the centre.

Set and published by the Assessment and Qualifications Alliance.

The Assessment and Qualifications Alliance (AQA) is a company limited by guarantee registered in England and Wales (company number 3644723) and a registered charity (registered charity number 1073334).
Registered address: AQA, Devas Street, Manchester M15 6EX
Dr Michael Cresswell Director General

STEMUP.CO.UK

MARK SCHEME

Information to Examiners

1. General

The mark scheme for each question shows:

- the marks available for each part of the question
- the total marks available for the question
- the typical answer or answers which are expected
- extra information to help the Examiner make his or her judgement and help to delineate what is acceptable or not worthy of credit or, in discursive answers, to give an overview of the area in which a mark or marks may be awarded.

The extra information is aligned to the appropriate answer in the left-hand part of the mark scheme and should only be applied to that item in the mark scheme.

At the beginning of a part of a question a reminder may be given, for example:
where consequential marking needs to be considered in a calculation;
or the answer may be on the diagram or at a different place on the script.

In general the right hand side of the mark scheme is there to provide those extra details which confuse the main part of the mark scheme yet may be helpful in ensuring that marking is straightforward and consistent.

2. Emboldening

2.1 In a list of acceptable answers where more than one mark is available 'any **two** from' is used, with the number of marks emboldened. Each of the following lines is a potential mark.

2.2 A bold **and** is used to indicate that both parts of the answer are required to award the mark.

2.3 Alternative answers acceptable for a mark are indicated by the use of **or**. (Different terms in the mark scheme are shown by a / ; eg allow smooth / free movement.)

3. Marking points

3.1 Marking of lists

This applies to questions requiring a set number of responses, but for which candidates have provided extra responses. The general principle to be followed in such a situation is that 'right + wrong = wrong'.

Each error/contradiction negates each correct response. So, if the number of error/contradictions equals or exceeds the number of marks available for the question, no marks can be awarded.

However, responses considered to be neutral (indicated as * in example 1) are not penalised.

STEMUP.CO.UK

Example 1: What is the pH of an acidic solution? (1 mark)

Candidate	Response	Marks awarded
1	4,8	0
2	green, 5	0
3	red*, 5	1
4	red*, 8	0

Example 2: Name two planets in the solar system. (2 marks)

Candidate	Response	Marks awarded
1	Pluto, Mars, Moon	1
2	Pluto, Sun, Mars, Moon	0

3.2 Use of chemical symbols / formulae

If a candidate writes a chemical symbol / formula instead of a required chemical name, full credit can be given if the symbol / formula is correct and if, in the context of the question, such action is appropriate.

3.3 Marking procedure for calculations

Full marks can be given for a correct numerical answer, as shown in the column 'answers', without any working shown.

However if the answer is incorrect, mark(s) can be gained by correct substitution / working and this is shown in the 'extra information' column;

3.4 Interpretation of 'it'

Answers using the word 'it' should be given credit only if it is clear that the 'it' refers to the correct subject.

3.5 Errors carried forward

Any error in the answers to a structured question should be penalised once only.

Papers should be constructed in such a way that the number of times errors can be carried forward are kept to a minimum. Allowances for errors carried forward are most likely to be restricted to calculation questions and should be shown by the abbreviation e.c.f. in the marking scheme.

3.6 Phonetic spelling

The phonetic spelling of correct scientific terminology should be credited **unless** there is a possible confusion with another technical term.

3.7 Brackets

(…..) are used to indicate information which is not essential for the mark to be awarded but is included to help the examiner identify the sense of the answer required.

COMPONENT NUMBER: BLY1F

COMPONENT NAME: Science B / Biology

STATUS: Final

DATE: January 2009

question	answers	extra information	mark
1(a)	eye / sight / eyesight ear / hearing	either order ignore light	1 1
1(b)	ear		1
1(c)(i)	reflex		1
1(c)(ii)	neurones		1
Total			**5**

COMPONENT NUMBER: BLY1F

COMPONENT NAME: Science B / Biology

STATUS: Final

DATE: January 2009

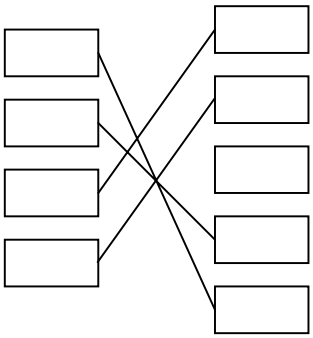
question	answers	extra information	mark
2(a)	fuel / houses / paper	allow any object made from wood	1
	farming / agriculture / replanting	allow roads / homes / factories	1
	carbon dioxide / greenhouse gas / pollution **or** relative named pollutant		1
	warming / temperature increase		1
2(b)(i)	none of species left / died out		1
2(b)(ii)	may have products useful to humans / examples	allow preserve for future generations **or** 'still there to look at' allow affect food chains / cycles **or** extinction of other species allow non human reasons eg loss of habitat ignore environmental effects	1
Total			**6**

COMPONENT NUMBER: BLY1F

COMPONENT NAME: Science B / Biology

STATUS: Final

DATE: January 2009

question	answers	extra information	mark
3	leads to increased blood pressure in 30 % of the population reduces the amount of oxygen carried by the blood 'good' cholesterol increases blood cholesterol levels	mark from the left hand box two lines from left hand box disqualifies 	1 1 1 1
Total			**4**

COMPONENT NUMBER: BLY1F

COMPONENT NAME: Science B / Biology

STATUS: Final

DATE: January 2009

question	answers	extra information	mark
4(a)	protection / defence from predators / from being attacked / from being eaten	ignore insulation **or** rolls into a ball ignore camouflage	1 1
4(b)	looks like snake / looks scary deters predators **or** has large eyes to spot predator **or** camouflage **or** warning colouration from predator or prey	allow **two** separate adaptations for **2** marks	1 1
4(c)(i)	natural selection		1
4(c)(ii)	Darwin		1
4(c)(iii)	simple life forms		1
4(d)	believe that God created all organisms **or** humans there from the beginning		1
Total			**8**

COMPONENT NUMBER: BLY1F

COMPONENT NAME: Science B / Biology

STATUS: Final

DATE: January 2009

question	answers	extra information	mark
5(a)	sexual reproduction		1
5(b)	any **three** from: • coat colour inherited / controlled by genes • it has horse and zebra features • gets gametes from both parents • genes / DNA / chromosomes / genetic information in gametes • zorse receives genes / DNA / chromosomes / genetic information from parents		3
Total			**4**

COMPONENT NUMBER: BLY1F

COMPONENT NAME: Science B / Biology

STATUS: Final

DATE: January 2009

question	answers	extra information	mark
6(a)	21		1
6(b)	1/26 or 8/208 or 4/104 or 2/52 **or** 3.8%	allow 'out of' in each case	1
6(c)	under 35		1
6(d)	any **two** from: • low success rate **or** not always successful • high number of multiple births • expensive • stressful / emotional • side effects		2
Total			**5**

COMPONENT NUMBER: BLY1F

COMPONENT NAME: Science B / Biology

STATUS: Final

DATE: January 2009

question	answers	extra information	mark
7(a)	antibodies	allow antitoxins / memory cells do **not** allow antigens	1
	immune	ignore protection allow resistant	1
7(b)(i)	fell		1
	numerical qualification to zero / nothing / by 100%	allow stopped in 1995	1
7(b)(ii)	(no) % vaccination fell **or** when no vaccination	ignore circle	1
	but autism numbers did not fall / stayed high / increased **or** '(yes) might support it if time lag between vaccination and autism symptoms' / 'time lag for diagnosis' (1) 6 year time lag quantified (1)		1
Total			**6**

COMPONENT NUMBER: BLY1F

COMPONENT NAME: Science B / Biology

STATUS: Final

DATE: January 2009

question	answers	extra information	mark
8(a)(i)	does not contain drug / chemical	allow eg fake / sugar pill / dummy drug ignore control	1
8(a)(ii)	as control **or** to see if the effects are psychological **or** allows blind testing	allow 'to compare (with NRT)' ignore fair test	1
8(b)(i)	gum	allow gum placebo allow placebo	1
8(b)(ii)	high / highest number of participants / people **or** correct number given ie gum 16706, gum placebo 9319, placebo 16458		1
8(c)(i)	nasal spray		1
8(c)(ii)	highest <u>percentage</u> of people stopped / 24% stopped biggest difference between treatment and placebo	 allow 'highest by 4%' for **2** marks	1 1
Total			**7**