AQA

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
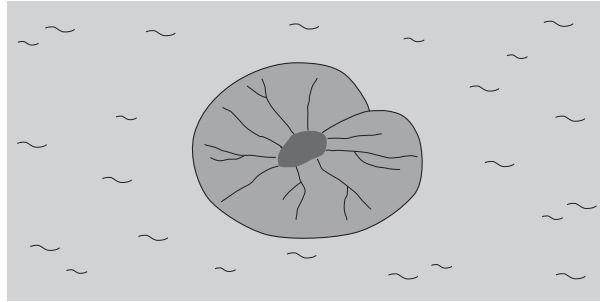- In all calculations, show clearly how you work out your answer.

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.

....

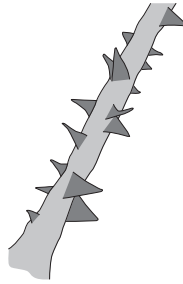...

(1 mark)

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

Thorns help this plant survive.

Suggest how.

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....
(1 mark)

1 (d) This plant lives in very dry areas.
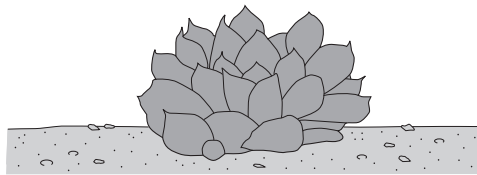
The swollen leaves help this plant to survive in very dry places.

Suggest how.

....

....
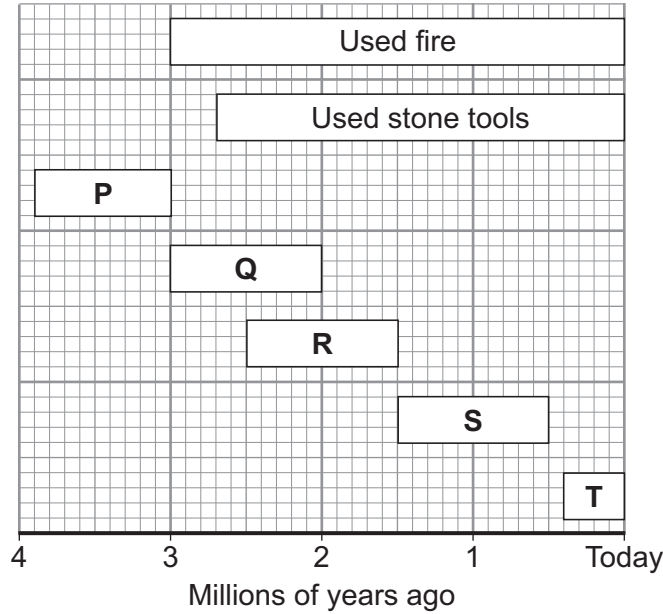*(1 mark)*

4

Turn over ▶

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)

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

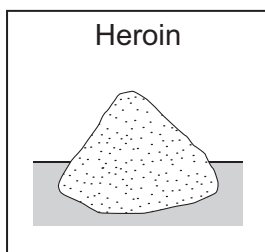**Turn over for the next question**

Turn over ▶

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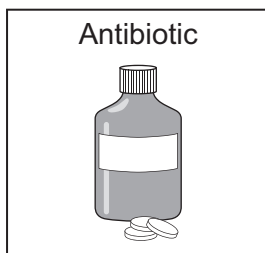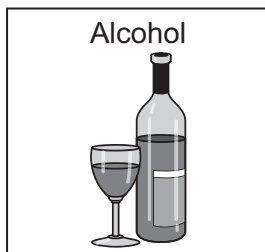
List A Substance	List B Information
Alcohol	Used to treat bacterial diseases
Antibiotic	A very addictive drug
Heroin	May cause lung cancer
Cigarette smoke	May cause babies to be born with abnormal limbs
	May cause liver disease

(4 marks)

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.
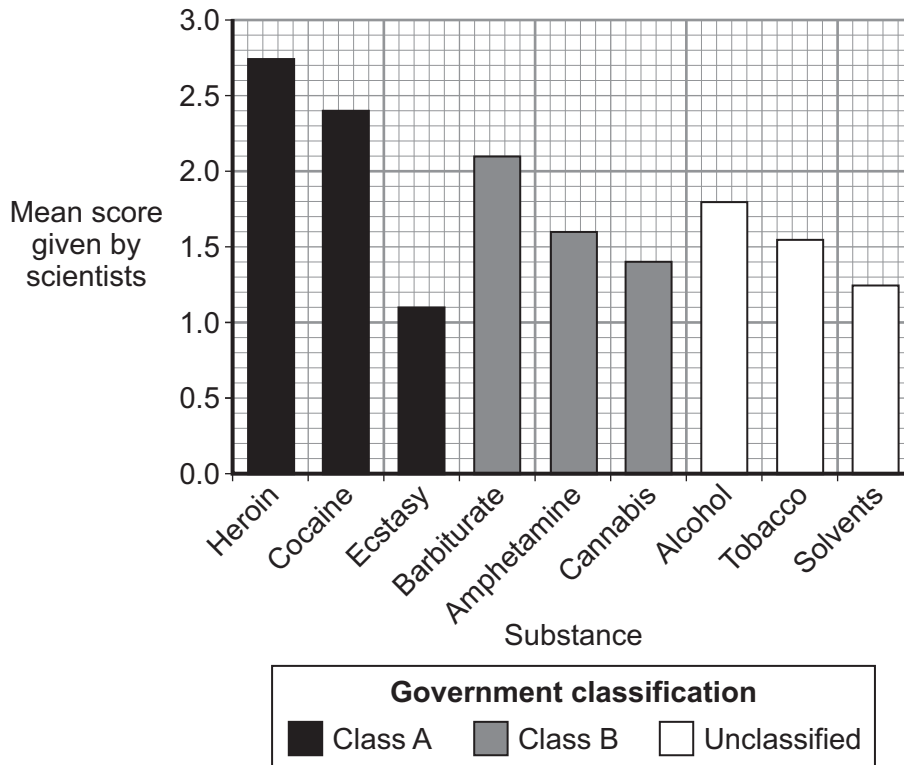
....
(1 mark)

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 ▶

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

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

Embryo transplantation

Genetic engineering

Taking cuttings

Tissue culture

Taking part of the stem from a plant, then putting this part of the stem in wet soil in a plant pot.

Growing groups of cells from a plant on special jelly.

Transferring genes from one organism to a different organism.

Growing plants from seeds in a garden.

Separating groups of cells from a very young developing animal then putting the groups of cells into host mothers.

(4 marks)

4

Turn over ▶

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

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

Turn over ▶

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

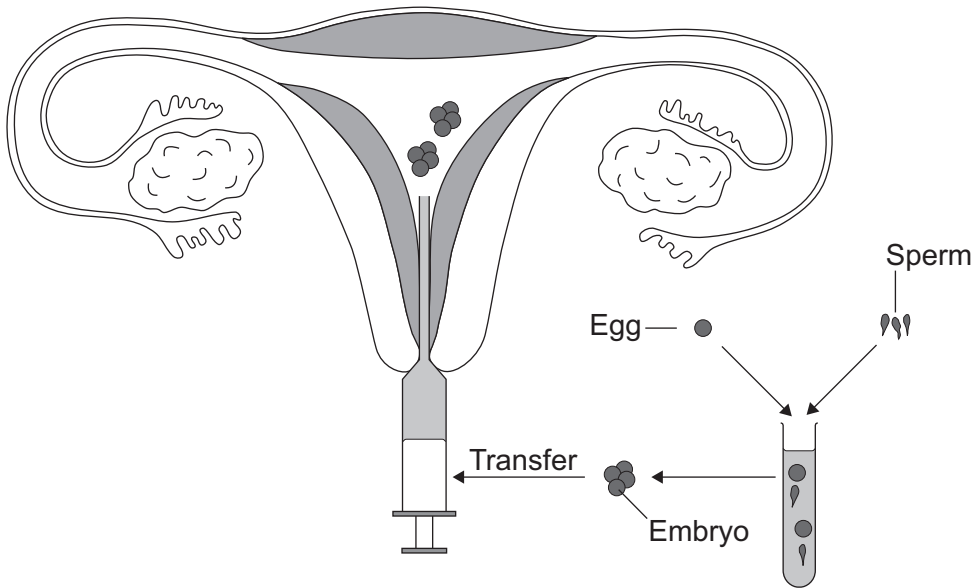**7** In-vitro fertilisation (IVF) is used to help some women get pregnant.

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.

....

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(4 marks)

6

Turn over ▶

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)

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

There are no questions printed on this page

**DO NOT WRITE ON THIS PAGE
ANSWER IN THE SPACES PROVIDED**