Surname		Other Names	
Centre Number			Candidate Number				
Candidate Signature									

For Examiner's Use

General Certificate of Secondary Education
January 2008

SCIENCE B **BLY1F**
Unit Biology B1

F

BIOLOGY
Unit Biology B1

Foundation Tier

Tuesday 15 January 2008 1.30 pm to 2.15 pm

For this paper you must have:
- a pencil and a ruler.

You may use a calculator.

Time allowed: 45 minutes

Instructions
- Use blue or black ink or ball-point pen.
- Fill in the boxes at the top of this page.
- Answer **all** questions.
- Answer the questions in the spaces provided.
- 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.

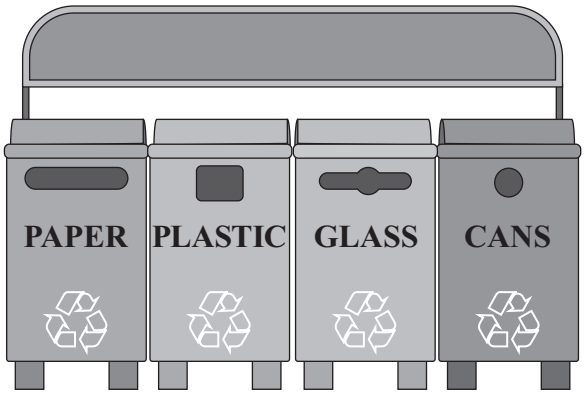
Advice
- In all calculations, show clearly how you work out your answer.

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			

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

1 There are many ways in which we can help to protect the environment.

The drawing shows recycling bins.



(a) (i) Give **one** way in which recycling paper helps to protect the environment.

.....

.....

(1 mark)

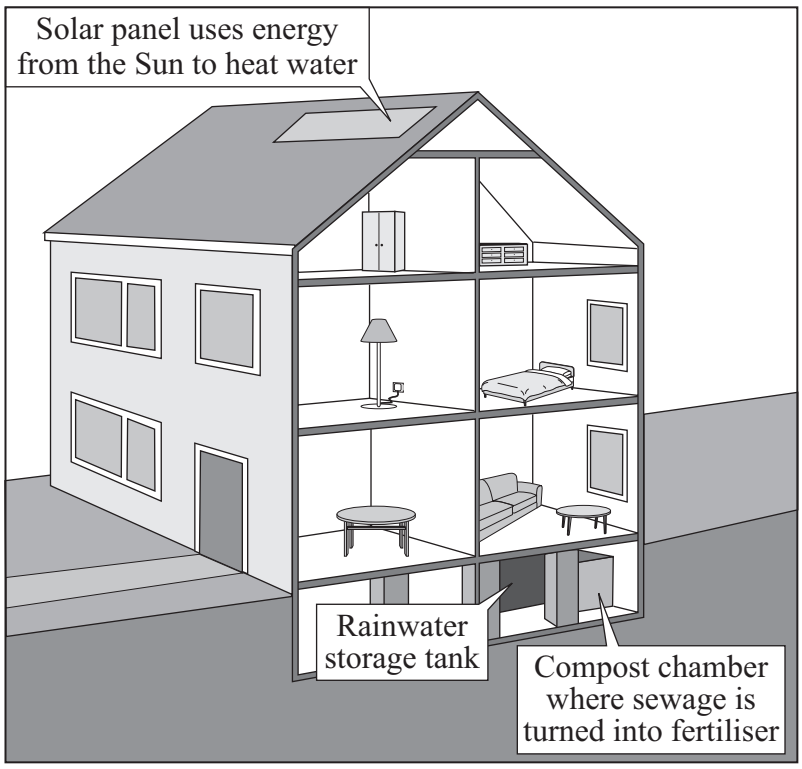
(ii) Give **one** way in which recycling cans helps to protect the environment.

.....

.....

(1 mark)

(b) The drawing shows an 'ecohouse'. This house has been designed to help to protect the environment.



How do the following features of the 'ecohouse' help to protect the environment?

(i) The solar panel

.....

.....

(1 mark)

(ii) The rainwater storage tank

.....

.....

(1 mark)

(iii) The compost chamber

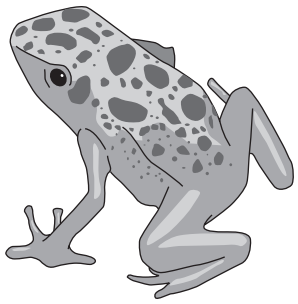
.....

.....

(1 mark)

5

2 The drawing shows a poison-dart frog.



(a) The poison-dart frog moves mainly by jumping.

Use information from the drawing to suggest **one** way in which this frog is adapted for jumping.

.....

.....

(1 mark)

(b) Use the information below to suggest how the poison-dart frog is adapted for survival.

- This poison-dart frog is bright blue in colour.
- Animals that eat poison-dart frogs become very sick.

.....

.....

(1 mark)

(c) There are over five thousand species of frogs in the world. One third of these species are threatened with extinction.

(i) Suggest **two** reasons why many species of frogs are now threatened with extinction.

1 .....

.....

2 .....

.....

(2 marks)

(ii) It is important that we do not allow species of frogs to become extinct.

Suggest **one** reason why.

.....

.....

(1 mark)

5

Turn over for the next question

3 (a) Use words from the box to complete the sentences about controlling conditions in our bodies.

kidneys	**liver**	**lungs**	**skin**

(i) When we breathe out, water leaves the .....

(1 mark)

(ii) When we sweat, water leaves the body through the .....

(1 mark)

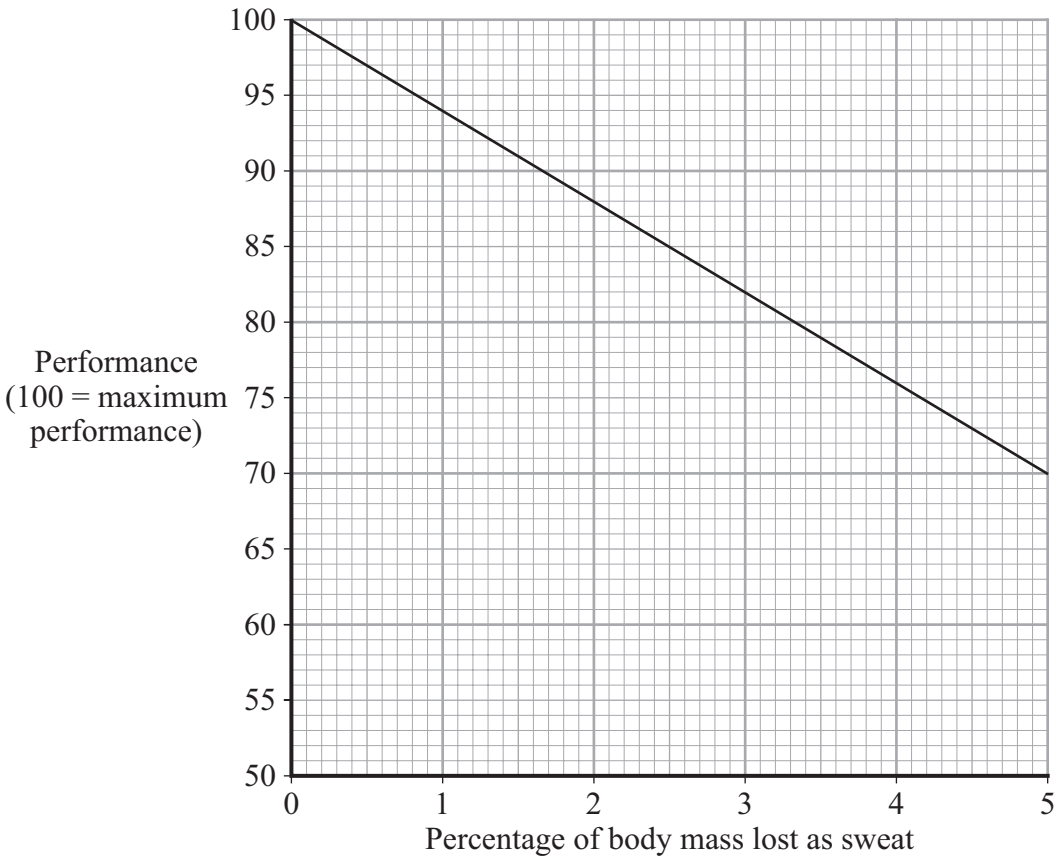
(iii) Excess water leaves the body in a liquid called urine.

Urine is produced by the ..... .

(1 mark)

(b) We lose a lot of sweat during exercise. When this happens, we cannot perform as well as we could at the start of the exercise.

The graph shows the effect of losing sweat on the performance of an athlete.



(i) Describe the effect of losing sweat on performance.

.....

.....

(1 mark)

(ii) How can athletes reduce this effect on performance?

.....

.....

(1 mark)

5

Turn over for the next question

4 Health is affected by diet and exercise.

(a) List **A** gives the names of three conditions which affect the body.

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

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

List A – Condition	**List B – Information**
	Linked to lack of food
High blood cholesterol level	
	Linked to eating too much saturated fat
Arthritis	
	Linked to too much salt in the diet
Reduced resistance to infection	
	Linked to too much weight acting on the joints

(3 marks)

(b) Give **two** reasons why exercise is good for us.

1 .....

.....

2 .....

.....

(2 marks)

5

5 Scientists have produced many different types of GM (genetically modified) food crops.

(a) Use words from the box to complete the sentence about genetic engineering.

clones	**chromosomes**	**embryos**	**genes**

GM crops are produced by cutting ..... out of the

..... of one plant and inserting them into the cells of a crop plant.

(2 marks)

(b) Read the information about GM food crops.

- Herbicide-resistant GM crops produce higher yields.
- Scientists are uncertain about how eating GM food affects our health.
- Insect-resistant GM crops reduce the total use of pesticides.
- GM crops might breed naturally with wild plants.
- Seeds for GM crops can be bought from only one manufacturer.
- The numbers of bees will fall in areas where GM crops are grown.

Use this information to answer these questions.

(i) Give **two** reasons why some farmers are in favour of growing GM crops.

1 .....

.....

2 .....

.....

(2 marks)

(ii) Give **two** reasons why many people are against the growing of GM crops.

1 .....

.....

2 .....

.....

(2 marks)

6

6 Polio is a disease caused by a virus. In the UK, children are given polio vaccine to protect them against the disease.

(a) In the sentences below, draw a ring around the correct words in each box.

(i) It is difficult to kill the polio virus inside the body

because the virus | is not affected by drugs / lives inside cells / produces antitoxins | .

(1 mark)

(ii) The vaccine contains an | active / infective / inactive | form of the polio virus.

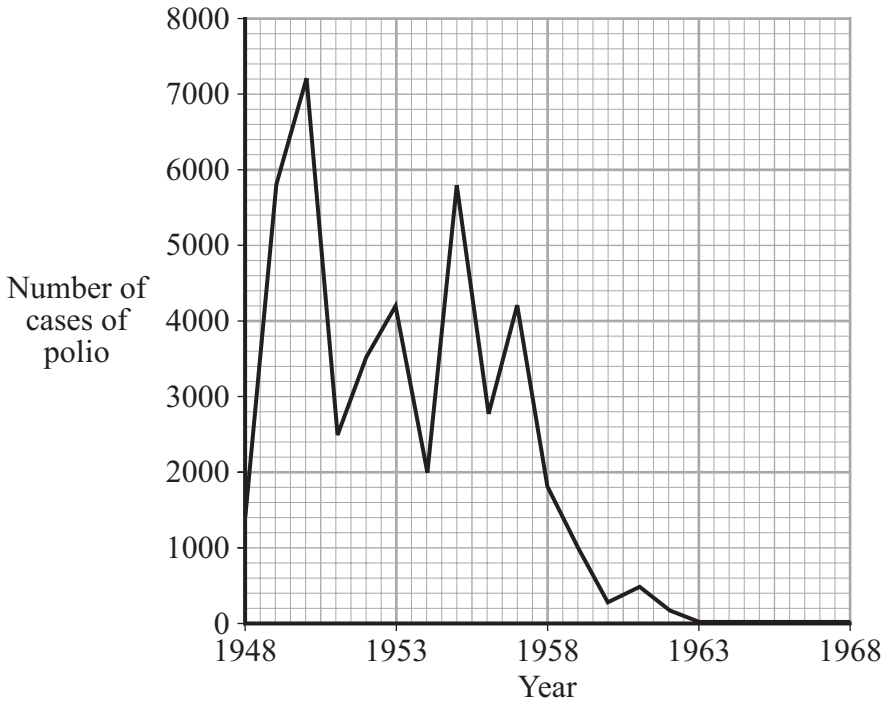
(1 mark)

(iii) The vaccine stimulates the white blood cells to

produce | antibiotics / antibodies / drugs | which destroy the virus.

(1 mark)

(b) The graph shows the number of cases of polio in the UK between 1948 and 1968.



(i) In which year was the number of cases of polio highest?

.....

(1 mark)

(ii) Polio vaccination was first used in the UK in 1955.

How many years did it take for the number of cases of polio to fall to zero?

.....

(1 mark)

(iii) There have been no cases of polio in the UK for many years. But children are still vaccinated against the disease.

Suggest **one** reason for this.

.....

.....

(1 mark)

6

7 Many people use drugs recreationally.

(a) (i) What is meant by the recreational use of drugs?

.....

.....

(1 mark)

(ii) Explain why a person might become addicted to a recreational drug.

.....

.....

.....

.....

(2 marks)

(b) Some people move on from using one type of recreational substance to using another.

Some recreational substances are legal, but some are illegal.

Illegal drugs are classified as Class A, B or C. Class A drugs are the most dangerous.

The table on the opposite page shows government statistics linking the use of pairs of recreational substances.

A '+' in the table shows that there is a strong statistical link between the use of two substances.

For example, people who use solvents are very likely to have used tobacco before using solvents. This is shown by a '+' in the table.

Substance used first	Substance used later									
	Legal substances			Class C drug	Class B drugs			Class A drugs		
	Tobacco	Alcohol	Solvents	Cannabis	Amphetamine	Tranquilliser	Ecstasy	Cocaine	Crack	Heroin
Tobacco		+	+	+	+		+		+	
Alcohol	+		+	+	+	+	+	+		
Solvents				+	+					
Cannabis	+	+			+	+	+	+		
Amphetamine						+	+	+	+	
Tranquilliser			+						+	+
Ecstasy								+		+
Cocaine			+						+	
Crack										+
Heroin									+	

(i) Many people think that using cannabis leads onto using class A drugs.

Does the data in the table support this view?

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

Use data from the table to support your answer.

.....

.....

(1 mark)

(ii) What is most likely to lead people to use class A drugs?

Use data from the table to support your answer.

.....

.....

.....

.....

(2 marks)

6

Turn over ▶

8 Copper compounds are found in water that has drained through ash from power stations. Invertebrate animals are used to monitor the concentration of copper compounds in water. First, scientists must find out which invertebrate animals can survive in a range of concentrations of copper compounds.

This is how the procedure is carried out.

- Solutions of different concentrations of a copper compound are prepared.
- Batches of fifty of each of five different invertebrate species, **A**, **B**, **C**, **D** and **E**, are placed in separate containers of each solution.
- After a while, the number of each type of invertebrate which survive at each concentration is counted.

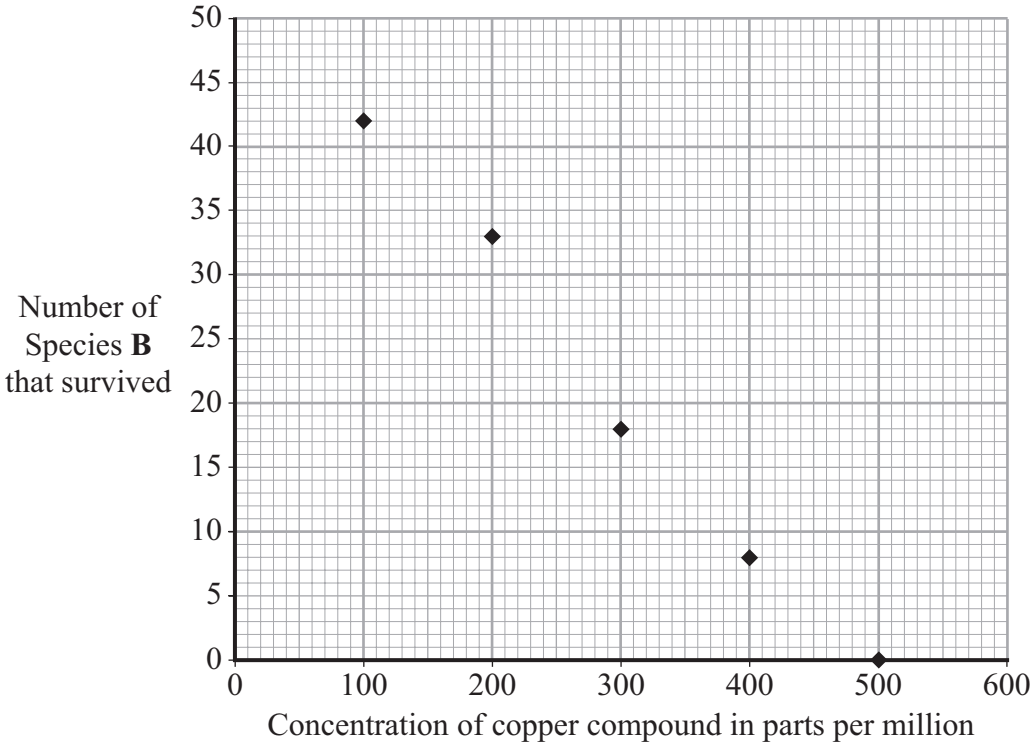
(a) Give **two** variables that should be controlled in this investigation so that the results are valid.

1 .....

2 .....

(2 marks)

(b) The graph below shows the results for species **B**.

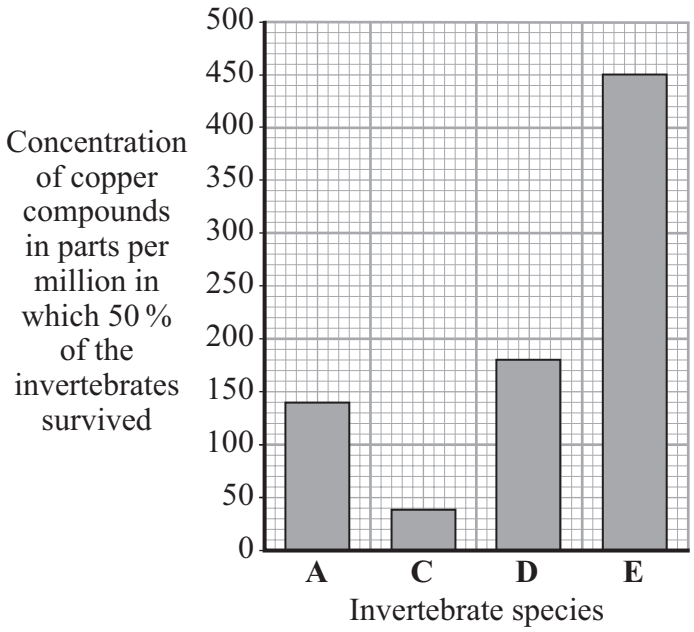


Use the graph to find the concentration of copper compounds in which 50% of Species **B** survived. To obtain full marks you must show clearly on the graph how you obtained your answer.

Concentration ..... parts per million

(2 marks)

(c) The graph below shows the results of the tests on the other four invertebrate species.



(i) Which species, **A**, **C**, **D** or **E**, is most sensitive to the concentration of copper in the water?

.....

Give the reason for your answer.

.....

.....

(1 mark)

(ii) It is often more convenient to use invertebrates rather than a chemical test to monitor water for copper.

Suggest **one** explanation for this.

.....

.....

.....

.....

(2 marks)

7

END OF QUESTIONS

There are no questions printed on this page

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