General Certificate of Secondary Education
January 2007

SCIENCE B
Unit Biology B1

BLY1F

F

BIOLOGY
Unit Biology B1

Foundation Tier

Tuesday 16 January 2007   1.30 pm to 2.15 pm

AQA
ASSESSMENT and
QUALIFICATIONS
ALLIANCE

For this paper you must have:
- 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.
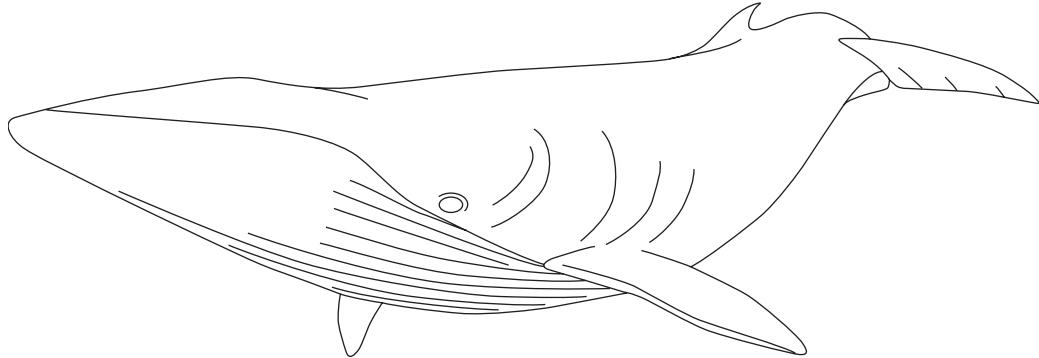
Advice
- In all calculations, show clearly how you work out your answer.

BLY1F

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

1 (a) **Figure 1** shows a minke whale. Whales live in the sea.

Figure 1

Write down **two** ways in which the body of the whale is adapted for swimming.

1 ....

....

2 ....

....

(2 marks)

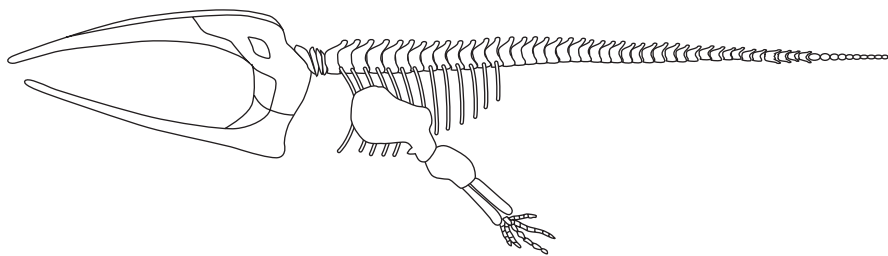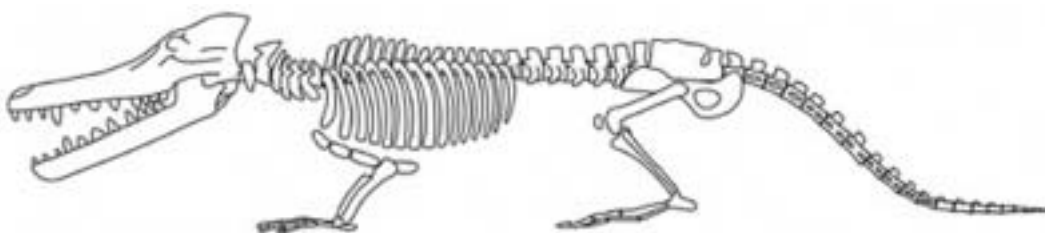(b) **Figure 2** shows the skeleton of a minke whale.

Figure 2

Figure 3 shows the fossil skeleton of an extinct whale.

Figure 3

(i) Apart from size, give **two** differences between the skeleton of the minke whale and the fossil skeleton of the extinct whale.

1 ....

....

2 ....

....

(2 marks)

(ii) In each of the sentences below, draw a ring around the correct answer.

Life on Earth first developed more than three

billion
million
thousand

years ago.

Fossils

disprove
give evidence for
prove

the theory of evolution.

(2 marks)

6

Turn over for the next question

Turn over ▶

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

List **B** gives information about substances which affect the body.

Draw a straight line from each drug in List **A** to its information in List **B**.

| **List A** | **List B** |
| **Drugs** | **Information** |

Alcohol

Cocaine

Nicotine

Thalidomide

The addictive substance in tobacco smoke

Deprives a fetus of oxygen, leading to low birth mass

A very addictive drug, sold illegally in the UK

Drug which caused many children to be born with abnormal limbs

Affects the nervous system by slowing down reactions

(4 marks)

4

3 A girl picks up a hot plate. A reflex action causes her to drop it.

The diagram shows some of the structures involved in this reflex action.

Hot plate
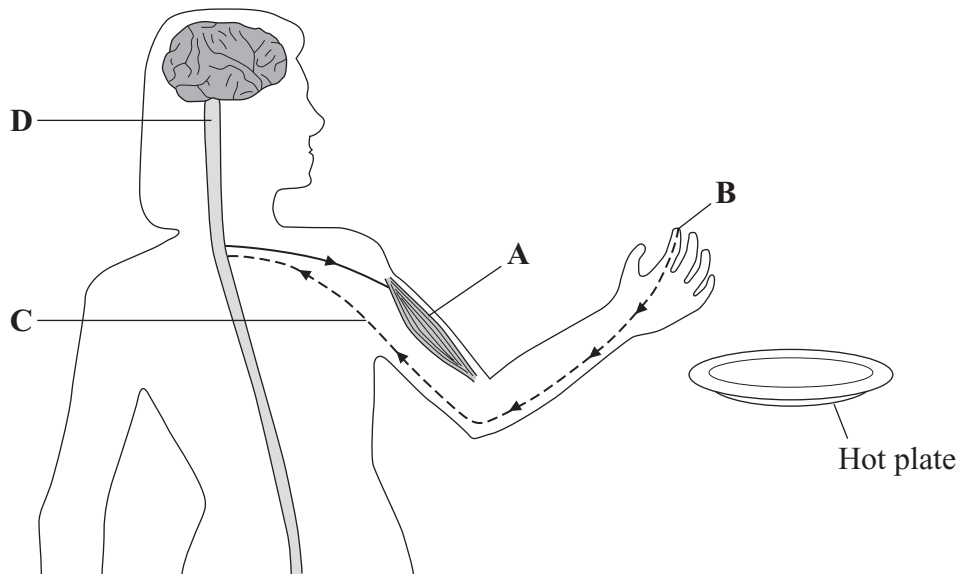
Use words from the box to name the structures labelled **A**, **B**, **C** and **D**.

brain	gland	muscle	neurone	receptor	spinal cord

A ....

B ....

C ....

D ....

(4 marks)

4

Turn over for the next question

4 (a) Use words from the box to complete the sentences about curing disease.

antibiotics	**antibodies**	**antitoxins**	**painkillers**	**statins**

The substances made by white blood cells to kill pathogens are called ....

The substances made by white blood cells to counteract poisons produced by pathogens

are called ....

Medicines which kill bacteria are called ....

(3 marks)

(b) The MMR vaccine protects people against three diseases.

Write down the names of **two** of these diseases.

1 ....

2 ....

(2 marks)

(c) All vaccinations involve some risk.

The table shows the risk of developing harmful effects:

● from the disease if a child is **not** given the MMR vaccine;

● if a child **is** given the MMR vaccine.

Harmful effect	Risk of getting the harmful effect from the disease (if not vaccinated)	Risk of getting the harmful effect from MMR vaccine
Convulsions	1 in 200	1 in 1000
Meningitis	1 in 3000	Less than 1 in 1 000 000
Brain damage	1 in 8000	0

A mother is considering if she should have her child vaccinated with the MMR vaccine.

Use information from the table to persuade the mother that she should have her child vaccinated.

....

....

....

....

(2 marks)

(d) The vaccine used to protect us from the Hepatitis B virus is produced by genetic engineering.

Yeast cells are used to produce the vaccine.

Use words from the box to complete the sentence.

chromosomes	drugs	enzymes	genes	hormones

To produce the vaccine .... are used to cut out ....

from the Hepatitis B virus which are then inserted into the yeast cells.

(2 marks)

9

Turn over for the next question

Turn over ▶

5 Long distance runners are advised to take several drinks during a race.

The table gives the composition of two drinks, Isotonic and Cola.

Drink	Sugar concentration in grams per litre	Sodium ion concentration in mmol per litre	Chloride ion concentration in mmol per litre
Isotonic	73	24	12
Cola	105	3	1

Explain why Isotonic would be the best drink for a long distance runner on a hot day.

....

....

....

....

(2 marks)

2

6 *Obesity* is a factor that affects Coronary Heart Disease (CHD).

(a) What is meant by *obesity*?

....

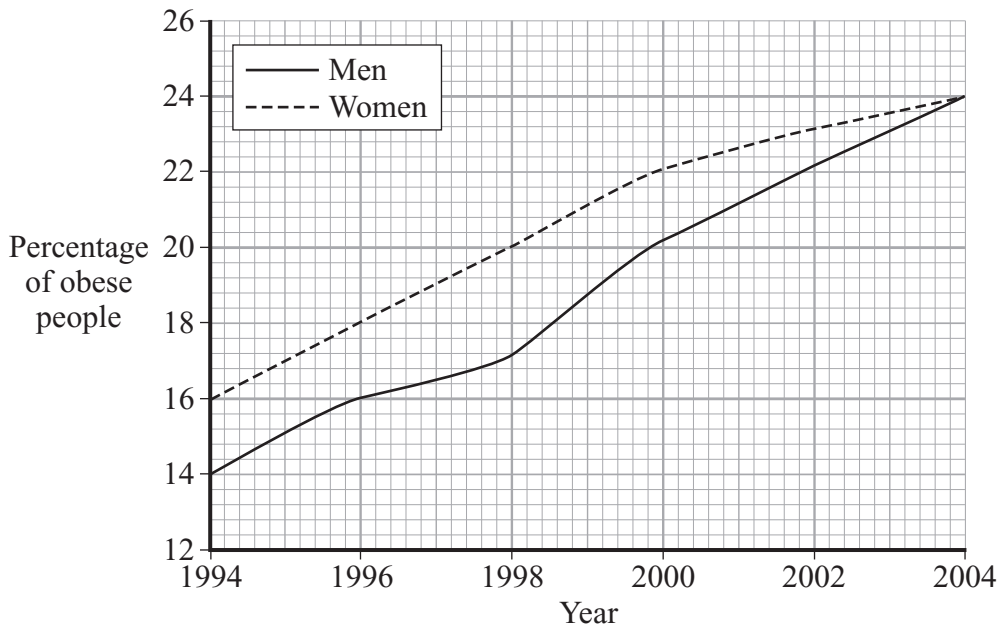...

(1 mark)

(b) The graph shows how the percentages of obese men and women in the UK changed between 1994 and 2004.

(i) Describe how the percentage of obese women changed between 1994 and 2004.

....

....

....

....

(2 marks)

(ii) The percentage of obese men changed between 1994 and 2004.

Suggest **two** reasons for this change.

1 ....

....

2 ....

....
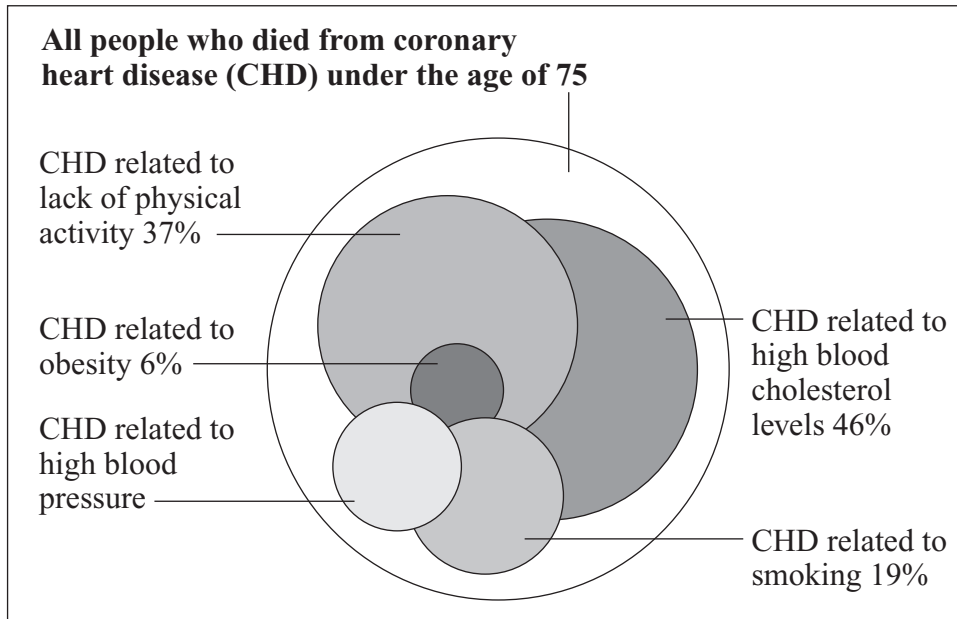
(2 marks)

Question 6 continues on the next page

Turn over ▶

(c) The chart below is published by the British Heart Foundation. It shows how death from CHD is related to a number of different factors.

All people who died from coronary heart disease (CHD) under the age of 75

CHD related to lack of physical activity 37%

CHD related to obesity 6%

CHD related to high blood pressure

CHD related to high blood cholesterol levels 46%

CHD related to smoking 19%

Each factor is represented by a circle.

The bigger the circle, the more people are affected by the factor.

(i) What is the main factor causing death from CHD?

....
(1 mark)

(ii) Estimate the percentage of deaths from CHD related to high blood pressure.

.... %
(1 mark)

(iii) The data are shown as overlapping circles instead of a bar chart. The percentages of deaths related to the different factors add up to more than 100%.

What does this tell you about some of the people who died from CHD?

....

....
(1 mark)

8

7 Deforestation affects the environment in many ways.

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

     Give **two** reasons why.

     1 ....

       ....

     2 ....

       ....

                                                            (2 marks)

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

    (i) What is meant by *biodiversity*?

       ....

       ....

                                               (1 mark)

    (ii) Give **one** reason why it is important to prevent organisms from becoming extinct.

       ....

       ....

                                               (1 mark)

4

**Turn over for the next question**

Turn over ▶

8 Red squirrels live in trees. They eat seeds from the cones of conifer trees. Squirrels store cones in 'larders' on the ground. These larders provide food through the winter. Each red squirrel makes and defends one larder.

Scientists monitor squirrel numbers to find the best habitats for the squirrel's survival. In one investigation, scientists estimated the numbers of squirrels in different types of woodland. Each woodland contains a different species of conifer tree.

Here is their method.

- Ten woods of each type of woodland were surveyed.

- In each wood scientists measured out two transects (strips), each 600 m long and 10 m wide.

- A scientist walked slowly down the centre of each transect, recording the number of squirrel larders he could see.
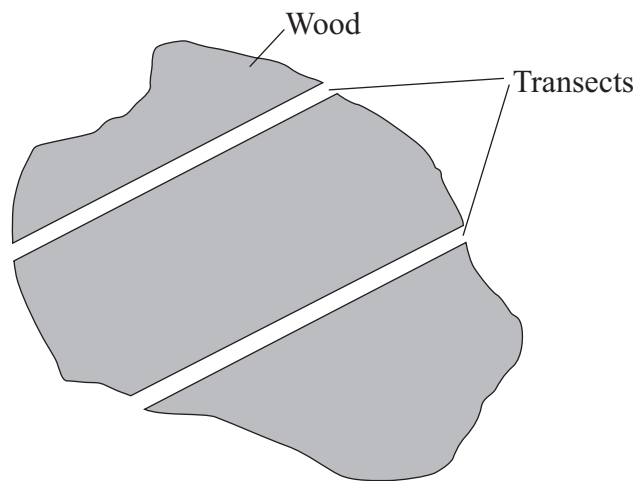
(a) (i) How many transects all together did the scientists survey in each **type** of woodland?

Number of transects ....
(1 mark)

(ii) What was the total area surveyed in **one** wood?

....

Area .... m^2
(1 mark)

(b) Name **one** variable that was controlled in this investigation.

....

(1 mark)

(c) (i) The scientists recorded the number of larders instead of the number of squirrels
they saw.

Explain how this could have increased the accuracy of the investigation.

....

....

(1 mark)

(ii) This method of counting the number of larders could have led to an inaccurate
estimate of the number of squirrels.

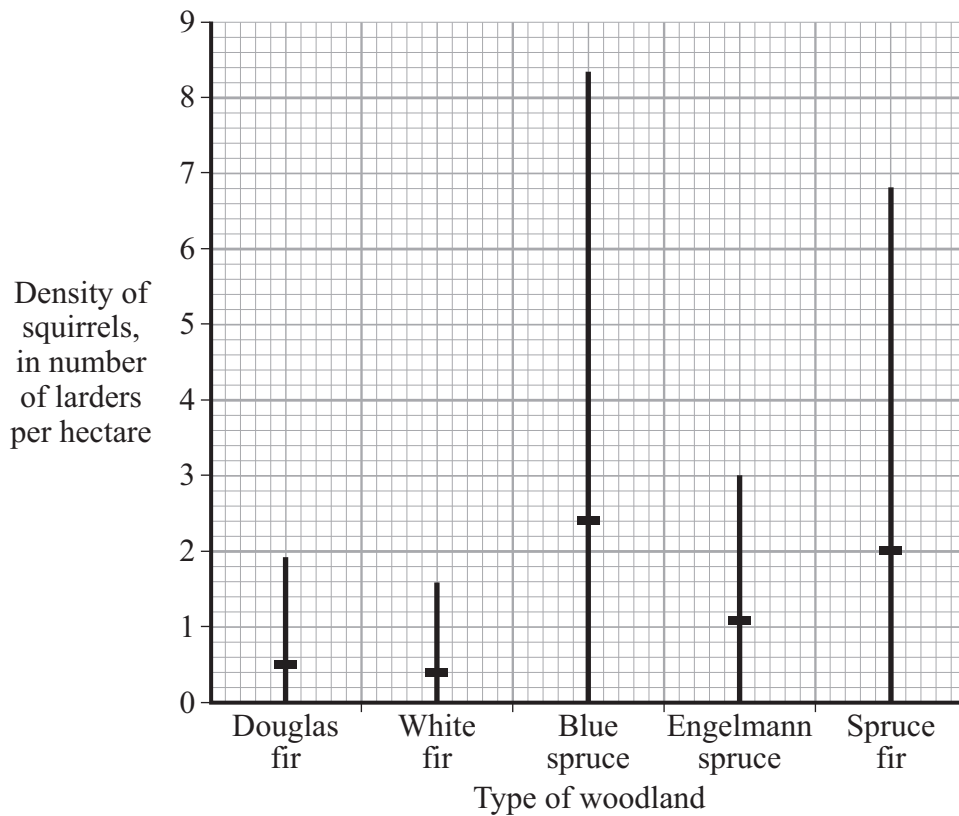Explain how.

....

....

....

....

(2 marks)

Question 8 continues on the next page

Turn over ▶

(d) The results of the investigation are shown in the graph.

The horizontal mark on each bar represents the mean number of larders per hectare of woodland.

The range of the number of larders observed for Douglas fir woodland was 0 to 1.9 per hectare.

(i) What was the range of the number of larders per hectare in the Spruce fir woodland?

....

(1 mark)

(ii) The highest mean number of larders per hectare was found in Blue spruce woodland.

Suggest **one** explanation for this.

....

....

(1 mark)

END OF QUESTIONS

There are no questions printed on this page

There are no questions printed on this page