

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
June 2010

Additional Science

Unit Biology B2

BLY2F

Biology

Unit Biology B2

F

Written Paper

Friday 21 May 2010 9.00 am to 9.45 am

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

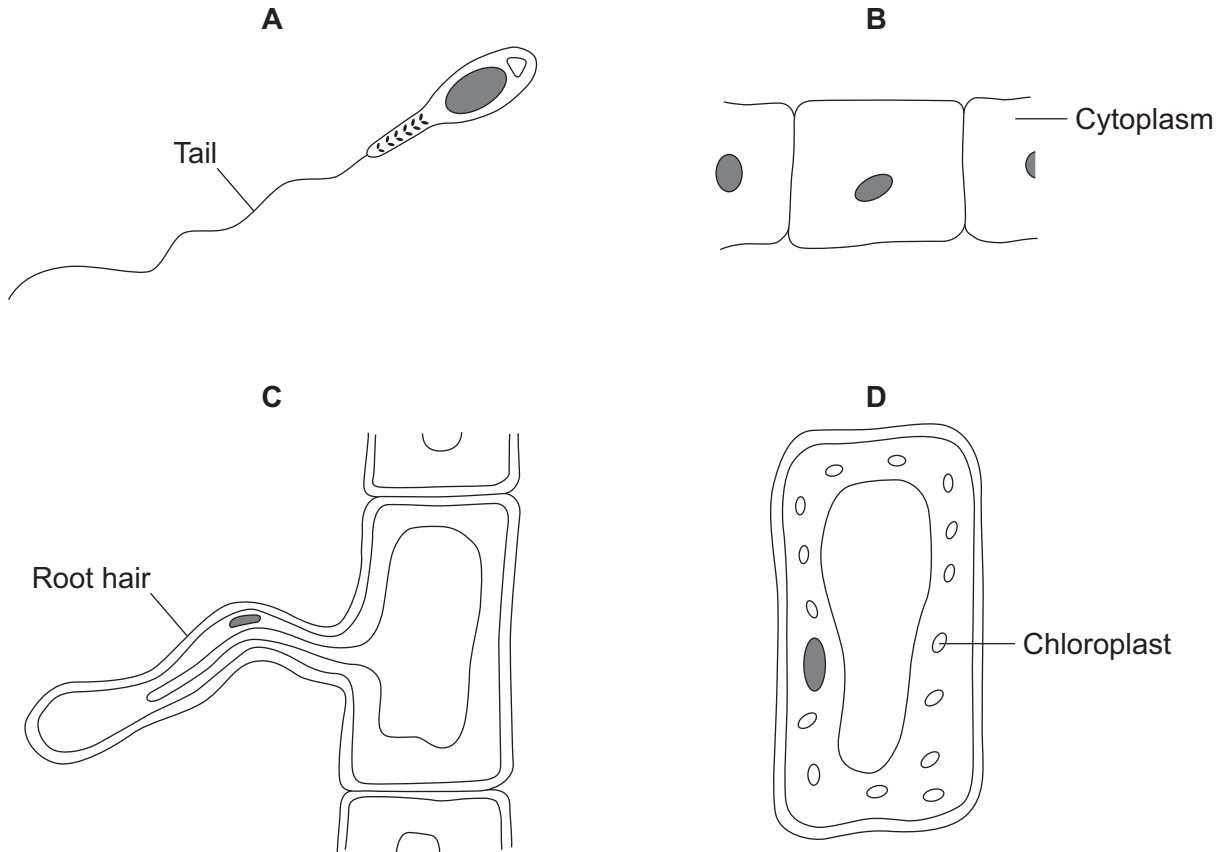
- In all calculations, show clearly how you work out your answer.



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

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

- 1 The diagrams show four types of cell, **A**, **B**, **C** and **D**.
Two of the cells are plant cells and two are animal cells.



- 1 (a) (i) Which **two** of the cells are plant cells?

Tick (✓) **one** box.

A and B

A and D

C and D

(1 mark)



1 (a) (ii) Which part is found **only** in plant cells?

Draw a ring around **one** answer.

cell membrane

cell wall

nucleus

(1 mark)

1 (b) (i) Which cell, **A**, **B**, **C** or **D**, is adapted for swimming?

(1 mark)

1 (b) (ii) Which cell, **A**, **B**, **C** or **D**, can produce glucose by photosynthesis?

(1 mark)

1 (c) Cells **A**, **B**, **C** and **D** all use oxygen.

For what process do cells use oxygen?

Draw a ring around **one** answer.

osmosis

photosynthesis

respiration

(1 mark)

5

Turn over for the next question

Turn over ►



2 This question is about what happens during decay.

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

2 (a) After living things die, they are decayed by

animals.
microorganisms.
plants.

(1 mark)

2 (b) Decay happens faster when there is plenty of oxygen and conditions are

cold.
dry.
moist.

(1 mark)

2 (c) During decay carbon dioxide is produced by

osmosis.
respiration.
photosynthesis.

(1 mark)

2 (d) Decay releases mineral salts into the soil.

These mineral salts are absorbed by plant

leaves.
roots.
stems.

(1 mark)

4



Turn over for the next question

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ANSWER IN THE SPACES PROVIDED**

Turn over ►



0 5

3 The body uses enzymes to digest (break down) large food molecules into smaller molecules.

3 (a) (i) Draw **one** line from **each** large food molecule to the enzyme that acts on it.

**Large food
molecule**

Enzyme

starch

amylase

protease

fat

lipase

protein

isomerase

(3 marks)



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

Starch is broken down into

amino acids.
fatty acids and glycerol.
sugars.

Fat is broken down into

amino acids.
fatty acids and glycerol.
fructose.

Protein is broken down into

amino acids.
fructose.
sugars.

(3 marks)

3 (b) Bile helps digestion.

Where is bile produced?

Draw a ring around **one** answer.

liver

mouth

stomach

(1 mark)

7

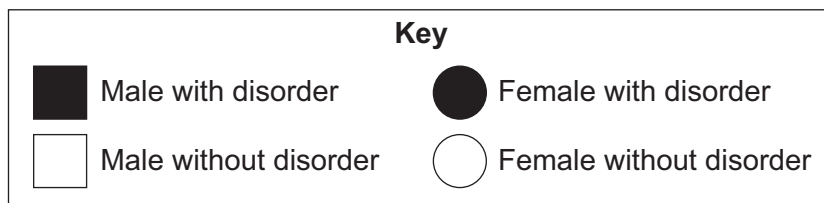
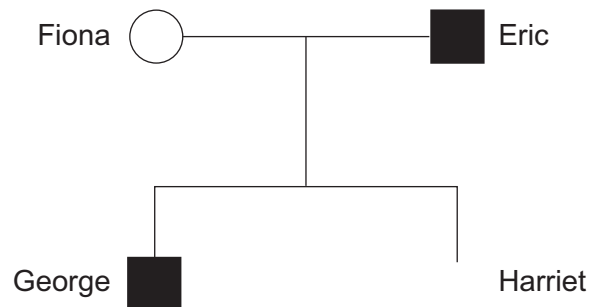
Turn over for the next question

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4 The family tree shows the inheritance of a disorder caused by a dominant allele.

Fiona and Eric have two children George and Harriet.



4 (a) The son, George, has the disorder.

The daughter, Harriet, does **not** have the disorder.

4 (a) (i) Use the key to draw the symbol for Harriet next to her name **on the family tree**.

(2 marks)

4 (a) (ii) The symbol **D** represents the dominant allele for the disorder.
The symbol **d** represents the recessive allele.

Fiona has the pair of alleles **dd**.

Write the correct pairs of alleles in the boxes.

Harriet has the pair of alleles .

A person with the disorder could have

the pair of alleles or the pair of alleles .

(3 marks)



4 (b) Before Harriet was born, a doctor suggested that Fiona should have the embryo 'screened'.

4 (b) (i) Give **one** reason why the doctor suggested screening.

Tick (✓) **one** box.

To check for the **D** allele

To check the sex of the embryo

To cure the disorder

(1 mark)

4 (b) (ii) Why do some people believe that embryos should **not** be screened?

.....

.....

(1 mark)

7

Turn over for the next question

Turn over ►



5 Diabetes is a disease in which the concentration of glucose in a person's blood may rise to fatally high levels. Insulin controls the concentration of glucose in the blood.

5 (a) Where is insulin produced?

Draw a ring around **one** answer.

gall bladder

liver

pancreas

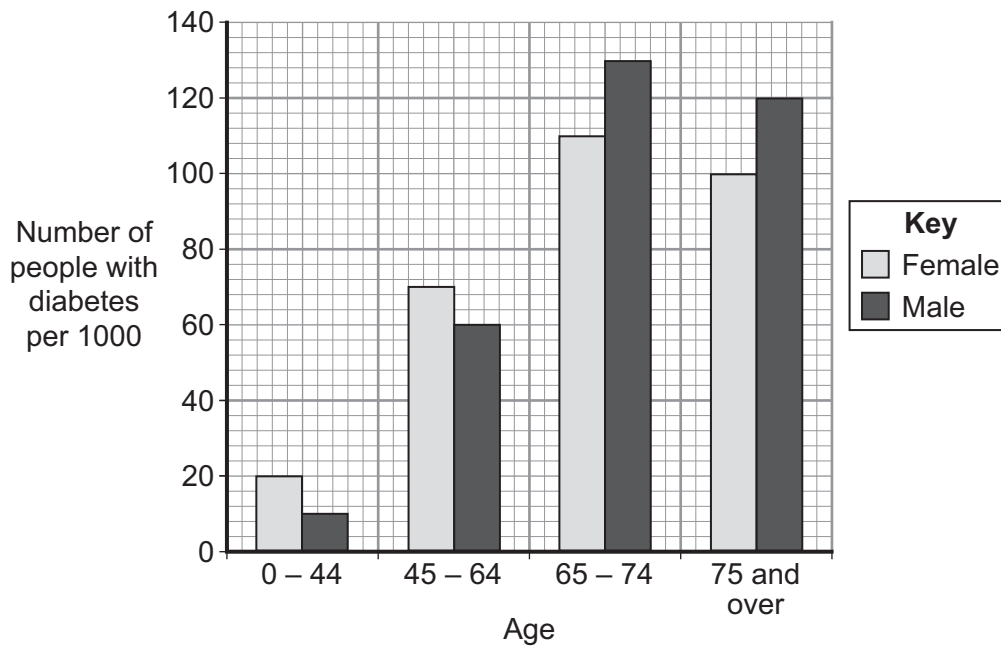
(1 mark)

5 (b) Diabetics may control their blood glucose by injecting insulin.

Apart from using insulin, give **one** other way diabetics may reduce their blood glucose.

.....
(1 mark)

5 (c) The bar chart shows the number of people with diabetes in different age groups in the UK.



5 (c) (i) Describe how the number of males with diabetes changes between the ages of 0–44 and 75 and over.

.....

.....

.....

.....

.....

.....

(3 marks)

5 (c) (ii) Compare the number of males and females with diabetes:

between the ages of 0 and 64 years

.....

.....

over the age of 65.

.....

.....

(2 marks)

7

Turn over for the next question

Turn over ►



6 This question is about photosynthesis.

6 (a) Plants make glucose during photosynthesis. Some of the glucose is changed into insoluble starch.

What happens to this starch?

Tick (✓) **one** box.

The starch is converted into oxygen.

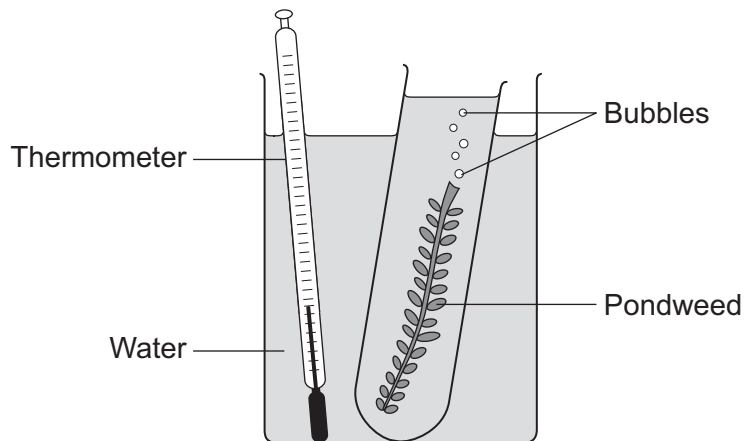
The starch is stored for later use.

The starch is used to make the leaf green.

(1 mark)

6 (b) A student investigated the effect of temperature on the rate of photosynthesis in pondweed.

The diagram shows the way the experiment was set up.



6 (b) (i) The student needed to control some variables to make the investigation fair.

State **two** of these variables.

1

2

(2 marks)



6 (b) (ii) The bubbles of gas are produced only while photosynthesis is taking place.

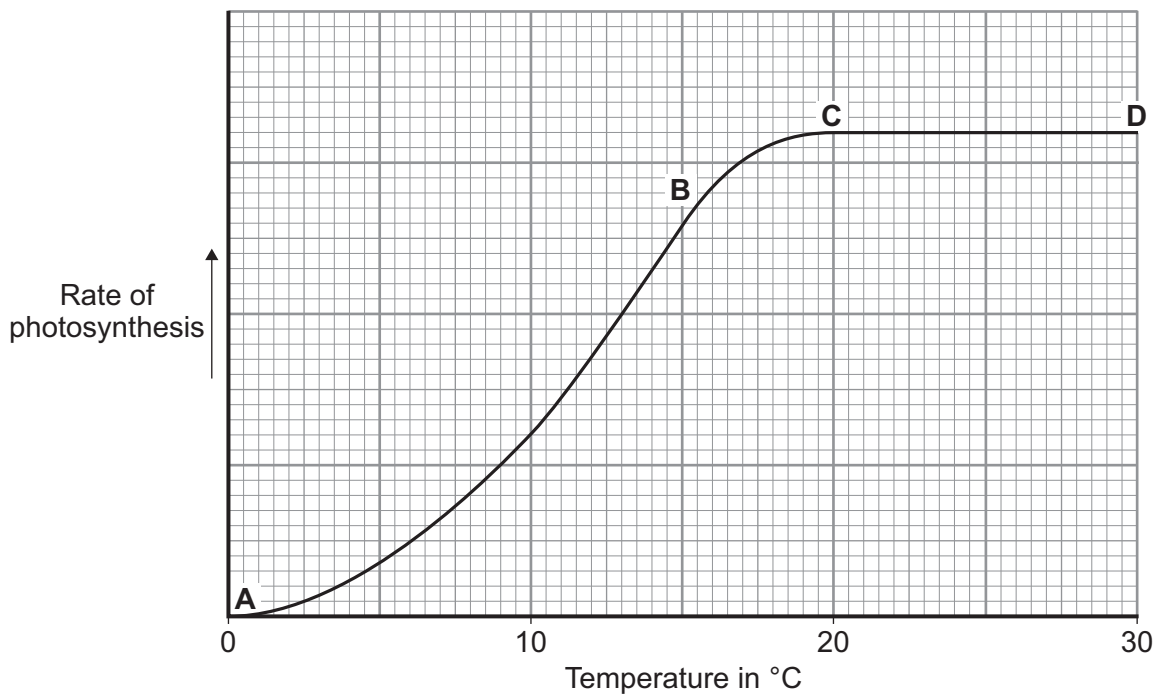
What **two** measurements would the student make to calculate the rate of photosynthesis?

1

2

(2 marks)

6 (c) The graph shows the effect of temperature on the rate of photosynthesis.



6 (c) (i) Name the factor that limits the rate of photosynthesis between the points labelled **A** and **B** on the graph.

.....
(1 mark)

6 (c) (ii) Suggest which factor, carbon dioxide, oxygen or water, might limit the rate of photosynthesis between the points labelled **C** and **D** on the graph.

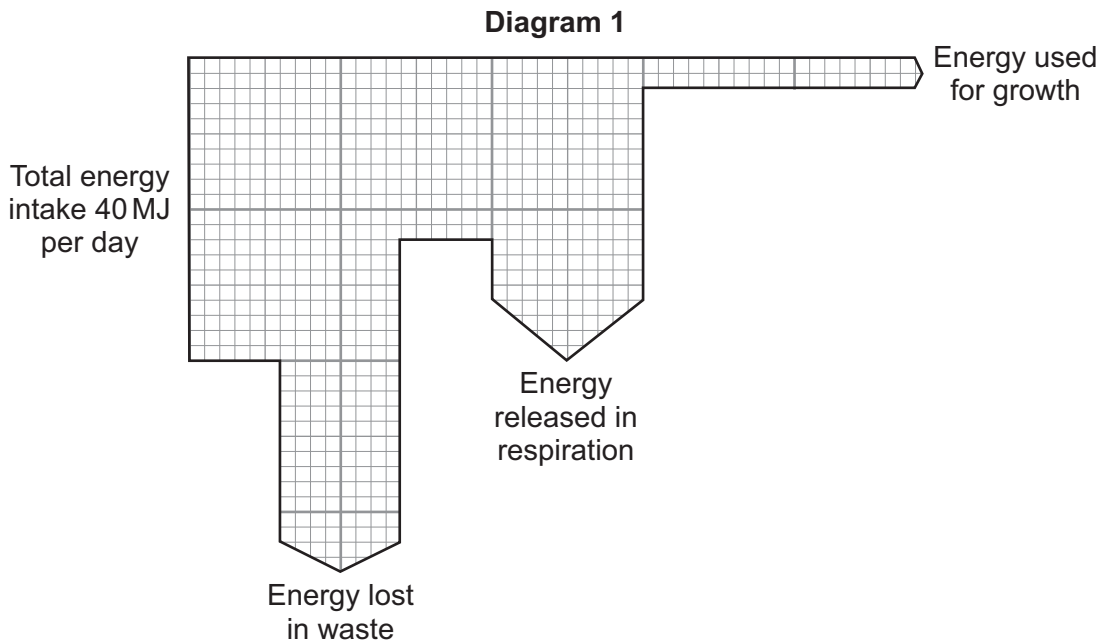
.....
(1 mark)

7

Turn over ►



7 (a) **Diagram 1** represents what happens to the energy in the food eaten by a herbivore (an animal that eats plants).



7 (a) (i) How much energy is released in respiration by the herbivore?

.....

Answer MJ per day
 (1 mark)

7 (a) (ii) What proportion of the total energy intake of the herbivore is used for growth?

Show clearly how you work out your answer.

.....

Proportion
 (2 marks)

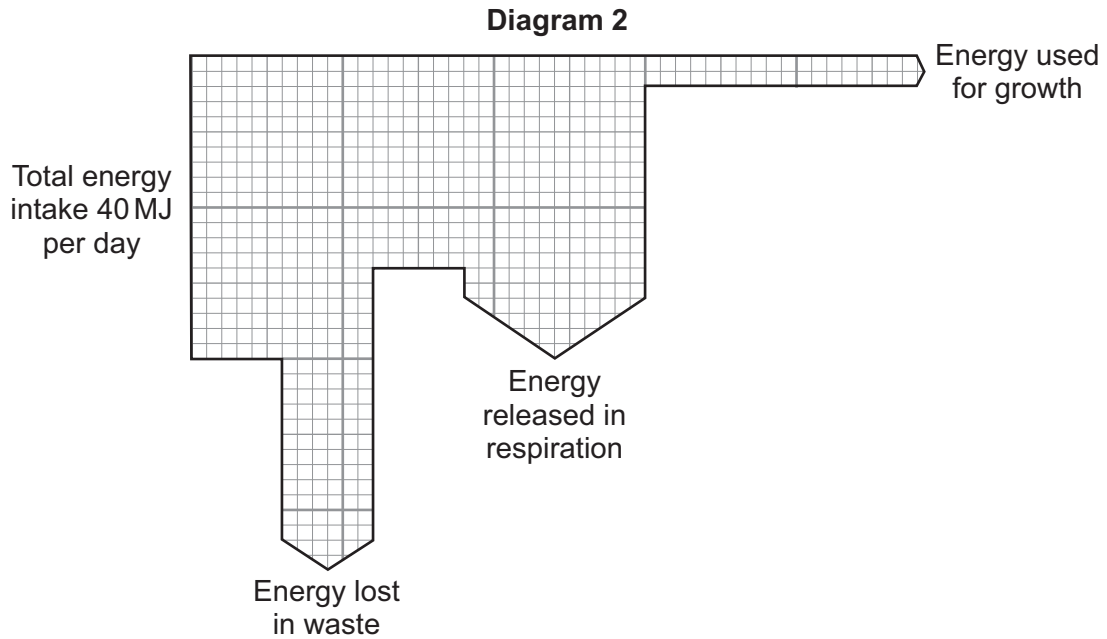
7 (b) Give **two** ways in which the energy, released in respiration, is used by a herbivore.

1
 2

(2 marks)



7 (c) **Diagram 2** represents what happens to the energy in the food eaten by a carnivore (an animal that eats other animals).



The carnivore releases a greater proportion of energy in respiration than the herbivore.

Suggest **one** reason for this.

.....

 (1 mark)

7 (d) Some farmers keep their animals outdoors. Other farmers keep their animals indoors.

Keeping farm animals indoors increases the proportion of energy in their food that is converted into growth.

Give **two** reasons why.

1

.....

2

.....
 (2 marks)

8

END OF QUESTIONS



There are no questions printed on this page

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