OCR
RECOGNISING ACHIEVEMENT

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GENERAL CERTIFICATE OF SECONDARY EDUCATION

GATEWAY SCIENCE

B632/01

BIOLOGY B

Unit 2 Modules B4 B5 B6 (Foundation Tier)

OCE/17650

Candidates answer on the Question Paper
A calculator may be used for this paper

OCR Supplied Materials:
None

Other Materials Required:
- Pencil
- Ruler (cm/mm)

Wednesday 9 June 2010
Afternoon

Duration: 1 hour

B6320 1

Candidate Forename		Candidate Surname	

Centre Number						Candidate Number				

INSTRUCTIONS TO CANDIDATES

- Write your name clearly in capital letters, your Centre Number and Candidate Number in the boxes above.
- Use black ink. Pencil may be used for graphs and diagrams only.
- Read each question carefully and make sure that you know what you have to do before starting your answer.
- Answer **all** the questions.
- Do **not** write in the bar codes.
- Write your answer to each question in the space provided. Additional paper may be used if necessary but you must clearly show your Candidate Number, Centre Number and question number(s).

INFORMATION FOR CANDIDATES

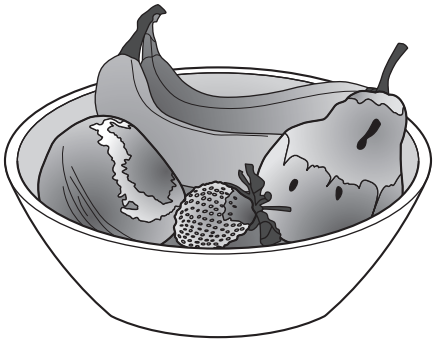
- The number of marks is given in brackets **[ ]** at the end of each question or part question.
- The total number of marks for this paper is **60**.
- This document consists of **20** pages. Any blank pages are indicated.

Answer **all** the questions.

Section A – Module B4

1 Alistair leaves some fruit in a bowl for too long.

The fruit starts to decay.



(a) The decay is caused by decomposers called fungi.

The fungi use a gas from the air as they decay the fruit.

Put a (ring) around the gas they use.

carbon dioxide **carbon monoxide** **nitrogen** **oxygen** **[1]**

(b) Fruit can be preserved to stop it decaying.

One way is to cook the fruit and then seal it in a metal can.

(i) Write down **two other** ways to preserve fruit.

1 .....

2 ..... **[2]**

(ii) Explain how canning fruit stops it decaying.

.....

..... **[1]**

[Total: 4]

2 Elaine uses organic farming methods to keep pigs.

Alison uses intensive farming methods to keep pigs.

Elaine's farm

Alison's farm

(a) Look at the statements about farming methods.

One statement correctly describes an **organic farming** method.

Put a tick (✓) in the box next to the correct statement.

Artificial fertilisers are banned.	☐
Herbicides are used to kill weeds.	☐
Insecticides are used to kill insects.	☐
The pigs are kept in small pens.	☐

[1]

(b) Alison says that intensive farming is better than organic farming.

Do you agree? .....

Give **one** reason for your answer.

.....

..... **[1]**

(c) Alison also grows vegetables on her farm.

She adds phosphates to the soil to help the vegetables grow.

If the soil is deficient in phosphates, some parts of the vegetables will **not** grow properly.

Which parts of the vegetables will be most affected?

Put **one** tick (✓) in the box next to the best answer.

flowers and fruits	☐
fruits and roots	☐
leaves and flowers	☐
roots and leaves	☐

[1]

[Total: 3]

3 This question is about plants.

(a) The table shows some **parts of a plant** and the **job they do**.

Finish the table.

parts of a plant	job they do
leaf pores	let in carbon dioxide
flowers	
chloroplasts	
cell walls	

[3]

(b) Look at the picture of a tree.

The tree is 90 metres high but water can still reach its leaves.

Write about how water travels through the tree.

.....

.....

.....

..... **[3]**

(c) Increasing light intensity increases the rate of water movement through a plant.

Write down **one other** environmental change that **increases** the rate of water movement.

..... **[1]**

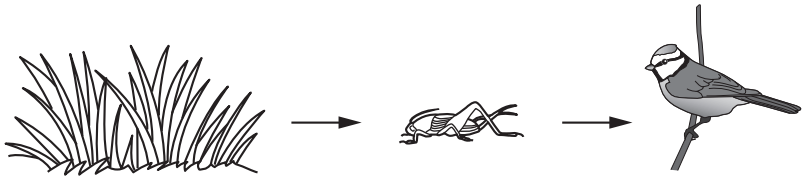
(d) Plants produce biomass.

Put a (ring) around the process that plants use to do this.

digestion **egestion** **hydroponics** **photosynthesis** **[1]**

[Total: 8]

4 Look at the diagram of a food chain.



	grass	crickets	birds
total biomass	100 kg	10 kg	1 kg

(a) The crickets are examples of **consumers**.

Why are crickets called consumers in this food chain?

..... **[1]**

(b) The grass takes in energy.

Where does the energy come from?

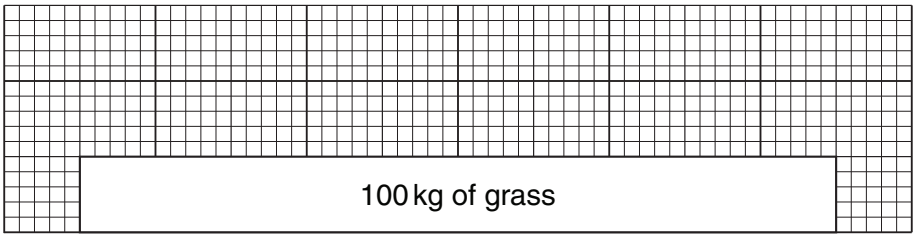
..... **[1]**

(c) A pyramid of biomass can be drawn to describe this food chain.

Finish the pyramid of biomass to include the crickets and the birds.

Make sure the bars are drawn to scale and **labelled**.

The bar for the grass has been drawn for you.



[2]

(d) Energy is 'lost' from each stage of the food chain.

Write down **one** way in which energy is lost.

..... **[1]**

[Total: 5]

Section B – Module B5

5 This question is about the blood system.

(a) Liz measures her pulse rate.

She presses her fingers against her wrist.

She counts the number of pulses in 15 seconds.

She does this three times.

The table shows her results.

	number of pulses in 15 seconds
1st measurement	19
2nd measurement	14
3rd measurement	15
average	16

(i) Liz works out that the average number of pulses in 15 seconds is 16.

Explain how she worked out this average.

.....

.....

..... **[1]**

(ii) Liz uses the value of her average pulse rate to work out her pulse rate per minute.

What is her average pulse rate **per minute**?

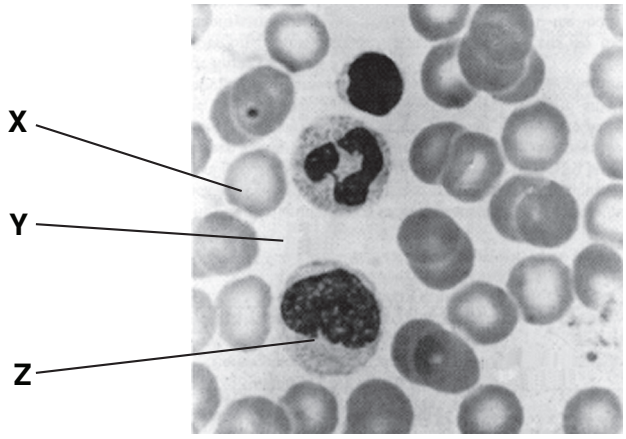
You should show your working.

answer ..... **[2]**

(iii) What causes a pulse?

..... **[1]**

(b) Liz uses a microscope to look at some blood.



Look at the list of parts of the blood.

plasma

platelet

red blood cell

white blood cell

Answer the questions by choosing your answers from the list.

(i) What is part **X**?

..... **[1]**

(ii) What is part **Y**?

..... **[1]**

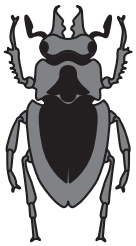
(iii) What is part **Z**?

..... **[1]**

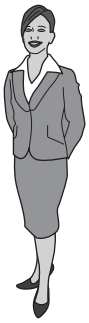
[Total: 7]

6 Look at the drawings of an insect, a human and an earthworm.

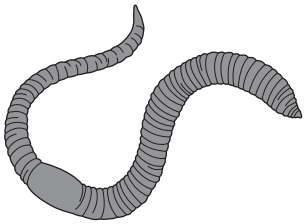
The drawings are **not** to the same scale.



insect



human



earthworm

(a) Humans have internal skeletons made of bone.

Insects are covered with an external skeleton.

What substance is an insect skeleton made of?

..... **[1]**

(b) **(i)** Insects, humans and earthworms all need oxygen.

Why do they all need oxygen?

.....

..... **[1]**

(ii) Insects take in oxygen through tiny holes along the sides of their body.

Earthworms take in oxygen all over their body surface.

Suggest why insects are **not** able to take in oxygen all over their body surface.

.....

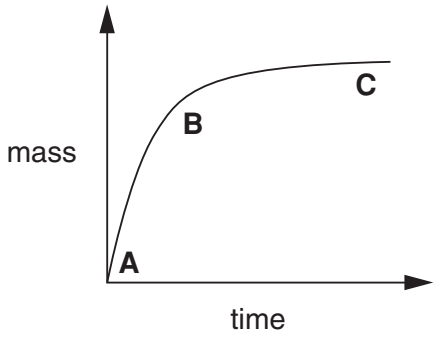
..... **[1]**

(iii) Humans remove carbon dioxide through their lungs.

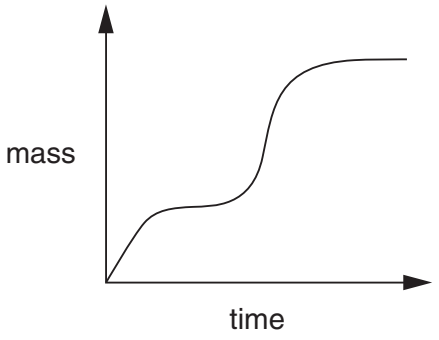
Suggest how earthworms remove carbon dioxide.

..... **[1]**

(c) The graphs show the growth curves of an earthworm and a human. (Not to the same scale.)



earthworm



human

(i) When is the earthworm growing at its fastest rate?

Choose from **A**, **B** or **C**. ..... **[1]**

(ii) The shape of the earthworm growth curve is different from the shape of the human growth curve.

Suggest **one** reason why it is different.

.....

..... **[1]**

(iii) What type of cell division is used for growth?

..... **[1]**

[Total: 7]

7 Paul's kidneys do not work properly.

He has to use a kidney dialysis machine.

(a) Describe what kidneys do when they are working properly.

.....

.....

.....

.....

.....

..... **[3]**

(b) Paul is waiting for a kidney transplant.

He is hoping to get a kidney from his identical twin brother.

(i) Suggest **two** reasons why it is better for Paul to have a kidney from his identical twin brother than from an unknown donor.

1 .....

.....

2 .....

..... **[2]**

(ii) Some body parts, such as knee and hip joints, can be replaced with mechanical replacements inside the body.

Suggest why a kidney can **not** be replaced with a mechanical replacement **inside** the body.

..... **[1]**

[Total: 6]

Section C – Module B6

8 Anna picks plums from a tree.

There is a white powder on the outside of the plums.

Anna's mother tells her that the white powder is yeast.

(a) What type of organism is yeast?

Look at the list.

Put a (ring) around the correct answer.

bacteria **fungus** **protozoa** **virus** **[1]**

(b) If a plum falls off the tree, the yeast ferments the sugars in the plum.

(i) Write down the name of the gas that is made during fermentation.

..... **[1]**

(ii) Plums can be fermented to make an alcoholic drink.

A **different** fruit is fermented to make cider.

Write down the name of this fruit.

..... **[1]**

Turn over for the remainder of question 8

(c) Alcohol produced by fermentation is used to produce a biofuel called gasohol.

(i) What is mixed with alcohol to make gasohol?

..... **[1]**

(ii) The photograph shows a train in Sweden.

The train uses another biofuel called **biogas**.

Write about how biogas is made.

Use these words in your answer.

bacteria **digester** **methane** **organic waste**

.....

.....

.....

.....

.....

..... **[3]**

[Total: 7]

9 Soil is made up from a number of different parts.

(a) Some of the parts are living and some are non-living.

(i) Humus is a non-living part of soil.

What is humus made of?

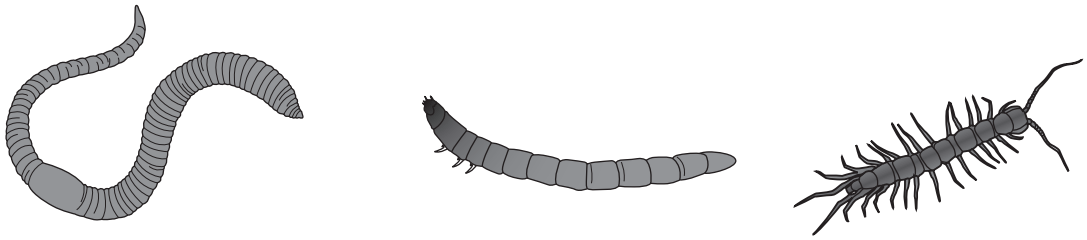
..... **[1]**

(ii) Write down **one other** non-living part of soil.

..... **[1]**

(b) Different organisms live in soil.

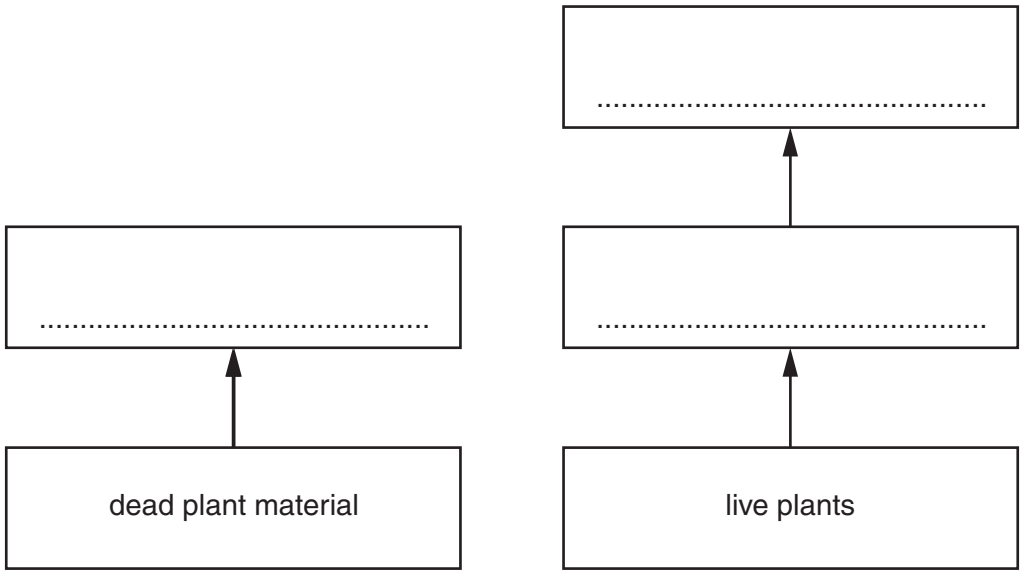
Three of these are shown in the diagram.



earthworm **wireworm** **centipede**

(i) Complete the boxes to show the feeding relationships in soil.

Write the name of each organism from the diagram in the correct box.



[1]

Turn over for the remainder of question 9

(ii) Earthworms are very important for soil fertility.

Put a tick (✓) next to **one** way that earthworms improve soil.

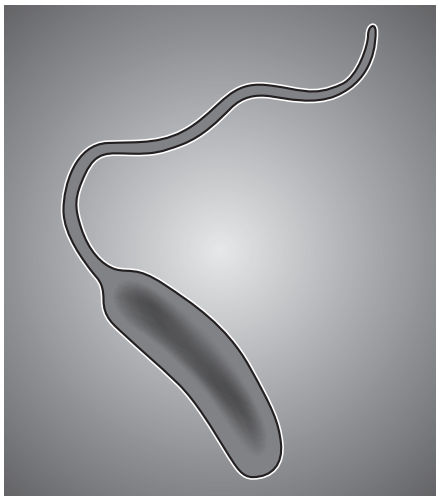
They make alkaline soils more acidic.	☐
They kill pathogenic bacteria in the soil.	☐
They make burrows that let oxygen into the soil.	☐
They ferment any dead organic material.	☐

[1]

[Total: 4]

10 Some pupils make a factsheet about cholera.

Cholera – A killer disease.



This is the bacterium that causes the disease cholera.

People are most likely to get cholera in areas where there has been a natural disaster.

If people get cholera then they need to take suitable drugs as treatment to kill the bacteria.

(a) What size is the bacterium likely to be?

Put a (ring) around the correct answer in this list.

2 mm **0.2 mm** **0.002 mm** **0.0002 mm** **[1]**

(b) The bacterium shown on the factsheet moves around.

Write down the name of the part that helps it to move.

..... **[1]**

(c) What type of medicine can be taken to treat diseases caused by bacteria?

..... **[1]**

(d) Write down **one** natural disaster that would make it more likely for cholera to spread.

..... **[1]**

[Total: 4]

11 Genetically modified (GM) plants are grown in many countries.

(a) **One** of these statements about GM plants is true.

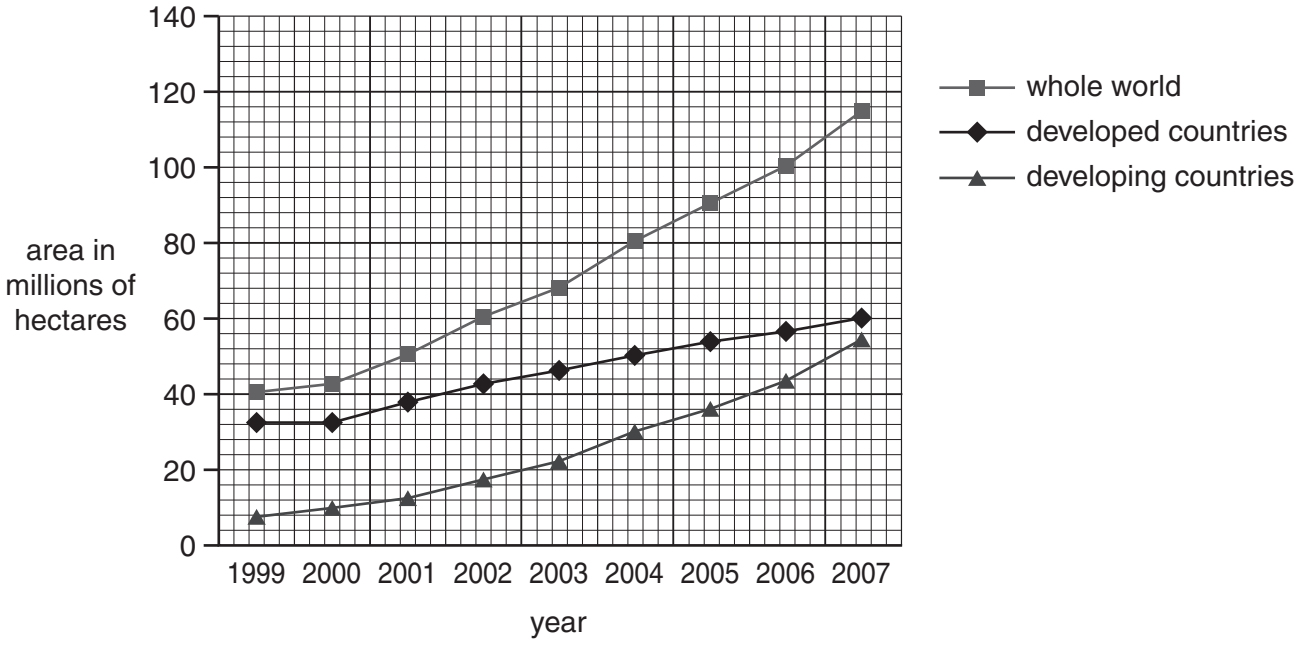
Put a tick (✓) in the box next to the true statement.

GM plants have had their DNA changed.	☐
GM plants do not have to photosynthesise to grow.	☐
GM plants do not contain chromosomes.	☐
GM plants can be grown without water.	☐

[1]

(b) Countries can be described as either developing or developed.

The graph shows the area of land used to grow GM crops in different types of country from 1999 to 2007.



(i) Describe **two** trends shown in the graph.

1 .....

.....

2 .....

..... **[2]**

(ii) In 2007, **58** million hectares of land were used to grow GM crops in the USA.

How can you use the graph to show that the USA must be a developed country?

.....

..... **[1]**

(iii) Most of the GM plants that are grown in the USA are soya bean plants.

Write down the name of **one other** GM plant that is grown in many countries.

..... **[1]**

[Total: 5]

END OF QUESTION PAPER

PLEASE DO NOT WRITE ON THIS PAGE