OCR
RECOGNISING ACHIEVEMENT

F

B632/01

GENERAL CERTIFICATE OF SECONDARY EDUCATION

GATEWAY SCIENCE

BIOLOGY B

Unit 2 Modules B4 B5 B6 (Foundation Tier)

WEDNESDAY 23 JANUARY 2008

Afternoon
Time: 1 hour

Candidates answer on the question paper.
Additional materials (enclosed):
None

Calculators may be used.
Additional materials: Pencil
Ruler (cm/mm)

CUP/T47855

Candidate Forename		Candidate Surname	

Centre Number						Candidate Number				

INSTRUCTIONS TO CANDIDATES

- Write your name in capital letters, your Centre Number and Candidate Number in the boxes above.
- Use blue or 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.
- Do **not** write outside the box bordering each page.
- Write your answer to each question in the space provided.

INFORMATION FOR CANDIDATES

- The number of marks for each question is given in brackets [ ] at the end of each question or part question.
- The total number of marks for this paper is 60.

FOR EXAMINER'S USE		
Section	**Max.**	**Mark**
A	**20**	
B	**20**	
C	**20**	
TOTAL	**60**	

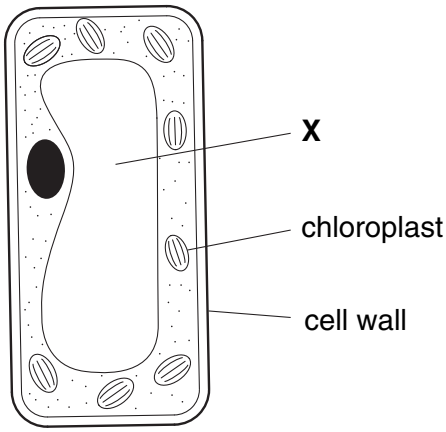
This document consists of **19** printed pages and **1** blank page.

[Turn over

Answer **all** the questions.

Section A – Module B4

1 Look at the diagram of a plant cell.



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

Put a (ring) around the correct answer.

cell membrane

cytoplasm

nucleus

vacuole

[1]

(b) Chloroplasts are needed for plants to grow.

Explain why, as fully as you can.

.....

.....

.....[2]

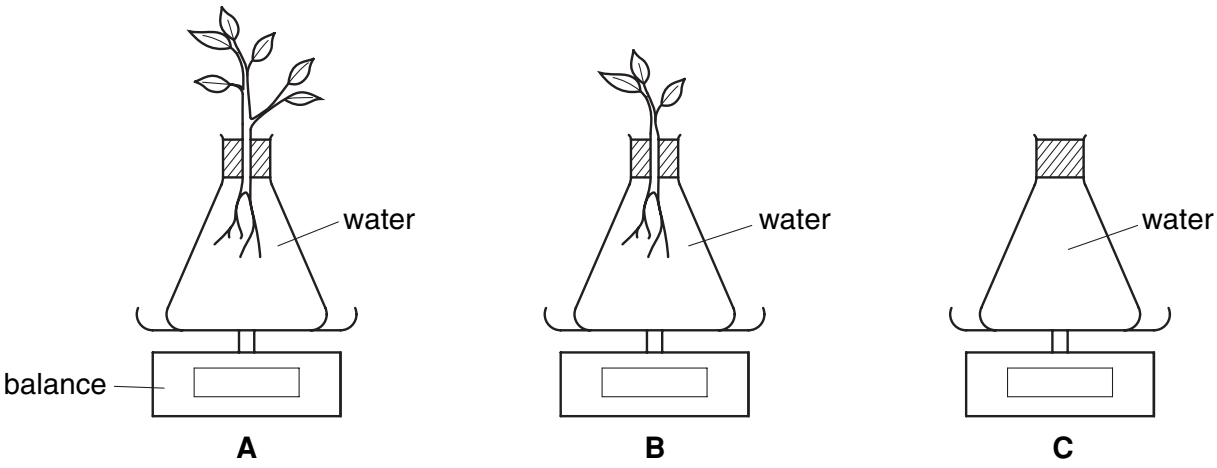
(c) What is the job of the cell wall?

.....[1]

[Total: 4]

2 Kate is investigating water loss in plants.

She sets up three flasks, **A**, **B** and **C**.



(a) All the flasks weigh the same at the start.

Kate leaves the flasks for 24 hours.

Which flask would you expect to lose most weight after 24 hours?.....

Explain your answer.

.....

.....

.....[3]

(b) Kate leaves the plants in the flasks to grow.

She keeps the water filled up and makes sure the plants have enough light.

However, the plants don't grow very well and the leaves become yellow.

Kate's teacher says that this is because the plants are **not** getting something from the water.

Suggest what Kate could add to the water to stop the leaves becoming yellow.

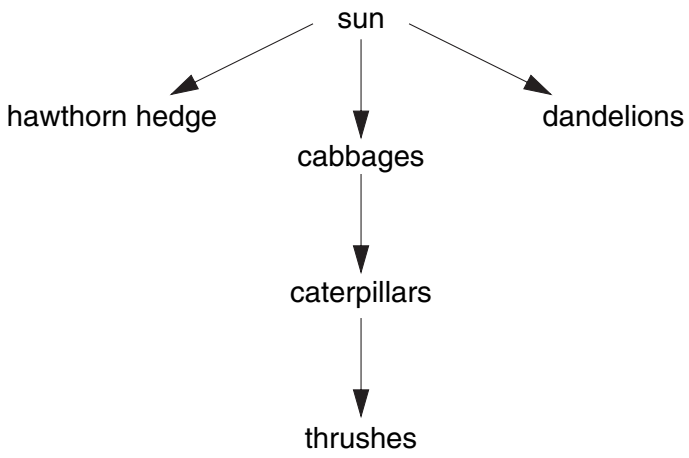
.....[1]

[Total: 4]

3 Chris is a farmer.

He grows cabbages in one of his fields.

Look at part of the food web in his cabbage field.



(a) Chris puts **pesticide** on his cabbage field.

(i) What is Chris trying to kill with the pesticide?

Choose your answer from the food web.

.....[1]

(ii) How does using the pesticide improve the cabbage crop?

.....

.....[1]

(b) Chris puts **herbicide** on his cabbage field.

(i) What is Chris trying to kill with the herbicide?

Choose your answer from the food web.

.....[1]

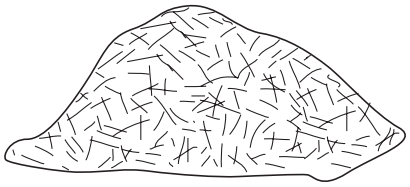
(ii) How does using the herbicide improve the cabbage crop?

.....

.....[1]

[Total: 4]

4 When Eileen cuts her grass, she puts the cuttings in a heap at the end of her garden.



The grass cuttings decay to form compost.

Eileen adds the compost to the soil in her garden.

(a) Decay is caused by **decomposers**.

Write down **one** example of a decomposer.

.....[1]

(b) Decay happens faster in the spring than in the winter.

Suggest why.

.....[1]

(c) The decomposers release carbon dioxide. This is part of the carbon cycle.

Put (rings) around **two** processes that release carbon dioxide.

combustion

diffusion

photosynthesis

respiration

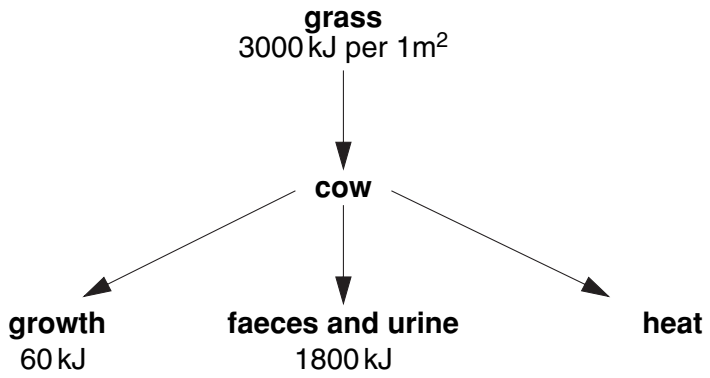
translocation

transpiration

[2]

[Total: 4]

5 Look at the energy flow through a cow.



(a) **(i)** For every 1 m^2 of grass that a cow eats, how much energy is transferred as heat?

answer ..... kJ [1]

(ii) What process in the cow's cells releases heat?

.....[1]

(b) What percentage of the energy in 1 m^2 of grass is used for the cow's **growth**?

answer ..... % [1]

(c) If humans use the milk and meat from a cow, what is the maximum amount of energy they can get for every 1 m^2 of grass?

Put a (ring) around the best answer.

30 kJ **300 kJ** **1200 kJ** **1860 kJ** **3000 kJ**

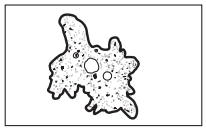
[1]

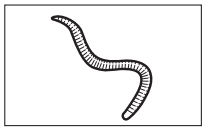
[Total: 4]

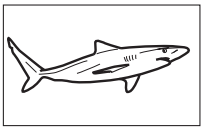
Section B – Module B5

6 This question is about the skeleton and blood system of different animals.

Look at these examples.


amoeba


worm


shark


human

Choose your answers from these examples.

(a) Which animal does **not** have a blood system?

.....[1]

(b) Which animal has gills for the exchange of gases?

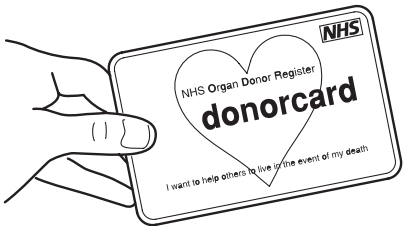
.....[1]

(c) Which **two** animals have an internal skeleton?

..... and .....[1]

[Total: 3]

7 Some people carry a donor card.



(a) **(i)** Why do people carry donor cards?

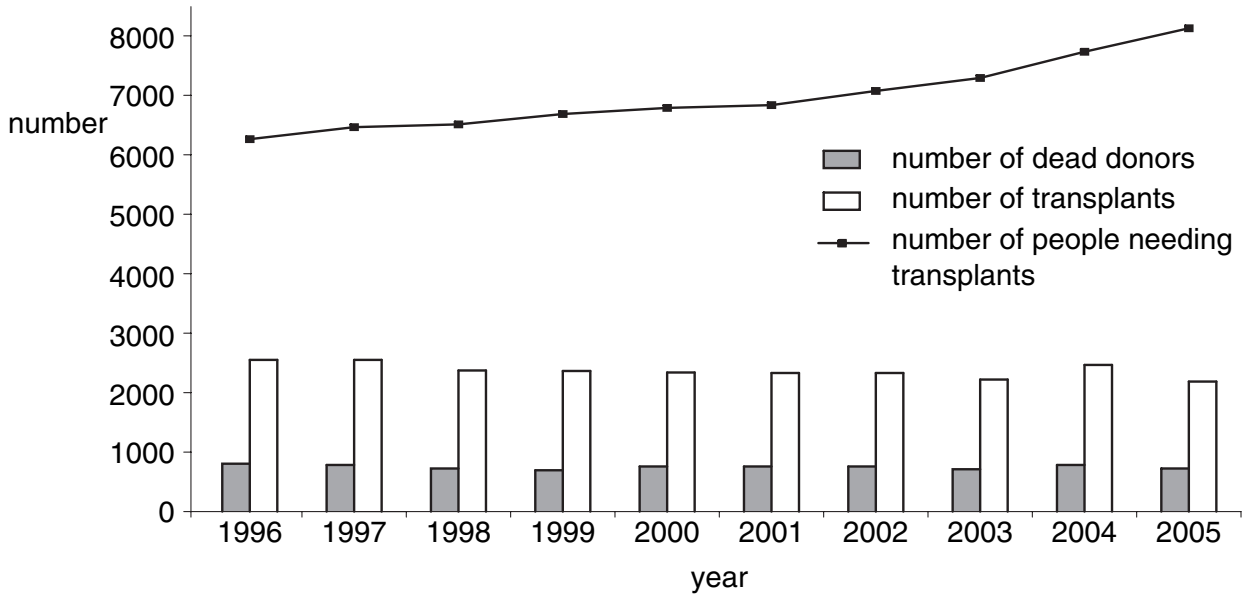
.....[1]

(ii) Write down **two** body parts that can be biologically replaced.

..... and .....[1]

(b) The graph shows the number of dead donors and the number of transplants carried out from 1996 to 2005.

It also shows the number of people needing transplants.



(i) The Government is keen to encourage more people to be donors.

Use the information in the graph to explain why.

.....

.....

.....[2]

(ii) The number of transplants carried out each year is greater than the number of dead donors.

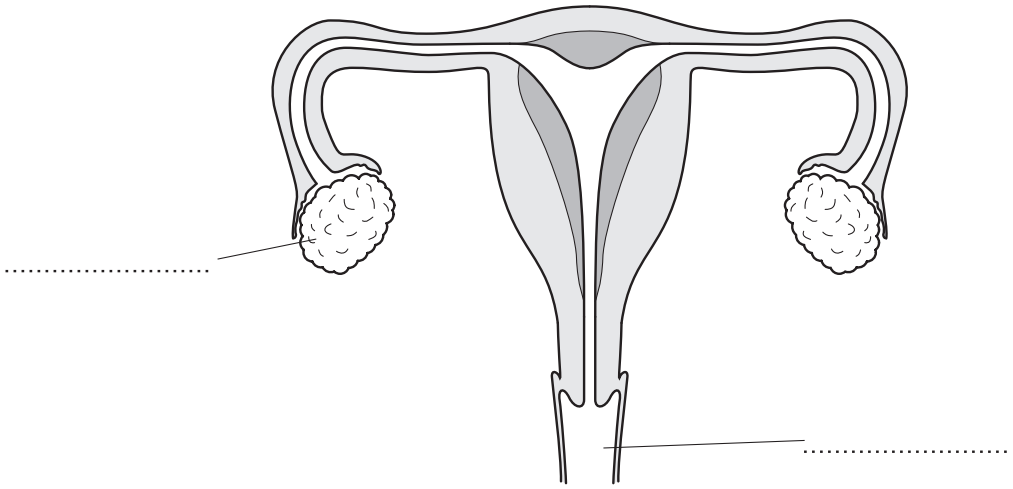
How can this be possible?

.....

.....[1]

[Total: 5]

8 **(a)** The diagram shows the female reproductive system.



(i) Finish the diagram by adding the correct labels.

Choose your words from this list.

ovary

oviduct

uterus

vagina

[2]

(ii) Where are eggs produced?

Choose your answer from the list.

.....[1]

(b) Many couples may need treatment for infertility.

The boxes show some **causes** of infertility and some possible **treatments**.

Draw straight lines to link each cause with the most suitable treatment.

cause	treatment
blocked oviducts	surrogacy
ovulation is irregular	use of FSH
uterus cannot support a baby	in vitro fertilisation (IVF)

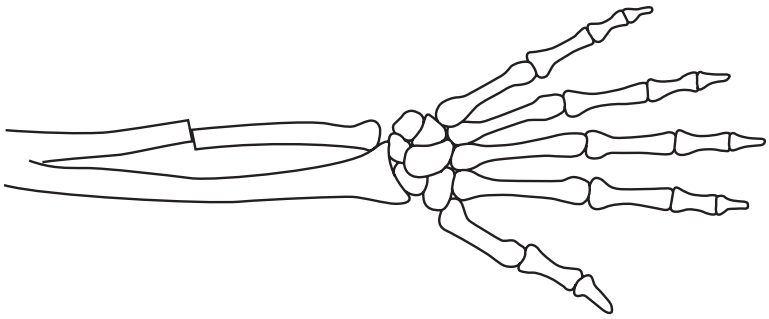
[2]

[Total: 5]

BLANK PAGE

PLEASE DO NOT WRITE ON THIS PAGE

9 Rupert has injured himself playing football.
He goes to the hospital and has an X-ray taken of his arm.



(a) There is no sign of any damage on the outside of his body but Rupert is in a lot of pain.
The doctor tells Rupert that his radius bone is fine but he has broken another bone in his arm.

(i) What is the name of this other bone?

.....[1]

(ii) What is the name given to this type of fracture?

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

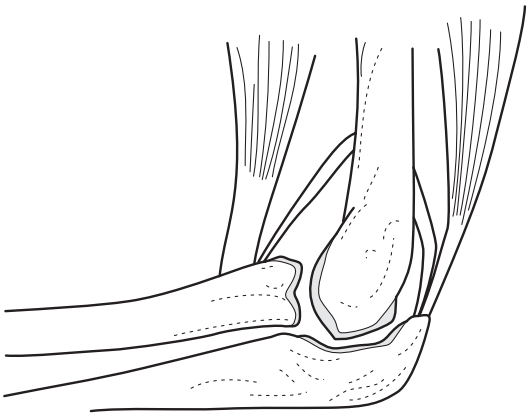
compound

greenstick

simple

[1]

(b) The diagram shows one of Rupert's elbow joints.
It was not damaged in the accident.



(i) What type of joint is the elbow joint?

.....[1]

(ii) The diagram shows two muscles.

How are these muscles attached to the bones?

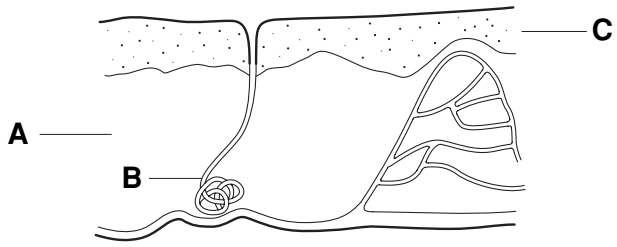
Put a (ring) around the correct answer in this list.

cartilage **ligaments** **tendons**

[1]

[Total: 4]

10 The diagram shows the basic parts of the skin.



(a) The table shows three possible sets of labels for the diagram.

Put a tick (✓) in the box next to the **row** which has the correct labels.

A	B	C	
epidermis	sweat gland	dermis	
dermis	sweat gland	epidermis	
epidermis	hair follicle	dermis	

[1]

(b) Write about how the sweat glands help to control the temperature of the body.

.....

.....

.....[2]

[Total: 3]

Section C – Module B6

11 (a) Look at the diagram.

It shows a bacterial cell.

Label the diagram.

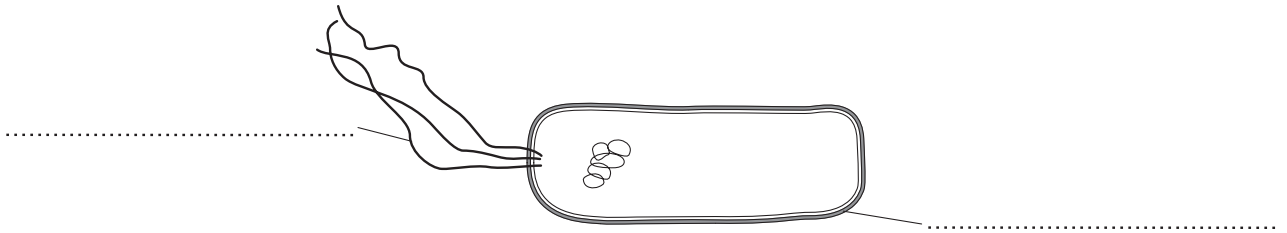
Choose words from the list.

cell membrane

cell wall

flagellum

nucleus



[2]

(b) Some bacteria are used to make cheese.

Write down **one other** use of bacteria.

..... [1]

(c) Bacteria can be classified by their shape.

Finish the table by writing in the shape of each type of bacterium.

The first one has been done for you.

type of bacterium	shape
	*rod*
	
	

[2]

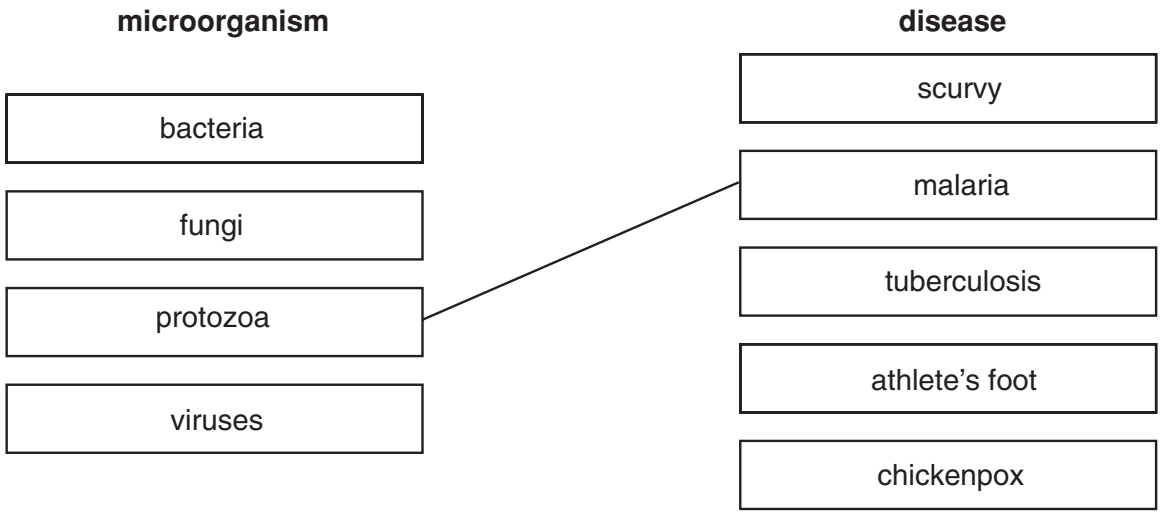
[Total: 5]

12 Microorganisms can cause disease.

(a) The boxes contain the names of some microorganisms and some diseases.

Draw a straight line from each **microorganism** to the **disease** it causes.

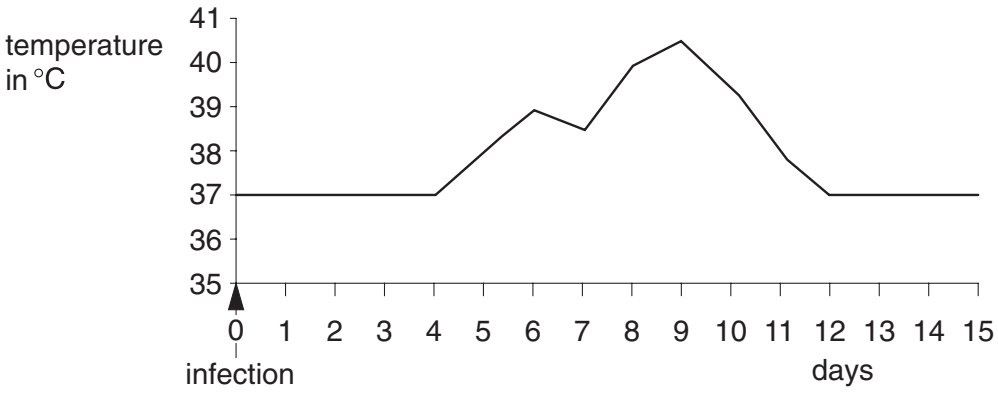
One has been done for you.



[3]

(b) Look at the graph.

It shows the temperature of someone suffering from a bacterial disease.



(i) How many days did the fever last?

……..... days [1]

(ii) Why do large numbers of bacteria cause the increase in temperature?

..... [1]

(c) A type of drug can be taken to treat bacterial infections.

What is the name of this type of drug?

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

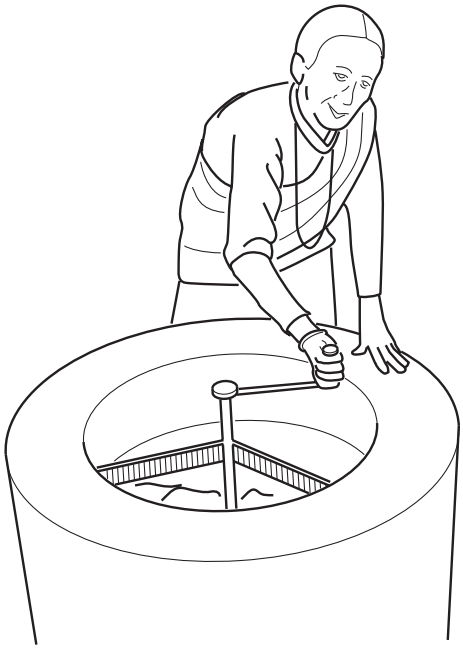
antibodies **antibiotics** **antiseptics** **disinfectants**

[1]

[Total: 6]

13 Look at the picture.

It shows Mitha with her biogas digester.



(a) The digester contains rotting organic material.

The rotting material makes a mixture of gases called biogas.

The **main** gas in the mixture can be burned to release energy.

Write down the name of this gas.

.....[1]

(b) Mitha uses the biogas to heat her home.

Write down **one other** use of biogas.

.....[1]

(c) The waste material from the digester is added to the soil to help Mitha's crops grow.

Write down **two** things the plants need from soil and waste.

1.....

2.....[2]

[Total: 4]

14 Robert has diabetes. He needs to test his urine for the presence of glucose.

(a) Describe **one** way Robert can test his urine.

how he tests his urine .....

.....

the result he gets if glucose is in the urine .....

.....[2]

(b) Robert has to inject insulin into his body to control his blood sugar level.

The insulin is made by bacteria.

The bacteria have had their DNA changed by scientists.

Name the process the scientists use to change the DNA of the bacteria.

.....[1]

(c) Diet is important to Robert.

He eats food with a low sugar content.

The food industry uses the enzyme sucrase to produce food that Robert can eat.

Explain how sucrase produces a sweet food with a low sugar content.

In your answer include

- what sucrase does
- why the food is still sweet even though it has a low sugar content.

.....

.....

.....

.....[2]

[Total: 5]

END OF QUESTION PAPER

PLEASE DO NOT WRITE ON THIS PAGE