OCR
RECOGNISING ACHIEVEMENT

F

GENERAL CERTIFICATE OF SECONDARY EDUCATION

GATEWAY SCIENCE

B632/01

BIOLOGY B

Unit 2 Modules B4 B5 B6 (Foundation Tier)

11LMP06072

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)

Tuesday 7 June 2011
Afternoon

Duration: 1 hour

B632 01

Candidate forename		Candidate surname	

Centre number						Candidate number				

MODIFIED LANGUAGE

INSTRUCTIONS TO CANDIDATES

- Write your name, centre number and candidate number in the boxes above. Please write clearly and in capital letters.
- Use black ink. Pencil may be used for graphs and diagrams only.
- Read each question carefully. Make sure you know what you have to do before starting your answer.
- 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).
- Answer **all** the questions.
- Do **not** write in the bar codes.

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 Cathy is investigating how plants lose water.

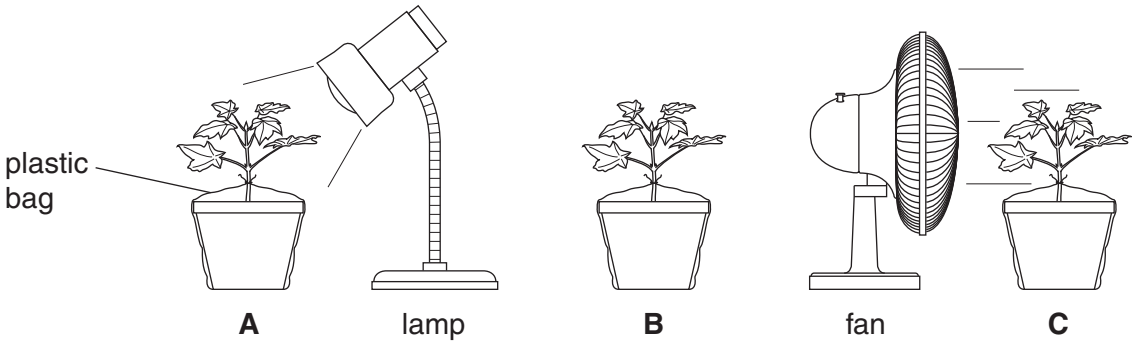
She sets up three plants as shown in the diagrams.

She waters each plant then covers each pot in a plastic bag.

She then measures the mass of each plant and its pot.

She leaves the plants on a bench for five days.

She then measures the mass of each plant again.



The table shows her results.

	plant **A**	plant **B**	plant **C**
mass at start in g	882	879	881
mass after five days in g	692	762	654

(a) The plants lose mass because they lose water.

(i) Look at the diagrams.

How does Cathy know that water has been lost from the plants and **not** from the soil?

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

(ii) Which plant lost most water?

Choose **A**, **B** or **C**. .....

Show how you worked out your answer.

.....

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

(b) Describe how plants lose water.

.....

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

(c) Plants sometimes take in carbon dioxide.

Look at the diagrams.

Which plant would you expect to take in most carbon dioxide?

Choose **A**, **B** or **C**. .....

Explain your answer.

.....

.....

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

[Total: 8]

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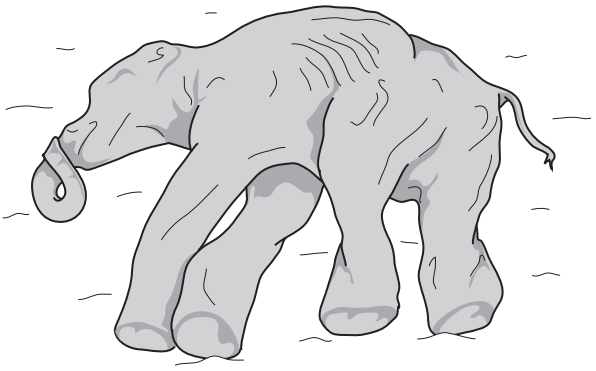
PLEASE DO NOT WRITE ON THIS PAGE

2 In 2007 scientists discovered the body of a woolly mammoth calf.

The body was buried in ice in Russia. It was completely preserved.

The mammoth died 37 000 years ago but had **not** decayed.



(a) Suggest **two** reasons why the mammoth had **not** decayed.

1 .....

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

(b) Some other mammoth bodies have been found which have partly decayed.

Look at the list of some mammoth body parts.

Put a (ring) around the body part that is **least** likely to decay.

fur **heart** **muscle** **skin** **teeth** **[1]**

(c) As dead bodies decay, nitrogen compounds in the bodies break down into nitrates.

This is part of the nitrogen cycle.

Write down **one** nitrogen compound that breaks down into nitrates.

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

(d) As dead bodies decay, gases are released.

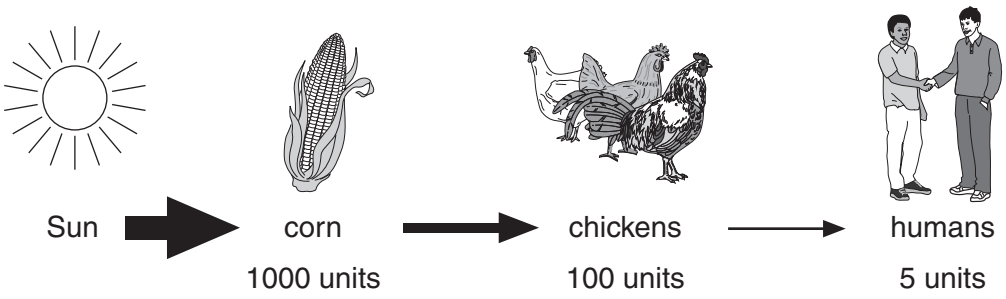
Write down the name of **one** gas that is released.

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

[Total: 5]

3 The diagram shows energy flow along a food chain.

The numbers show the amount of energy at each stage.



(a) By what process does energy from the Sun enter the food chain?

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

(b) Not all the energy at one stage of the food chain is transferred to the next stage.

Write down **one** reason why some energy is lost from the food chain.

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

(c) **(i)** What percentage of the energy in the corn is transferred to the chickens?

.....

.....

answer .....% **[1]**

(ii) What percentage of the energy in the corn is transferred to the humans?

.....

.....

answer .....% **[1]**

(d) Humans eat chickens. They can also eat corn.

Explain **one** advantage to humans of eating corn compared with eating chickens.

Use information from the diagram to help you answer.

.....

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

(e) Corn needs minerals to grow as well as sunlight.

Many farmers add fertiliser to their crops to give them the minerals they need.

Look at the list of things that plants need to grow.

Put (rings) around **two** minerals found in fertiliser.

carbon dioxide **nitrate** **phosphate** **sugar** **water** **[2]**

[Total: 7]

Section B – Module B5

4 Look at the picture.

It shows Winston donating blood.

(a) The blood Winston donates can be given to someone who has been injured in an accident.

Write down **one other** use for donated blood.

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

(b) A chemical is added to stop the donated blood from clotting.

Write down the name of this chemical.

Choose from the list.

antibody **anti-coagulant** **platelet** **rhesus**

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

(c) The blood is taken from a vein in Winston's arm.

Veins are **one type** of blood vessel in a circulatory system.

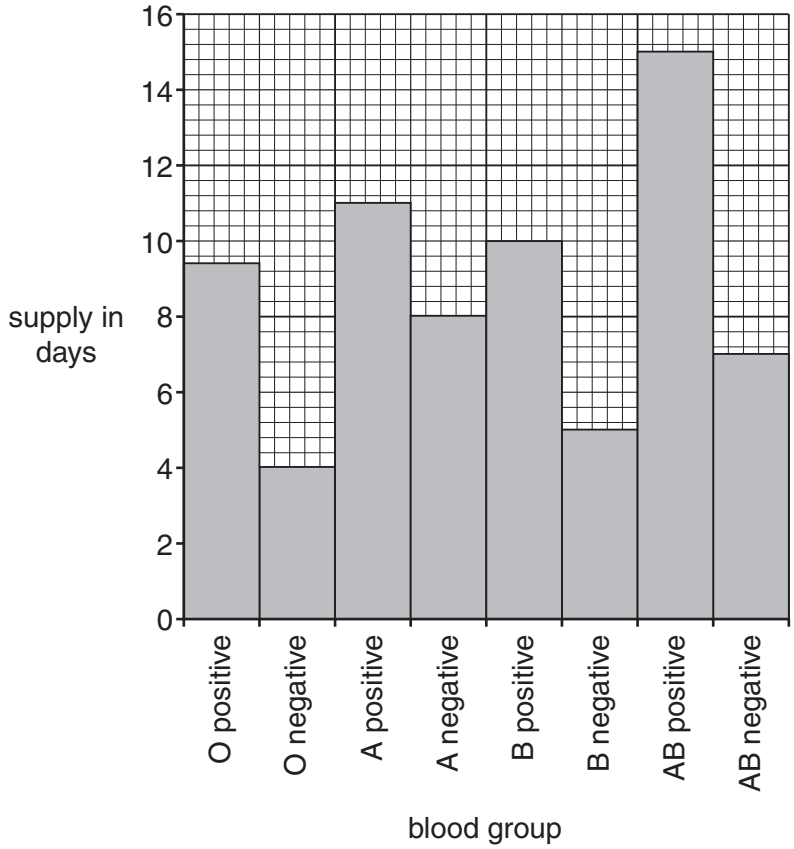
Write down **one other** type of blood vessel.

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

(d) The National Blood Service keeps a record of the blood stored in their blood banks.

Look at the graph.

It shows how many days' supply there is of each blood group.



(i) One blood group will only last for 5 days if there are no more donations.

Write down the name of this blood group.

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

(ii) If there are no more donations how many days longer will **AB positive** last compared to **AB negative**?

answer ..... days **[1]**

(e) The blood banks store **more** O positive than any other blood group.

The stocks of O positive will be used up faster than any other group.

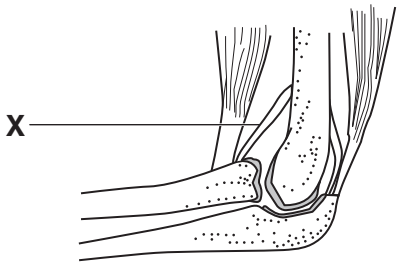
Suggest why.

.....

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

[Total: 6]

5 Look at the picture of an elbow joint.



(a) Part **X** joins two bones together.

Put a (ring) around the name of part **X**.

cartilage

humerus

ligament

tendon

[1]

(b) Finish the sentences about the elbow joint by writing one word in each space.

The human body contains different types of joints.

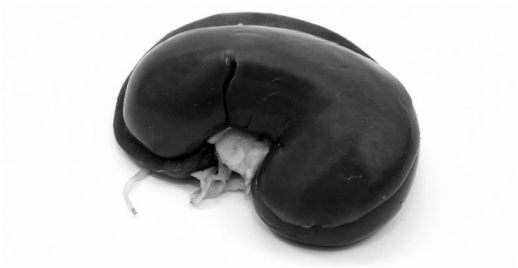
The elbow joint is an example of a ..... joint.

The joint is moved by **two** muscles called the biceps and the ..... .

These two muscles pull the arm in opposite directions. Muscles that pull in opposite directions are called ..... muscles. **[3]**

[Total: 4]

6 Look at the picture of a kidney.



(a) The kidney removes waste products from the body.

(i) Write down the word used to describe removing waste products that have been **made in the body**.

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

(ii) The kidney removes urea from the blood.

Put a tick (✓) in **one** box to show two more substances removed by the kidney.

carbon dioxide and salt	☐
glucose and carbon dioxide	☐
glucose and water	☐
salt and water	☐

[1]

(b) Urea is made in the body when a substance is broken down.

Write about how urea is made.

In your answer include

- where urea is made
- which substance urea is made from.

.....

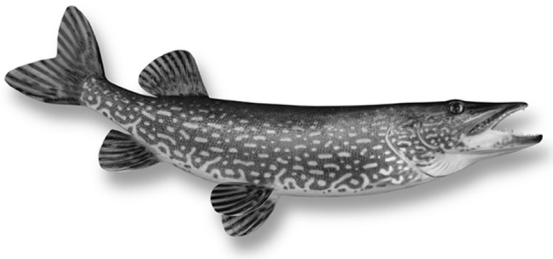
.....

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

[Total: 4]

7 Humans have organs called lungs to take oxygen into the blood.

(a) Look at the picture of a pike.



(i) Write down the name of the organs a pike uses to take oxygen into its blood.

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

(ii) What does a pike use oxygen for?

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

(b) If a pike is taken out of water it cannot get oxygen into its blood.

Explain why.

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

[Total: 3]

8 Ben and Daniel are twins.

They are **not** identical because they came from two different eggs.

Each egg was fertilised by a different sperm.

(a) What is meant by the term fertilisation?

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

(b) Ben is much taller than Daniel.

Suggest why they are different heights.

.....

.....

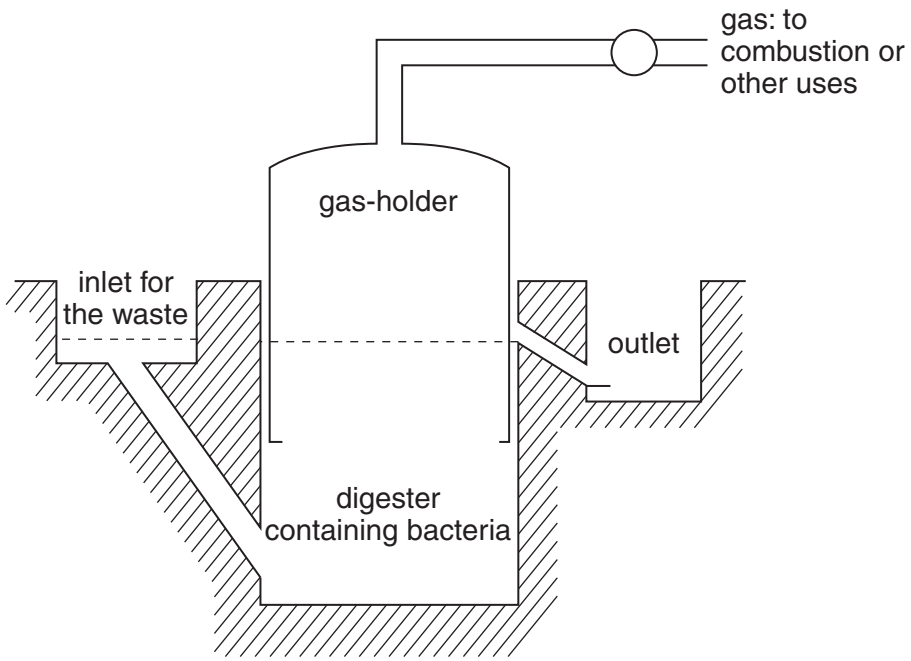
..... **[2]**

[Total: 3]

Section C – Module B6

9 Look at the diagram of a digester.

The digester turns waste into fuel.



(a) What waste can be used in the digester?

Put ticks (✓) in the boxes next to the **two** types of waste that can be used.

glass bottles	☐
plastic bottles	☐
sewage	☐
steel cans	☐
vegetable peelings	☐

[2]

(b) The digester produces a **mixture** of gases.

The main gas in this mixture is methane.

Write down the name of this mixture of gases.

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

(c) The digester contains bacteria.

Bacterial cells are different from both plant and animal cells.

Look at the table.

It shows features found in three different cells, **A**, **B** and **C**.

cell A	**cell B**	**cell C**
cell wall	cell wall	no cell wall
chloroplasts	no chloroplasts	no chloroplasts
cytoplasm	cytoplasm	cytoplasm

Which of these three cells could be a bacterial cell?

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

(d) Chicken dung is waste that is used in digesters.

On average, a chicken produces 0.15 kg of dung per day.

A fridge would use the energy from 4.5 kg of chicken dung per day to run for 24 hours.

How many chickens would be needed to make 5 fridges work for 24 hours?

Show your working out.

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

[Total: 6]

10 (a) Richard owns a brewery making alcoholic drinks.

The alcoholic drinks are made by fermentation.

Fermentation uses yeast.

(i) What type of micro-organism is yeast?

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

(ii) Different alcoholic drinks are made from different plants.

Match the alcoholic drink to the plant it is made from.

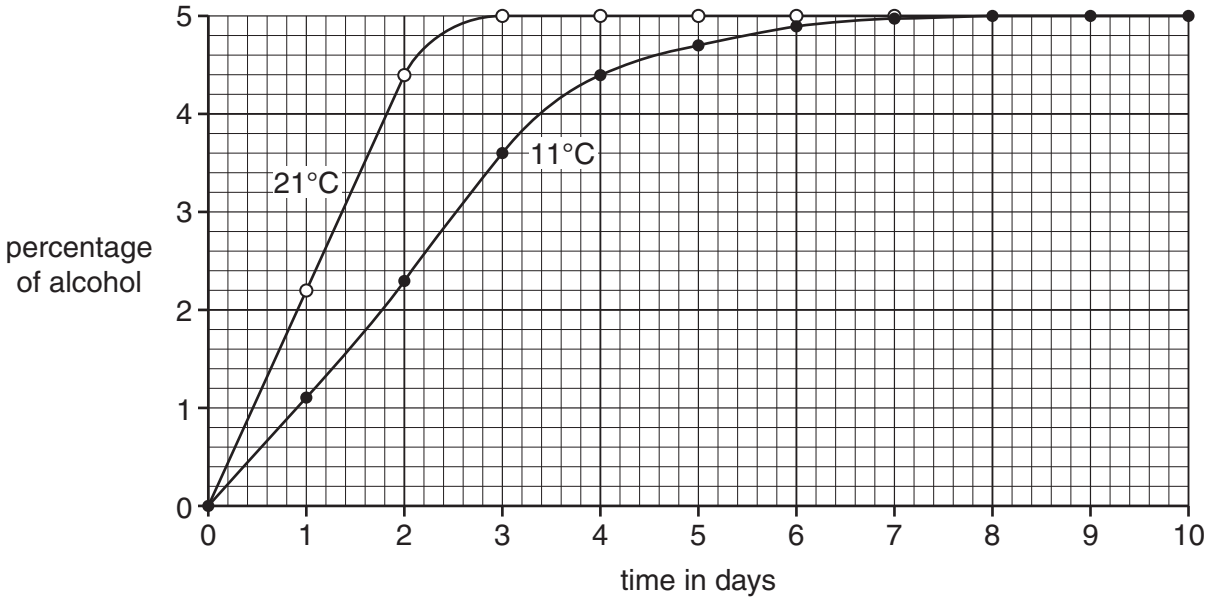
Draw three straight lines.

alcoholic drink	**plant**
beer	apples
cider	grapes
wine	barley

[2]

(b) Look at the graph.

It shows how the percentage of alcohol changes when beer is brewed at two different temperatures.



(i) What is the alcohol content of the beer brewed at 21 °C after two days?

answer ..... % **[1]**

(ii) The graph shows that alcohol is produced more quickly at 21 °C than at 11 °C.

Suggest how **temperature** affects yeast reproduction.

.....

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

(c) In Brazil, alcohol is added to petrol to make fuel for cars.

Write down the name of this fuel.

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

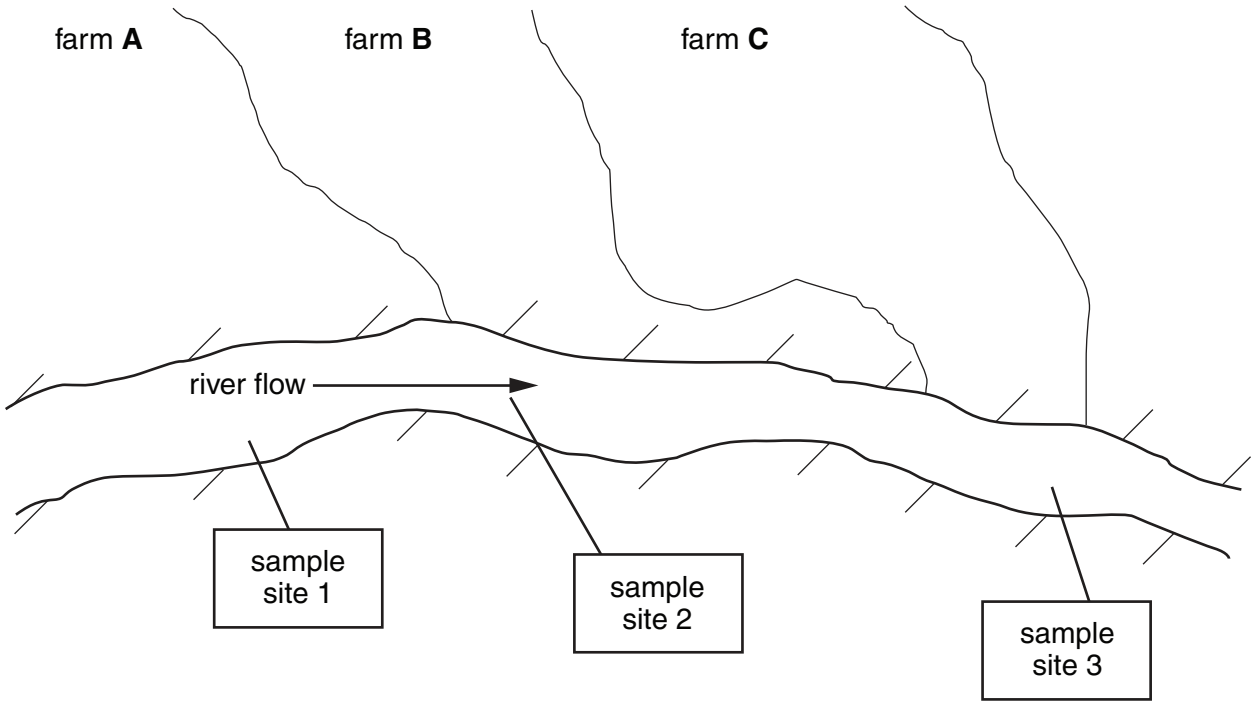
[Total: 6]

11 Cotton is a crop grown in many parts of the world.

Several types of insect can damage cotton plants.

Some farmers use insecticides to prevent damage to their crops.

Look at the diagram. It shows three neighbouring farms.



(a) Scientists measure the amount of insecticide in the water at three sample sites, 1, 2 and 3.

Only farm **B** uses insecticides.

Which **sample site** would contain the highest amount of insecticide?

sample site .....

reason .....

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

(b) Farm **A** grows genetically engineered cotton to resist insect pests.

(i) Genetic engineering alters the genetic code in the nucleus of the cotton plant cells.

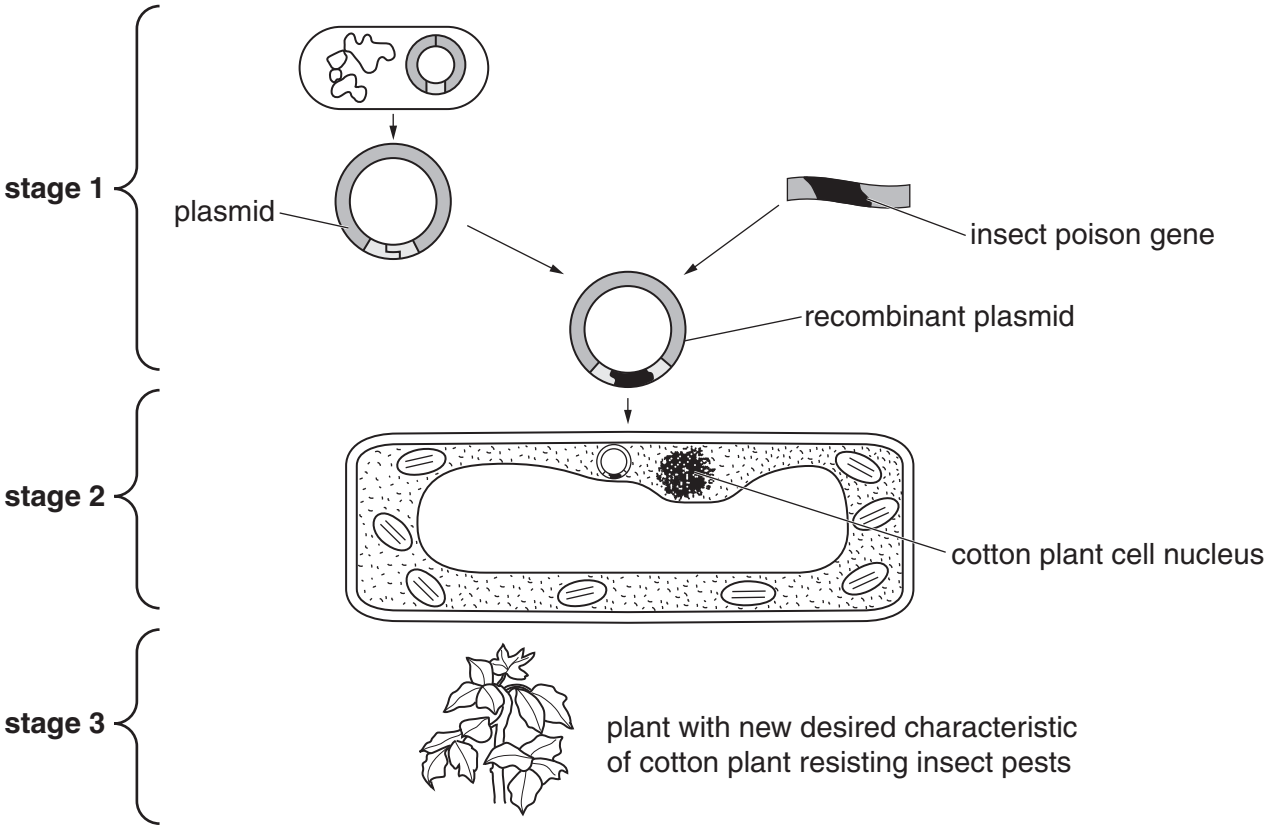
Write down the name of the chemical that forms the genetic code.

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

(ii) The cotton plant has been genetically engineered to make a substance which is poisonous to insects.

Look at the diagram.

It shows how a genetically engineered cotton plant is produced.



How is a genetically engineered cotton plant produced?

Look at the diagram.

Describe what happens at stages 1, 2 and 3.

stage 1 .....

.....

stage 2 .....

.....

stage 3 .....

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

[Total: 5]

12 (a) MRSA is a bacterial 'superbug'.

Hospitals try hard to reduce the spread of MRSA.

They have antiseptic gel on each ward to use on hands.

Suggest how the MRSA bacteria might enter the body.

.....

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

(b) Patients who have a MRSA infection are given antibiotics.

Antiseptics and **antibiotics** are both used to kill micro-organisms that cause disease.

Write down **two** ways antibiotics are different from antiseptics.

1 .....

.....

2 .....

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

[Total: 3]

END OF QUESTION PAPER