

FOR OFFICIAL USE

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	KU	PS
Total Marks		

0500/401

NATIONAL
QUALIFICATIONS
2010

FRIDAY, 30 APRIL
9.00 AM – 10.30 AM

CHEMISTRY
STANDARD GRADE
General Level

Fill in these boxes and read what is printed below.

Full name of centre

Town

Forename

Surname

Date of birth

Day	Month	Year

Scottish candidate number

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Number of seat

- All questions should be attempted.
- Necessary data will be found in the Data Booklet provided for Chemistry at Standard Grade and Intermediate 2.
- The questions may be answered in any order but all answers are to be written in this answer book, and must be written clearly and legibly in ink.
- Rough work, if any should be necessary, as well as the fair copy, is to be written in this book.

Rough work should be scored through when the fair copy has been written.
- Additional space for answers and rough work will be found at the end of the book.
- The size of the space provided for an answer should not be taken as an indication of how much to write. It is not necessary to use all the space.
- ~~Before leaving the examination room you must give this book to the Invigilator. If you do~~



PART 1

In Questions 1 to 9 of this part of the paper, an answer is given by circling the appropriate letter (or letters) in the answer grid provided.

In some questions, two letters are required for full marks.

If more than the correct number of answers is given, marks will be deducted.

A total of 20 marks is available in this part of the paper.

SAMPLE QUESTION

A	CH ₄	B	H ₂	C	CO ₂
D	CO	E	C ₂ H ₅ OH	F	C

(a) Identify the hydrocarbon.

☐ A	☐ B	☐ C
☐ D	☐ E	☐ F

The one correct answer to part (a) is A. This should be circled.

(b) Identify the **two** elements.

☐ A	☐ B	☐ C
☐ D	☐ E	☐ F

As indicated in this question, there are **two** correct answers to part (b). These are B and F. Both answers are circled.

If, after you have recorded your answer, you decide that you have made an error and wish to make a change, you should cancel the original answer and circle the answer you now consider to be correct. Thus, in part (a), if you want to change an answer A to an answer D, your answer sheet would look like this:

☒ A	☐ B	☐ C
☐ D	☐ E	☐ F

If you want to change back to an answer which has already been scored out, you should enter a tick (✓) in the box of the answer of your choice, thus:

✓ ☒ A	☐ B	☐ C
☒ D	☐ E	☐ F

[illegible]

A	B	C
Pt	Na	P
D	E	F
N	S	Ne

- You may wish to use page 8 of the data booklet to help you.

A	B	C
D	E	F

- You may wish to use page 8 of the data booklet to help you.

A	B	C
D	E	F

- You may wish to use page 8 of the data booklet to help you.

A	B	C
D	E	F

[Turn over

KU	PS

A	B	C
bromine solution	ferroxyl indicator	universal indicator
D	E	F
lime water	Benedict's solution	iodine solution

(a) Identify the reagent used to test the pH of a dilute acid.

A	B	C
D	E	F

1

(b) Identify the reagent used to test for glucose.

A	B	C
D	E	F

1

(2)

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- Marks*

[illegible]

- 1**

1
(2)

- 1**
(2)

1
(2)

1
(2)

Marks

KU PS

4. The grid shows the names of some oxides.

A	potassium oxide	B	nitrogen dioxide	C	carbon monoxide
D	carbon dioxide	E	hydrogen oxide	F	sulphur dioxide

- (a) Identify the oxide produced by the sparking of air.

A	B	C
D	E	F

1

- (b) Identify the oxide which dissolves in water to produce an alkaline solution.

A	B	C
D	E	F

1

(2)

[illegible]

(a) Identify the **two** compounds which exist as molecules.

1

You may wish to use page 4 of the data booklet to help you.

1
(2)

[0500/401]

[illegible]

A	B	C
neutralisation	photosynthesis	addition
D	E	F
polymerisation	corrosion	combustion

(a) Identify the reaction in which chlorophyll absorbs light energy.

A	B	C
D	E	F

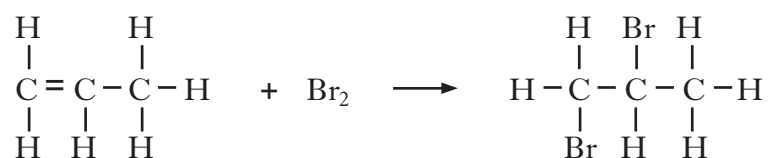
1

(b) Identify the reaction which takes place when iron rusts.

A	B	C
D	E	F

1

(c) Identify the reaction represented by the equation:



A	B	C
D	E	F

1

(3)

KU	PS
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Substance	Conducts as	
	a solid	a liquid
A	yes	yes
B	no	yes
C	no	no
D	no	yes
E	no	no

1

A
B
C
D
E

1
(2)

A
B
C
D
E

[Turn over

KU	PS
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- Identify the **two** correct statements.

A	Water is produced.
B	The pH of the acid decreases.
C	Hydrogen gas is produced.
D	Carbon dioxide gas is produced.
E	Potassium chloride is produced.

A
B
C
D
E

(2)

KU	PS
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- You may wish to use page 1 of the data booklet to help you.

A	It will form an ion by losing one electron.
B	It has two more electrons than an atom of neon.
C	It has the same atomic number as an atom of lithium.
D	It has a different size compared to an atom of bromine.
E	It has different chemical properties to an atom of potassium.

A
B
C
D
E

(2)

[Turn over

[BLANK PAGE]

A total of 40 marks is available in this part of the paper.

- (a) Circle the correct words to complete the sentence.

1

- 1

-

1
(3)

[0500/401]

[illegible]

(a) (i) State the test for oxygen gas.

1

1

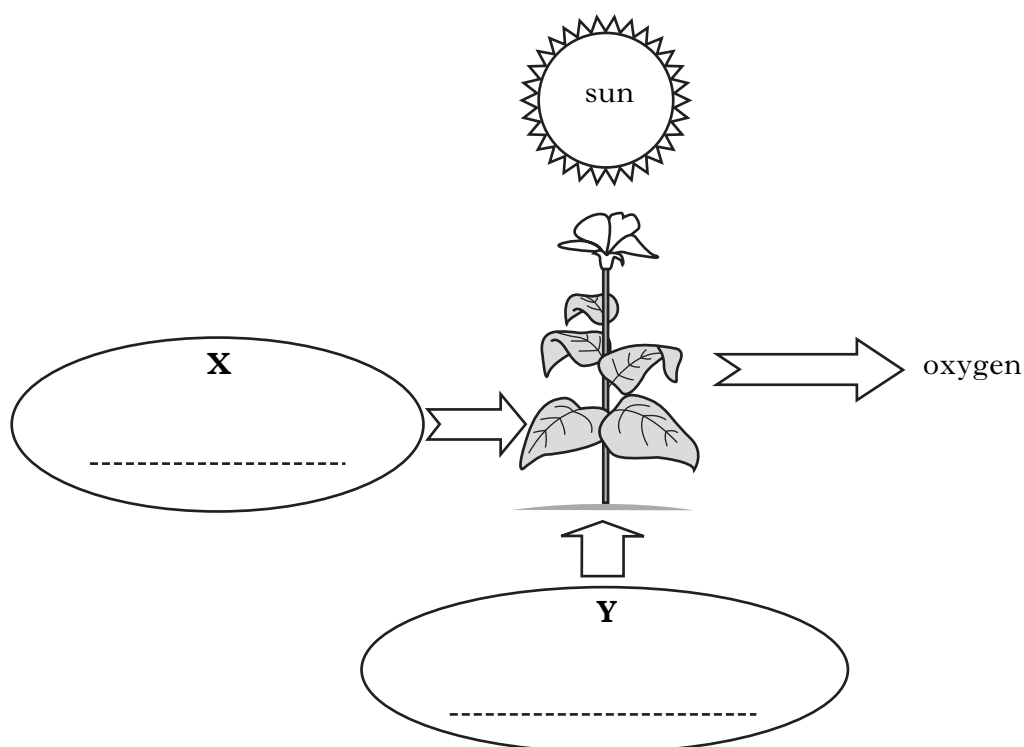


Diagram illustrating the experiment setup to show that green plants release oxygen in the presence of light. A lamp is shown on the left, illuminating a test tube containing a green plant and water. Oxygen bubbles are shown rising from the plant.

[0500/401]

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- The diagram shows a Bunsen burner with a label 'BUTANE' on its base. A flame is shown rising from the burner's nozzle. An aluminium pot is placed on the burner's frame, and a plastic handle is attached to its side. Labels with leader lines identify the 'aluminium pot' and the 'plastic handle'.

- There is no need to balance the equation.

1

- (i) Give **another** property of the aluminium which makes it suitable for this use.

1

- What **term** is used to describe this type of plastic?

1

- Suggest what the black substance could be.

1

(4)

KU	PS
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- (a) Name the elements present in potassium carbonate.

-
- The diagram illustrates a chemical reaction. On the left, two beakers are shown. The first beaker is labeled 'potassium carbonate solution' and contains a liquid. The second beaker is labeled 'copper nitrate solution' and also contains a liquid. A plus sign (+) is placed between the two beakers. An arrow points from the two beakers to a third beaker on the right. This third beaker contains a dark, solid substance at the bottom, labeled 'solid', and a clear liquid above it, labeled 'solution'.

-

- You may wish to use page 5 of the data booklet to help you.

-
-
-
-
-

1
(4)

[0500/401]

- 



(a) Present the above information in a table with suitable headings.

2

-

1

-

1

-
- Diagram illustrating the electrolysis of water. An electric motor is connected to two electrodes. Hydrogen gas is produced at the negative electrode (left) and oxygen gas is produced at the positive electrode (right). Water is shown entering the cell from the bottom right.

-

1

-

1

-

1

(5)

-
- Phosphorus free formula
- # Fertiliser
- Sustained release formula
- Dissolves quick, deep growing
 - Actually formulated with Scott's Turf Builder
- Apply anytime
- ## 29-0-4
- Feeds 5,000
- NET WT 33.5 lb (7.5 kg)

- Name **one** other essential element required for healthy plant growth.

1

- Suggest a reason for this.

1

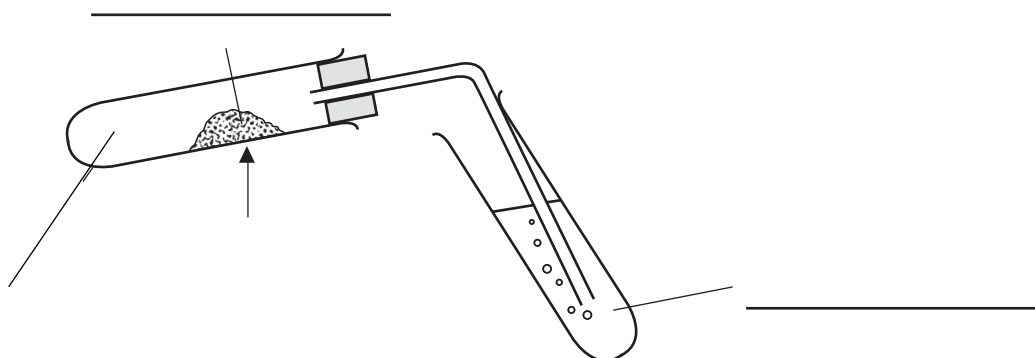
- Which part of the plant contains these bacteria?

1

(3)

[0500/401]

Octane is cracked using an aluminium oxide catalyst. Bromine solution is used to show that some of the products are unsaturated.

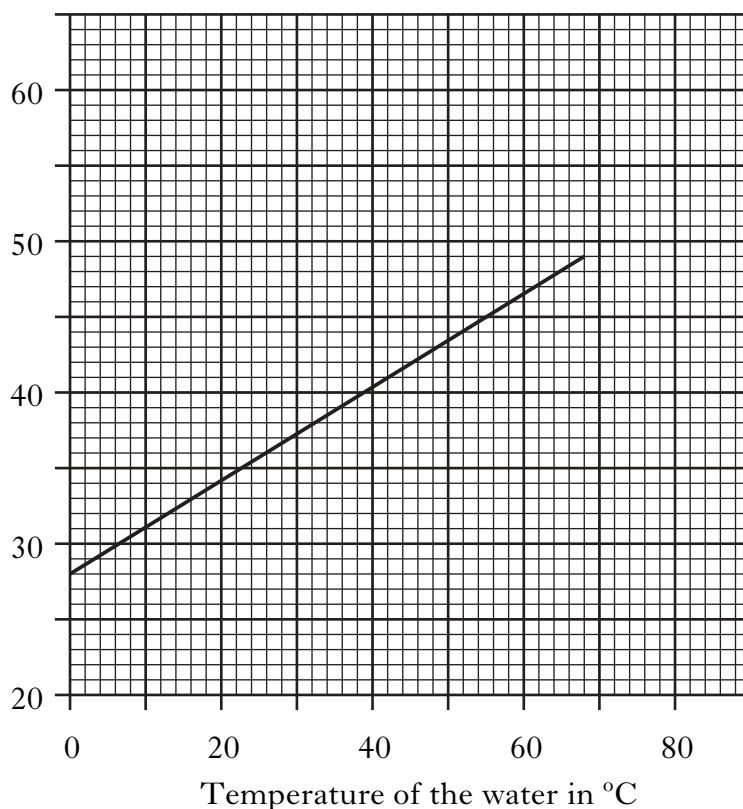


Identify **X**.

- (a) What **term** can be used to describe the water?

1

- Solubility of potassium chloride in grams per 100 cm³ of water



- (i) How does the temperature of the water affect the solubility of the potassium chloride?

1

- (ii) Predict the solubility of potassium chloride at 80 °C.

_____ grams per 100 cm³ of water.

1
(3)

[Turn over for Question 19 on *Page twenty-four*

1



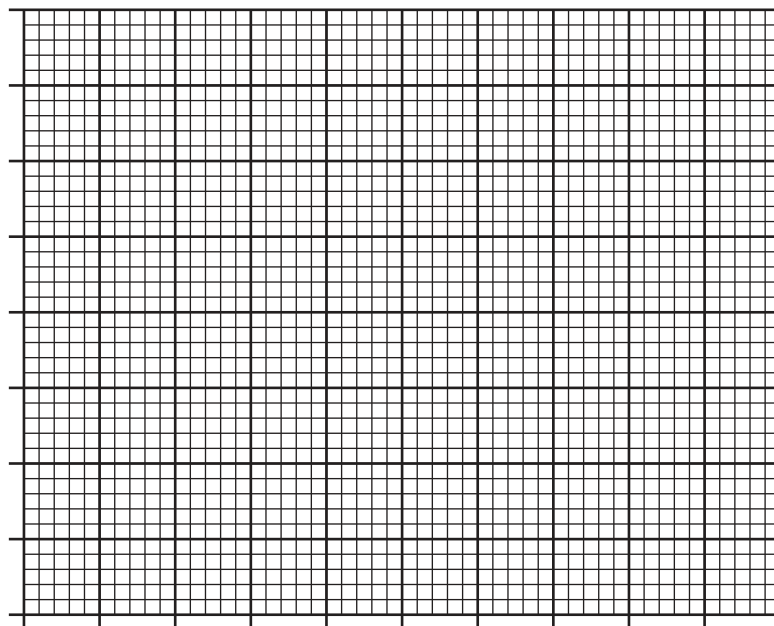
- 1

1

(4)

- [END OF QUESTION PAPER]

ADDITIONAL GRAPH PAPER FOR QUESTION 11(b)(i)



A diagram of a test tube with a stopper. A delivery tube is inserted through the stopper into the test tube. The delivery tube has several small circles inside, representing gas bubbles. An arrow points to the test tube, and another arrow points to the delivery tube.

ADDITIONAL SPACE FOR ANSWERS

ADDITIONAL SPACE FOR ANSWERS

ADDITIONAL SPACE FOR ANSWERS