FOR OFFICIAL USE			

KU	PS

Total Marks

# 0500/29/01

NATIONAL 2013

WEDNESDAY, 1 MAY QUALIFICATIONS 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(s)	Surname
Date of birth	
Day Month Year Scottish candidate numb	Der Number of seat
1 All questions should be attempted.	
2 Necessary data will be found in the Data Bookl Grade and Intermediate 2.	let provided for Chemistry at Standard
3 The questions may be answered in any order be answer book, and must be written clearly and legib	
4 Rough work, if any should be necessary, as well book.	as the fair copy, is to be written in this
Rough work should be scored through when the fa	ir copy has been written.
5 Additional space for answers and rough work will b	be found at the end of the book.
6 The size of the space provided for an answer show much to write. It is not necessary to use all the sp	
7 Before leaving the examination room you must given not, you may lose all the marks for this paper.	ve 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 <sub>4</sub>	B H <sub>2</sub>	C CO <sub>2</sub>
D CO	E C <sub>2</sub> H <sub>5</sub> OH	F C

(*a*) Identify the hydrocarbon.

A	В	С
D	Е	F

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

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

А	B	С
D	Е	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:

$\langle X \rangle$	В	С
$\bigcirc$	E	F

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

	В	С
Ø	Е	F

WRITE IN THIS MARGIN MARGIN

1

1

1

(3)

DO NOT

1. The grid contains the names of some metals.

A	В	С
sodium	beryllium	calcium
D	Ε	F
magnesium	potassium	lithium

(a) Identify the metal which was discovered in 1808.

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

А	В	С
D	Е	F

(b) Identify the metal which is an essential element for healthy plant growth.

А	В	С
D	Е	F

(c) Identify the metal which gives a red flame colour.

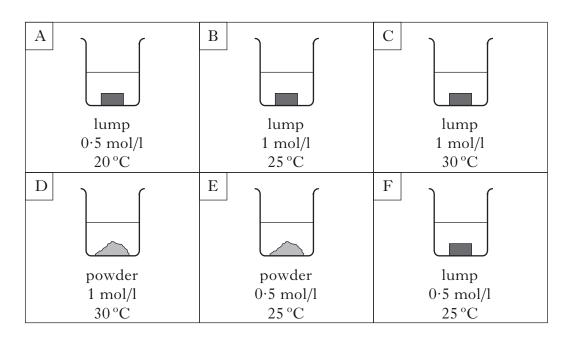
You may wish to use page 4 of the data booklet to help you.

А	В	С
D	Е	F

DO NOT WRITE IN THIS

MARGIN Marks KU PS

**2.** A student investigated the rate of reaction between chalk and dilute hydrochloric acid.



(*a*) Identify the **two** experiments that should be compared to show the effect of concentration on the rate of reaction.

А	В	С
D	Е	F

(b) Identify the experiment with the **fastest** speed of reaction.

А	В	С
D	Е	F

1 (2)

1

[0500/29/01]

3. The grid contains the names of some elements.

A carbon	B sulphur	C nitrogen
D neon	E oxygen	F phosphorus

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

А	В	С
D	Е	F

(*b*) Identify the noble gas.

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

А	В	С
D	Е	F

(c) Identify the gas which makes up approximately 20% of the air.

А	В	С
D	Е	F

Page five

[Turn over

1

1

1

(3)

DO NOT WRITE IN THIS MARGIN

KU PS

Marks

4. The grid contains the names of some compounds.

А	В	С
magnesium chloride	calcium nitrate	barium sulphate
D	Е	F
sulphur dioxide	sodium chloride	potassium oxide

(*a*) Identify the **two** compounds which contain three elements.

А	В	С
D	Е	F

(b) Identify the compound which dissolves in water to form an alkaline solution.

А	В	С
D	Е	F

(c) Identify the compound which reacts with water in the atmosphere to produce acid rain.

А	В	С
D	E	F

1 (3)

1

1

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Marks

**5.** Coating iron prevents rusting.

А	tin
В	painting
С	plastic
D	zinc
Е	magnesium

(a) Identify the coating which, if scratched, would cause the iron to rust **fastest**.

You may wish to use page 7 of the data booklet to help you.

А
В
С
D
Е

(b) Identify the coating which is used to galvanise iron.

А
В
С
D
Е

1 (2)

1

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Marks KU PS

6	The table shows t	he colours of some	compounds in solution.
υ.	The table shows th	he colours of some	compounds in solution.

Compound	Colour
sodium chloride	colourless
potassium chloride	colourless
potassium chromate	yellow
copper chloride	blue
copper chromate	green

Identify the colour of sodium chromate solution.

А	colourless
В	yellow
С	blue
D	green

А	
В	
С	
D	

(1)

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Marks KU PS

Marks KU PS

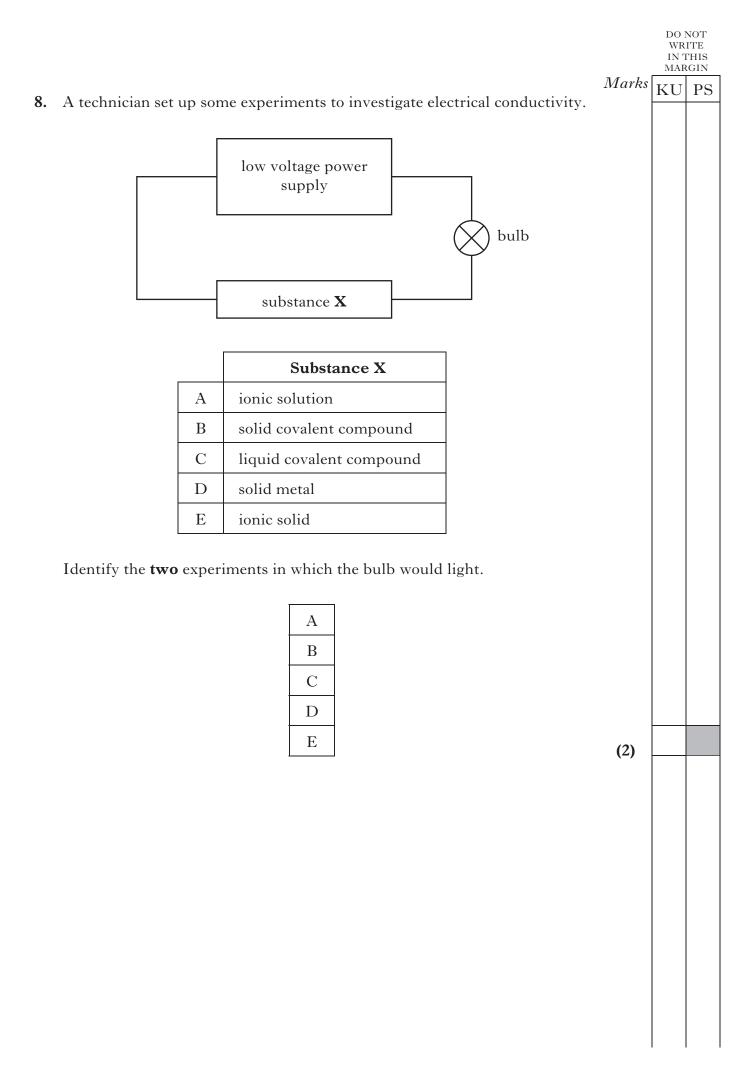
7. Starch is a carbohydrate.

Identify the **two** correct statements about starch.

А	Starch is a polymer made in plants from glucose.
В	Starch is very soluble in water.
С	Iodine solution can be used to test for starch.
D	Starch is sweet.
Е	Starch molecules are made of carbon and hydrogen only.

А
В
С
D
Е

(2)



**9.** Identify the **two** correct statements which refer to an atom of potassium. You may wish to use page 1 of the data booklet to help you.

А	It has two more electrons than an atom of argon.
В	It has similar chemical properties to an atom of lithium.
С	It has the same atomic number as an atom of sodium.
D	It is the same size as an atom of fluorine.
Е	It will form an ion by losing one electron.

А
В
С
D
Е

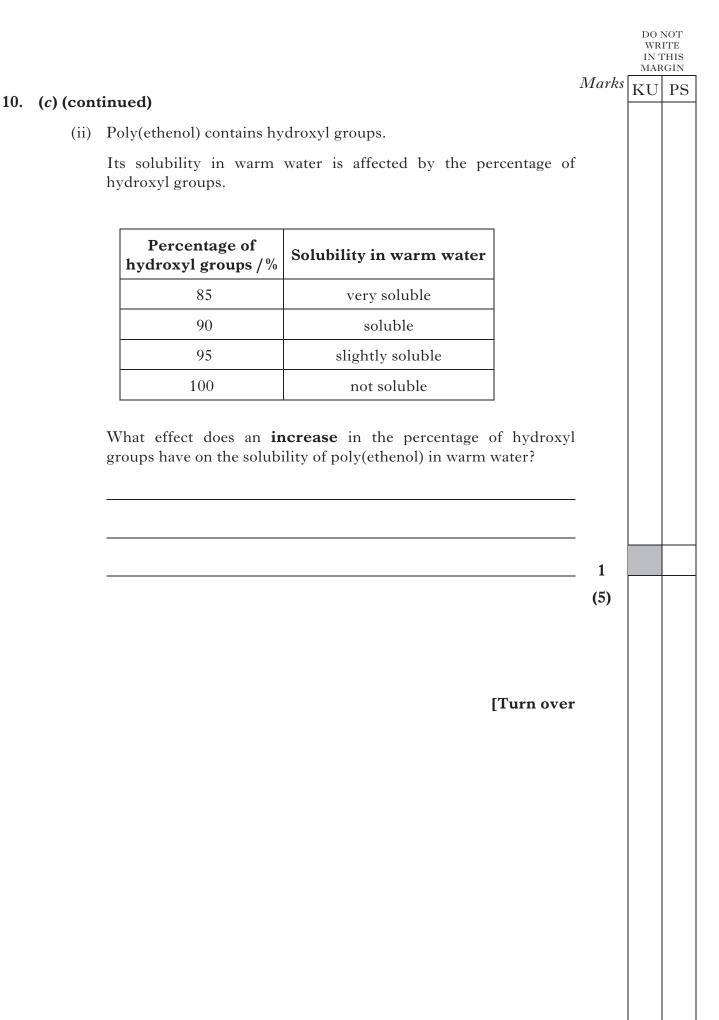
(2)

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Marks KU PS

### [Turn over for Part 2 on Page twelve

# DO NOT WRITE IN THIS MARGIN Marks KU PS PART 2 A total of 40 marks is available in this part of the paper. 10. Some plastics have been developed which have unusual properties. Poly(ethenol) is soluble in water. Poly(ethyne) conducts electricity. Biopol is biodegradable, while PVK is photoconductive. (a) Present this information as a table with suitable headings. 2 (b) What is meant by the term **biodegradable**? 1 (c) (i) (Circle) the correct word to complete the sentence below. When poly(ethenol) dissolves in water, the poly(ethenol) solute is the { solvent solution 1



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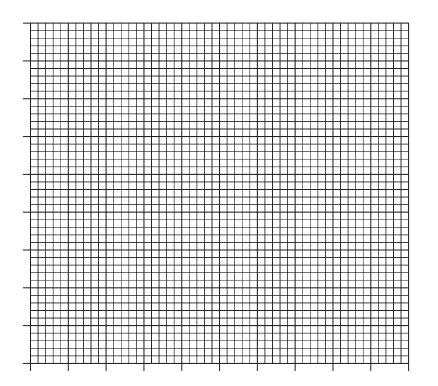
- Marks KU PS
- **11.** Fuel Mix Information gives the percentage of household electricity generated from different fuels.

Fuel Mix Information					
Fuel	Coal	Natural Gas	Nuclear	Renewable	Oil
Percentage / %	33	42	15	6	4

(a) Present the information as a bar chart.

Use appropriate scales to fill most of the graph paper.

(Additional graph paper, if required, can be found on page 27.)



2

				DO I WR IN 7 Mar	ITE THIS
11.	(cc	ontinued)	Marks	KU	PS
	( <i>b</i> )	In an exam a student was asked to describe how coal was formed.			
		Circle) the <b>two incorrect words</b> in their answer.			
		Question: How was coal formed?			
		Answer: Coal was formed over thousands of years from the			
		remains of animals which decayed under layers			
		of mud.	1		
	(c)	Both coal and natural gas can be described as finite resources. What is meant by the term <b>finite</b> ?			
			1		
	( <i>d</i> )	Biogas is a renewable fuel. Biogas consists mainly of methane. Name the <b>two</b> products formed when methane burns in a plentiful supply of air.			
			1		
			(5)		
		[Turn over			

12. A student investigated the reactivity of metals with dilute hydrochloric acid.

Image: Comparison of the transmission of transmission of the transmission of transmission

(b) Name the gas produced when a metal reacts with dilute hydrochloric acid.

B

(a) Place the metals **A**, **B** and **C** in order of reactivity (most reactive first).

A

С

- (c) The student repeated the experiment using another metal but no bubbles were produced.
  - (i) Suggest a name for this metal.

You may wish to use page 7 of the data booklet to help you.

(ii) The student kept the volume of acid the same in each test tube.Suggest **one** other factor that should have been kept constant to make a fair comparison.

1 (4)

1

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PS

KU

Marks

1

1

**13.** Green plants, such as Elodea, are placed in fish tanks to supply oxygen. They produce oxygen by photosynthesis.

- (a) Name the substance in green plants which absorbs light energy during photosynthesis.
- (b) The word equation for photosynthesis is:

water +  $\mathbf{X} \longrightarrow$  glucose + oxygen

Identify X.

(c) The table shows how the solubility of oxygen in water changes with temperature.

Solubility

/mg per litre

52

36

24

16

Predict the solubility of oxygen in water at 30 °C.	

Temperature

/°C

10

15

20

25

30

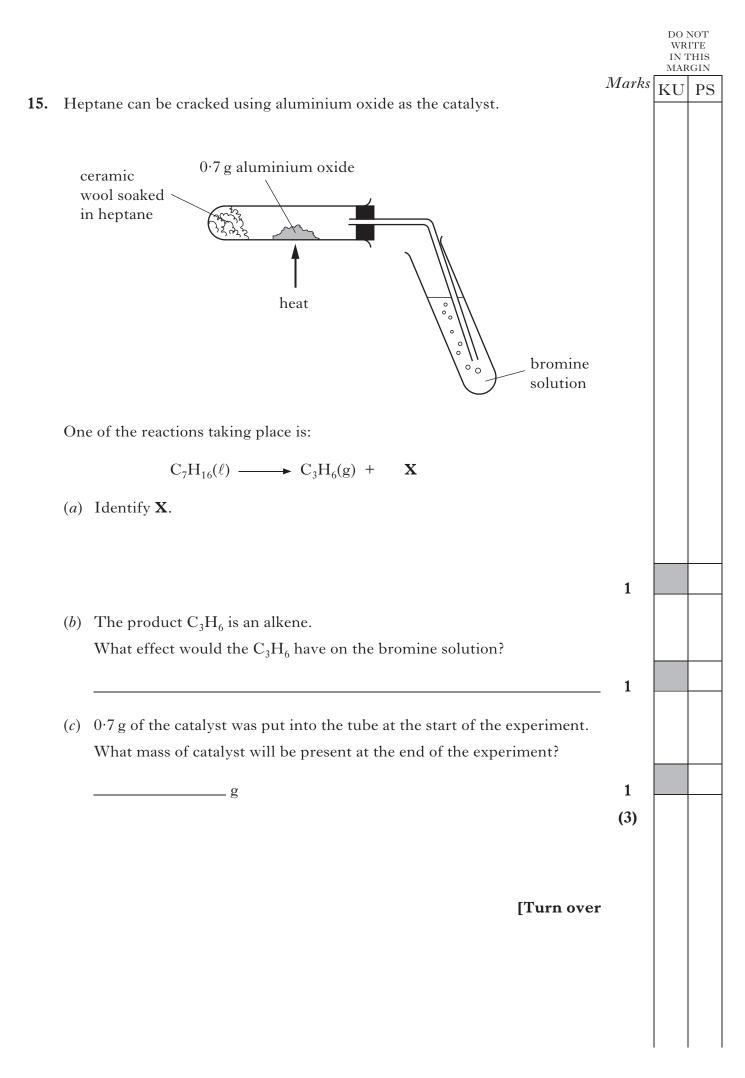
\_mg per litre

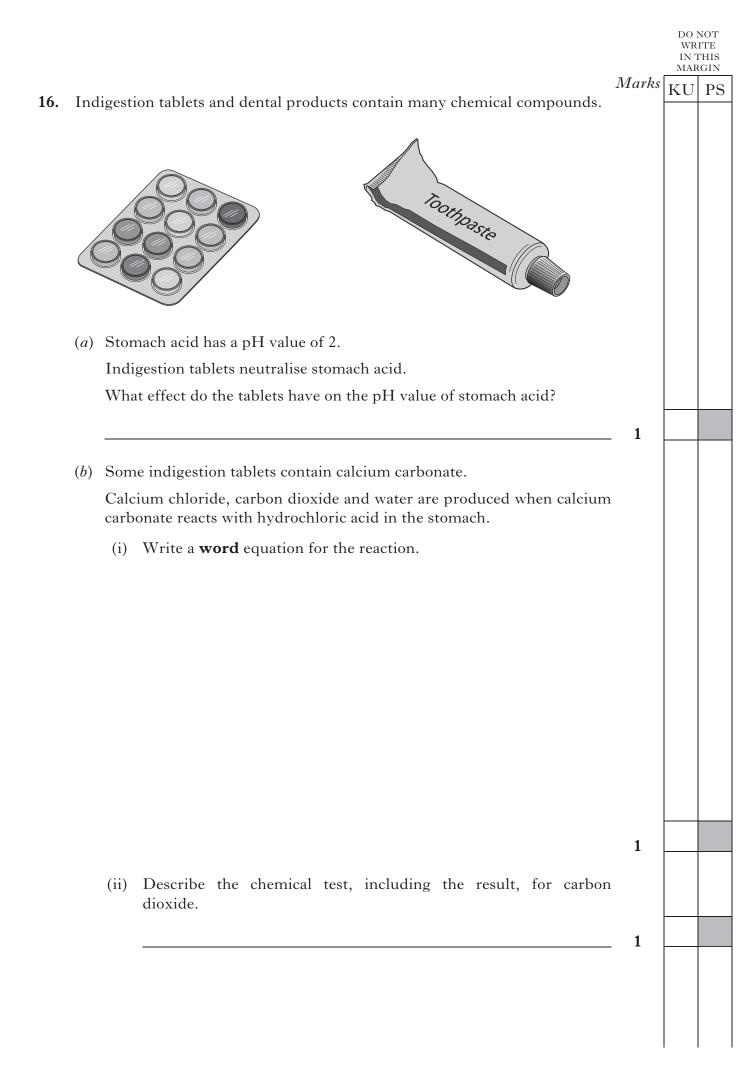
MARGIN Marks KU PS 1 1 1 (3)

DO NOT WRITE IN THIS

WRITE IN THIS MARGIN Marks KU PS 14. A student set up the following experiment to break up copper chloride solution into its elements. power connecting supply wires electrodes copper chloride solution (a) Name this process. 1 (b) (Circle) the correct word to complete the sentence. In the experiment the positive metal ions are attracted to ( positive ) | negative } electrode. the 1 (c) A brown solid is produced at one of the electrodes. What would be **seen** happening at the other electrode? 1 (d) Name a **non-metal** element which is suitable for use as the electrodes. 1 (4)

DO NOT





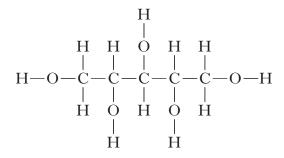
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#### 16. (continued)

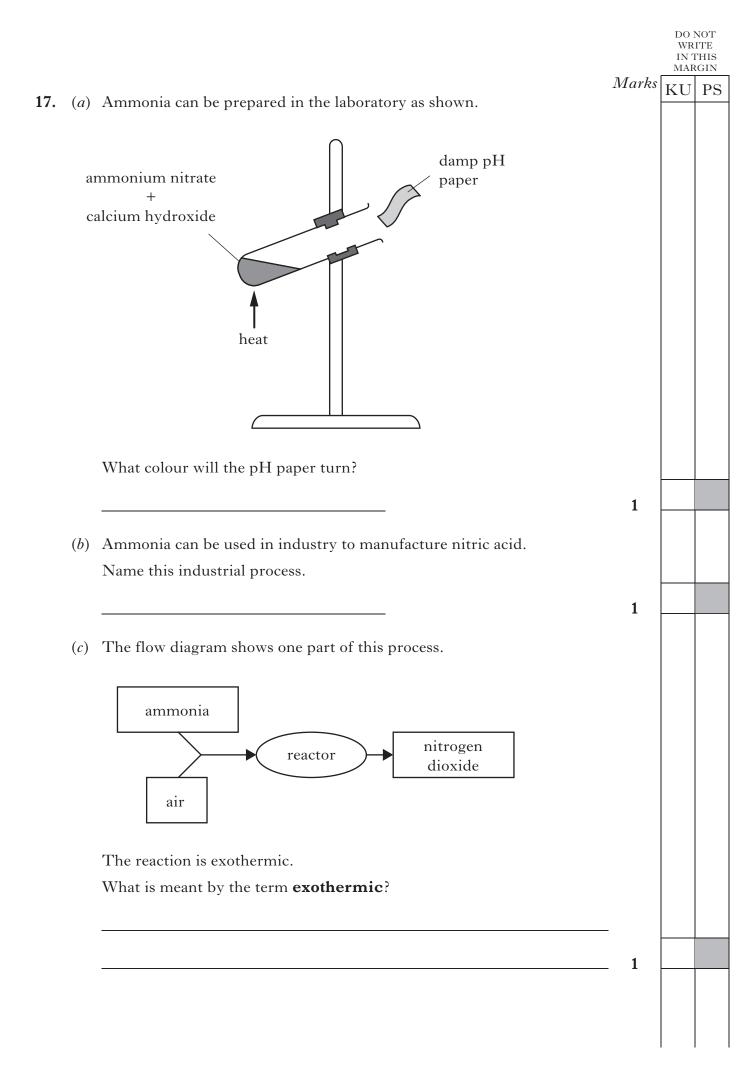
(c) Xylitol is a compound found in some toothpastes.The structure of xylitol is shown below.

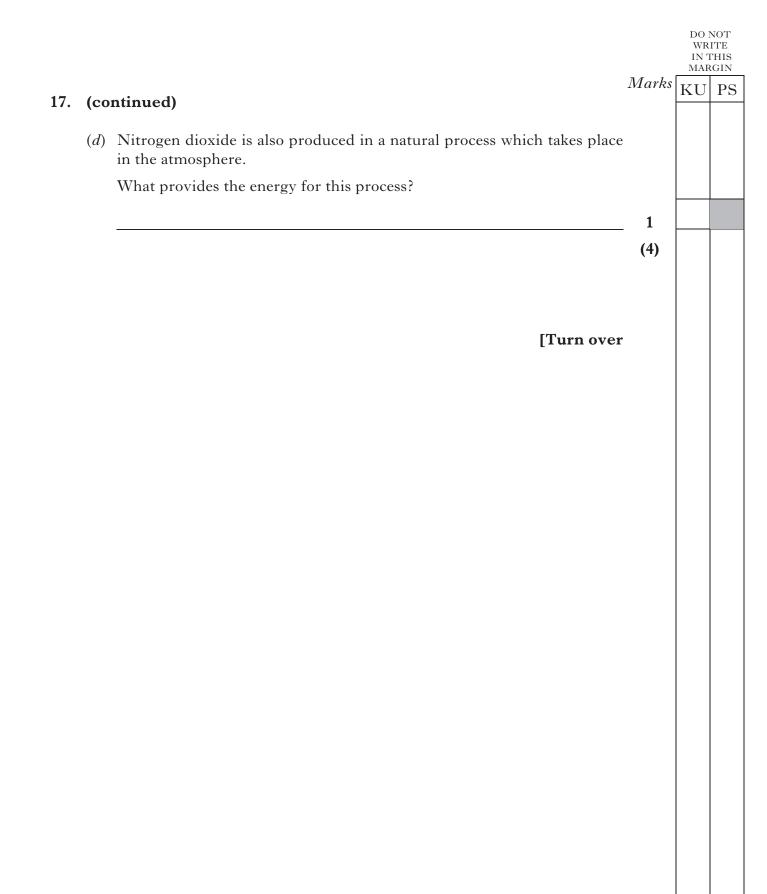


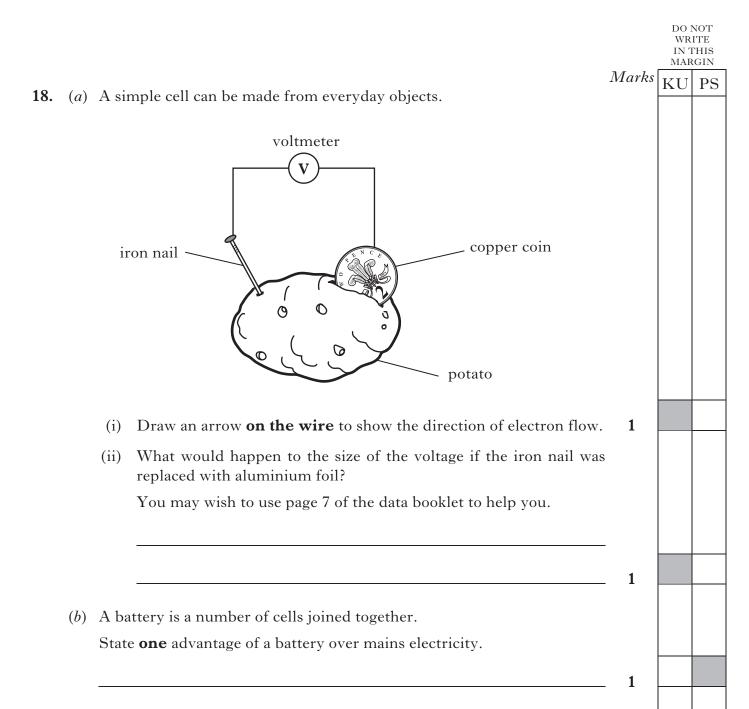
Complete the molecular formula for xylitol.

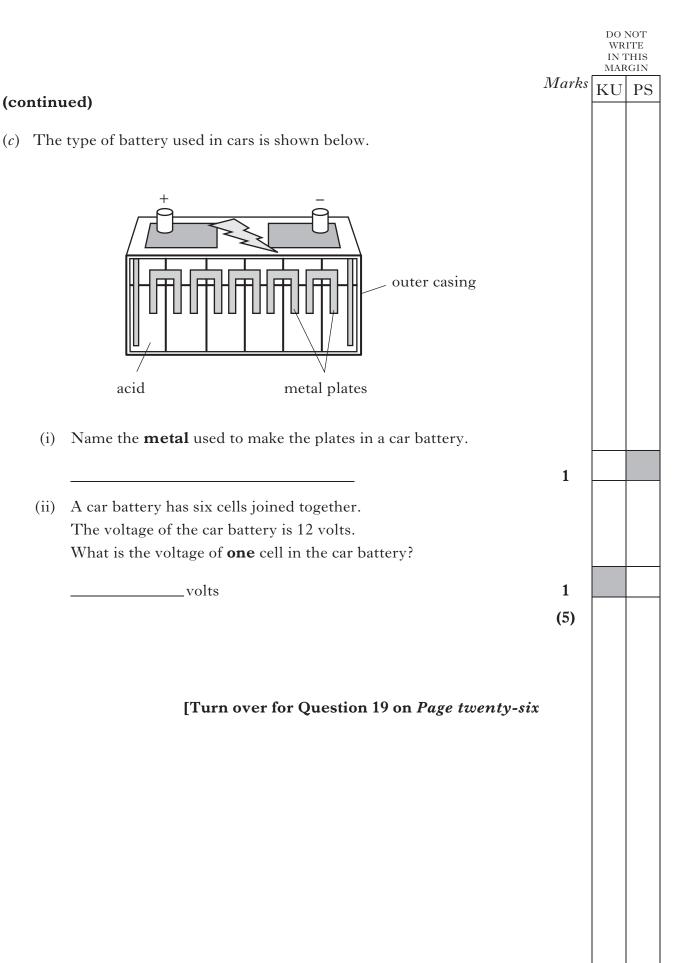


1 (4)









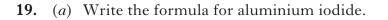
- (i) Name the **metal** used to make the plates in a car battery.
- (ii) A car battery has six cells joined together. The voltage of the car battery is 12 volts. What is the voltage of **one** cell in the car battery?

volts

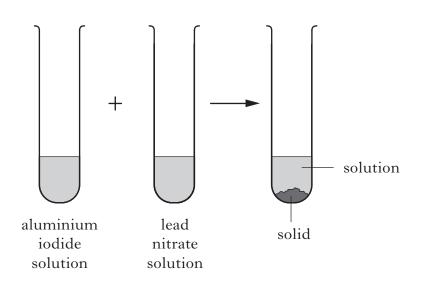
acid

[Turn over for Question 19 on Page twenty-six

18. (continued)



(b) When aluminium iodide solution and lead nitrate solution are mixed together a chemical reaction takes place.



- (i) Name the solution formed in this reaction.You may wish to use page 5 of the data booklet to help you.
- (ii) How could the solid be separated from the solution?

1 (3)

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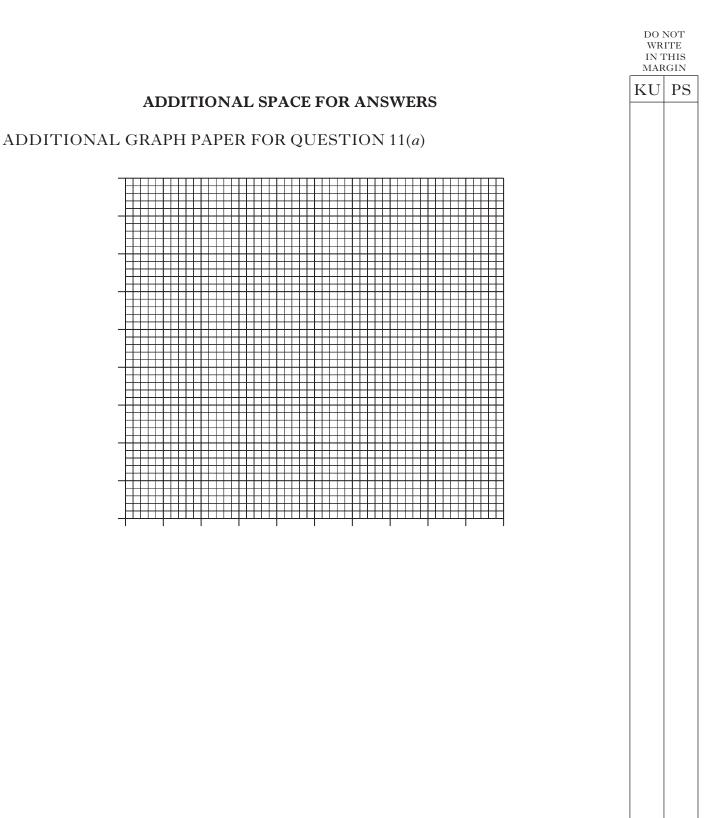
PS

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## [END OF QUESTION PAPER]



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### ADDITIONAL SPACE FOR ANSWERS