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KU

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Total
Marks

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0500/29/01NATIONAL
QUALIFICATIONS
2012MONDAY, 14 MAY
9.00 AM – 10.30 AMCHEMISTRY
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

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Scottish candidate number

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Number of seat

- 1 All questions should be attempted.
- 2 Necessary data will be found in the Data Booklet provided for Chemistry at Standard Grade and Intermediate 2.
- 3 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.
- 4 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.
- 5 Additional space for answers and rough work will be found at the end of the book.
- 6 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.
- 7 Before leaving the examination room you must give this book to the Invigilator. If you do not, you may lose all the marks for this paper.



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	gold	B	magnesium	C	carbon
D	nitrogen	E	calcium	F	iodine

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

A	B	C
D	E	F

- 1

A	B	C
D	E	F

- 1

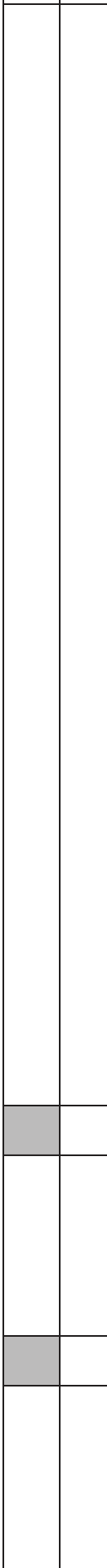
1

A	B	C
D	E	F

(3)

[Turn over

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1

1
(2)

(2)

(2)

(2)

(2)

KU	PS

(a) Identify the **two** non-metal elements.

A	B	C
D	E	F

A	B	C
D	E	F

[Turn over

KU	PS

(a) Identify the metal produced in a Blast Furnace.

1

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

1

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

1

(3)

A	butter melting	B	distillation of crude oil
C	wood burning	D	water evaporating

A	B
C	D

(1)

[Turn over

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[illegible]

11

[illegible]

A	B	C
chlorine	nitrogen	ammonia
D	E	F
oxygen	hydrogen	ethene

1

A	B	C
D	E	F

1

A	B	C
D	E	F

1
(3)

A	B	C
D	E	F

[Turn over

KU	PS

A	B	C
H^+	NO_3^-	Fe^{2+}
D	E	F
OH^-	SO_4^{2-}	Na^+

1

A	B	C
D	E	F

1
(2)

A	B	C
D	E	F

KU	PS
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A	Both air and water are required for rusting to occur.
B	Attaching iron to the positive terminal of a battery prevents rusting.
C	Salt slows down rusting.
D	Rusting is the corrosion of iron.
E	Coating iron in nickel is called galvanising.

(2)

A
B
C
D
E

[Turn over for Part 2 on *Page twelve*

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

-
- A diagram of a hydrogen atom. It consists of a central circle labeled $9+$. Surrounding this central circle are two concentric circles. The inner circle has four black dots on it. The outer circle has five black dots on it. A line points from the text "9 positive charges" to the central circle.

-

1

-

1

(2)

[illegible]

Catalyst	Use
platinum	catalytic converter
nickel	making margarine
iron	making ammonia
rhodium	drug manufacture

- 1

- 1**

- 1**

(3)

[Turn over

[illegible]

(a) Label the pie chart to show the name and percentage for each type of hydrocarbon.

(An additional pie chart, if required, can be found on page 27.)



(b) The table below gives information about some hydrocarbons obtained from the paraffins.

Name	Formula
octane	C_8H_{18}
nonane	C_9H_{20}
decane	$\text{C}_{10}\text{H}_{22}$
undecane	$\text{C}_{11}\text{H}_{24}$

Name the family of hydrocarbons in the table.

(c) Eicosane is another member of this family.

A molecule of eicosane contains 20 carbon atoms.

Write the molecular formula of eicosane.

1

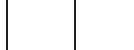
1

(4)

[Turn over

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KU	PS



1

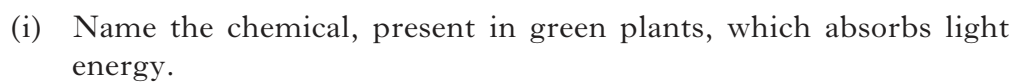
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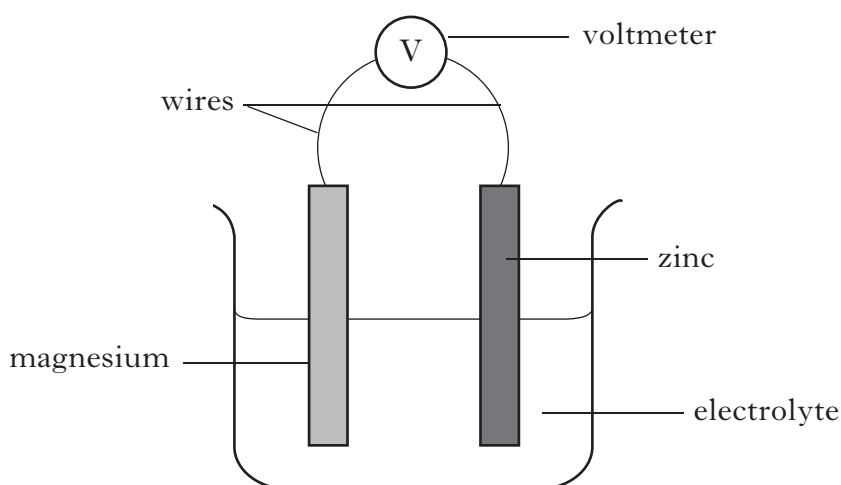
(3)

[Turn over

[illegible]

1

1

[illegible]

- (a) Name the type of charged particle that flows through the wires.

1

- (b) The voltage of the cell shown above is 1.51 V.

Name a metal which could replace **zinc** to produce a **greater** voltage.

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

1

- (c) Scientists at the University of St. Andrews have developed a type of battery. It has the advantage of being able to store up to 10 times more energy than some other types of battery.

- (i) Suggest another advantage of using this type of battery.

1

- (ii) The chemical reaction inside this battery produces lithium oxide. Write the formula for lithium oxide.

1

Marks

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16. (continued)

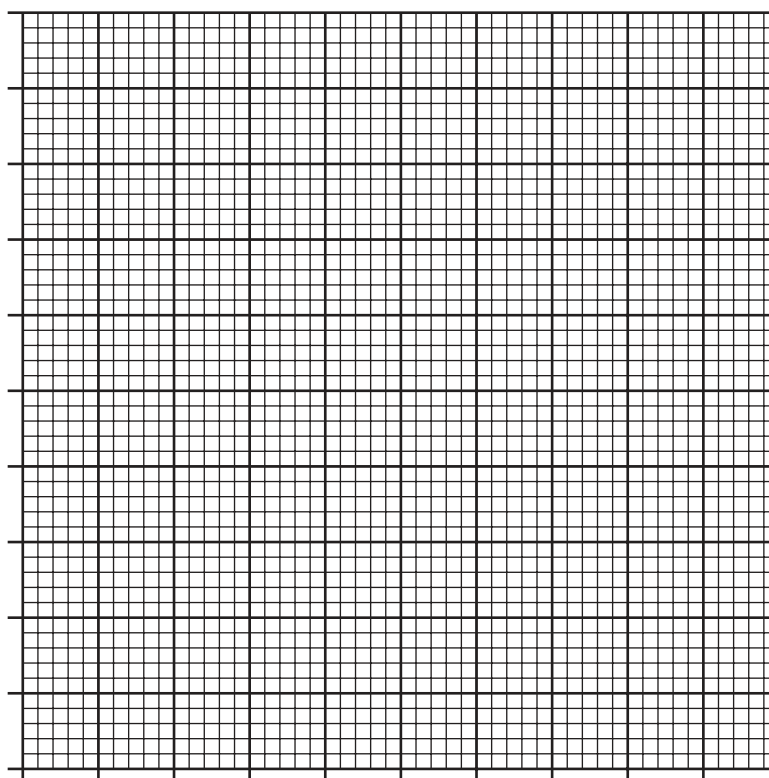
- (d) The table below shows the maximum storage life of some other types of battery.

Type of battery	Storage life/years
alkaline	5
zinc chloride	2
silver oxide	2
nickel-cadmium	7
lithium	10

Present the information as a bar chart.

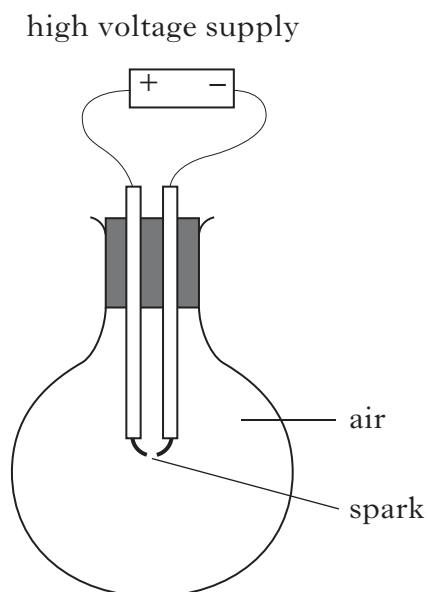
Use appropriate scales to fill most of the graph paper.

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



2
(6)

[Turn over

[illegible]

-

1

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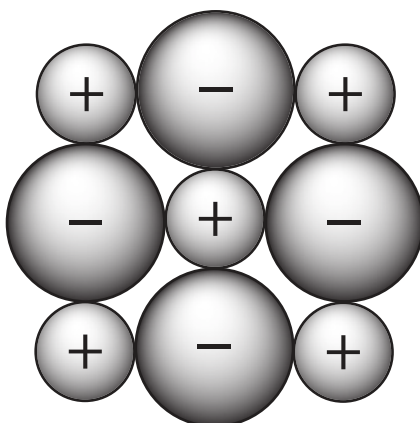
- II 1 6 1 : 1 :

1

(3)

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18. The diagram shows an arrangement of ions in an ionic compound.



(a) What term is given to the arrangement of ions in an ionic solid?

1

(b) Explain why solid ionic compounds do **not** conduct electricity.

1

(c) Many ionic compounds are coloured.

Compound	Colour
copper sulphate	blue
nickel chloride	green
sodium dichromate	orange
sodium chloride	colourless

Using the information in the table, state the colour of the chloride ion.

1

(d) Copper can be extracted from the ionic compound copper oxide as shown.

copper oxide + **Y** $\longrightarrow$ copper + carbon dioxide

Name **Y.**

1

(4)

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Using the information in the table, name the **least** soluble compound.

1

[illegible]

(a) In the table,

- (ii) complete equation
- C**
- .
- 1**

- What does this tell you about the structure of alkenes?

1

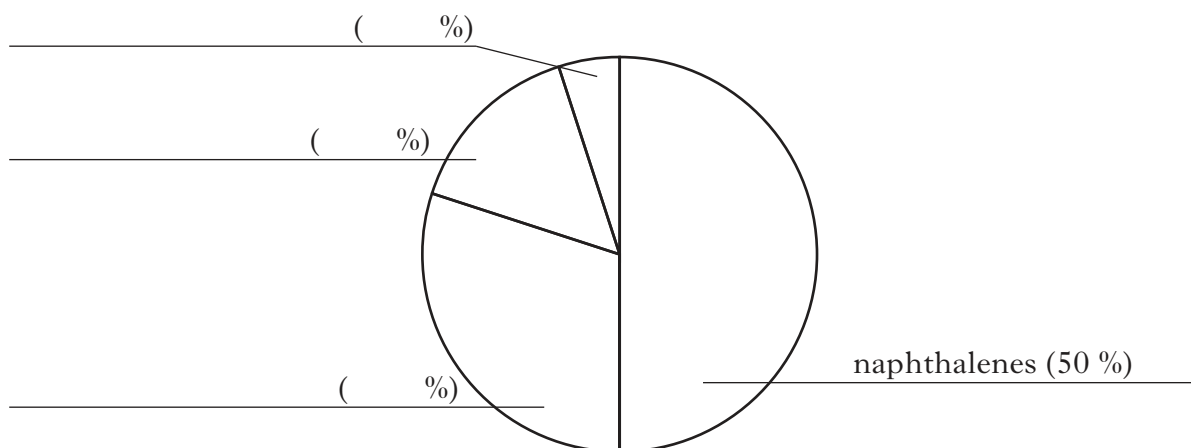
- You may wish to use page 5 of the data booklet to help you.

1

(4)

[END OF QUESTION PAPER]

ADDITIONAL PIE CHART FOR QUESTION 12(a)

[illegible]

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