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Surname			Other names		
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Edexcel GCSE					
Chemistry/Science					
Unit C1: Chemistry in Our World					
Foundation Tier					
Wednesday 9 November 2011 – Morning				Paper Reference	
Time: 1 hour				5CH1F/01	
You must have: Calculator, ruler					Total Marks

Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Answer the questions in the spaces provided
– *there may be more space than you need.*

Information

- The total mark for this paper is 60.
- The marks for **each** question are shown in brackets
– *use this as a guide as to how much time to spend on each question.*
- Questions labelled with an **asterisk** (*) are ones where the quality of your written communication will be assessed
– *you should take particular care with your spelling, punctuation and grammar, as well as the clarity of expression, on these questions.*

Advice

- Read each question carefully before you start to answer it.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end.

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The Periodic Table of the Elements

Answer ALL questions.

Some questions must be answered with a cross in a box ☒. If you change your mind about an answer, put a line through the box ~~☒~~ and then mark your new answer with a cross ☒.

Problems caused by acids

1 (a) Hydrochloric acid is produced in the stomach.
When too much acid is produced it can cause indigestion.

(i) Give a reason why hydrochloric acid is present in the stomach.

(1)

(ii) Complete the sentence by putting a cross (☒) in the box next to your answer.

The formula of hydrochloric acid is

(1)

- A HCl
- B H₂Cl
- C HCl₂
- D HCl²



(iii) Which of these hazard symbols should be used on a container of dilute hydrochloric acid to show that it is an irritant?

Put a cross (☒) in the box next to your answer.

(1)



A



B



C



D

(b) Indigestion can cause pain in the chest.
Indigestion tablets can be taken to relieve this pain.



(i) Explain how indigestion tablets relieve this pain.

(2)

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(ii) Complete the sentence by putting a cross (☒) in the box next to your answer.

Some indigestion tablets contain magnesium carbonate.
When magnesium carbonate is added to dilute hydrochloric acid, a salt is formed.

The name of the salt formed is

(1)

- A magnesium oxide
- B magnesium nitrate
- C magnesium chloride
- D magnesium sulphate

(c) Waste gases from coal-fired power stations can be acidic.
These waste gases can be passed through calcium carbonate.

Explain how the calcium carbonate helps to reduce the amount of acid rain.

(2)

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(Total for Question 1 = 8 marks)



Crude oil products

- 2 Crude oil is separated into fractions.
Crude oils from different oil wells contain different percentages of the fractions.

The table shows the percentages of the fractions in crude oils from three different oil wells.

fraction	percentage of fraction in crude oil from		
	oil well A	oil well B	oil well C
gases	1	6	9
petrol	2	15	24
kerosene	6	14	20
diesel oil	7	10	16
fuel oil	26	28	30
bitumen	58	27	1

- (a) Give the name of the process that is used to separate crude oil into fractions. (2)
-
- (b) Crude oil from which oil well contains the most petrol? (1)
-
- (c) Which fraction is present in almost the same percentage in the crude oils from all three oil wells? (1)
-



(d) Complete the sentence by putting a cross (☒) in the box next to your answer.

Kerosene is used as a fuel for

(1)

- A cars
- B large ships
- C jet aircraft
- D power stations

(e) Petrol fractions contain the hydrocarbon octane, C_8H_{18} .

Explain what is meant by the term **hydrocarbon**.

(2)

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(f) One product obtained when hydrocarbons burn in air is carbon dioxide.

Describe a test to show that a gas is carbon dioxide.

(2)

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(Total for Question 2 = 9 marks)



Ethene and poly(ethene)

3 (a) Ethene is an unsaturated hydrocarbon.

State what is meant by the term **unsaturated**.

(1)

(b) Complete the sentences by putting a cross (☒) in the box next to your answer.

(i) When bromine water is shaken with ethene, it changes colour.

The bromine water becomes

(1)

- A orange
- B brown
- C colourless
- D clear

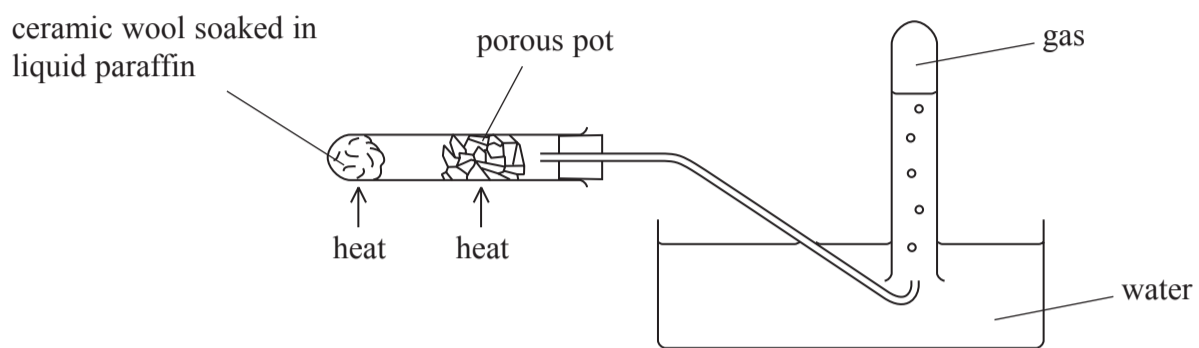
(ii) The formula of ethene is

(1)

- A CH₄
- B C₂H₄
- C C₂H₆
- D C₃H₈



(c) A gas containing ethene can be produced from liquid paraffin using this apparatus.



Describe how liquid paraffin becomes ethene in this experiment.

(3)

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(d) Ethene is used to make poly(ethene).

Describe how ethene molecules form poly(ethene) molecules.

(2)

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(e) Waste poly(ethene) can cause problems.

Explain the problems caused by waste poly(ethene).

(2)

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(Total for Question 3 = 10 marks)



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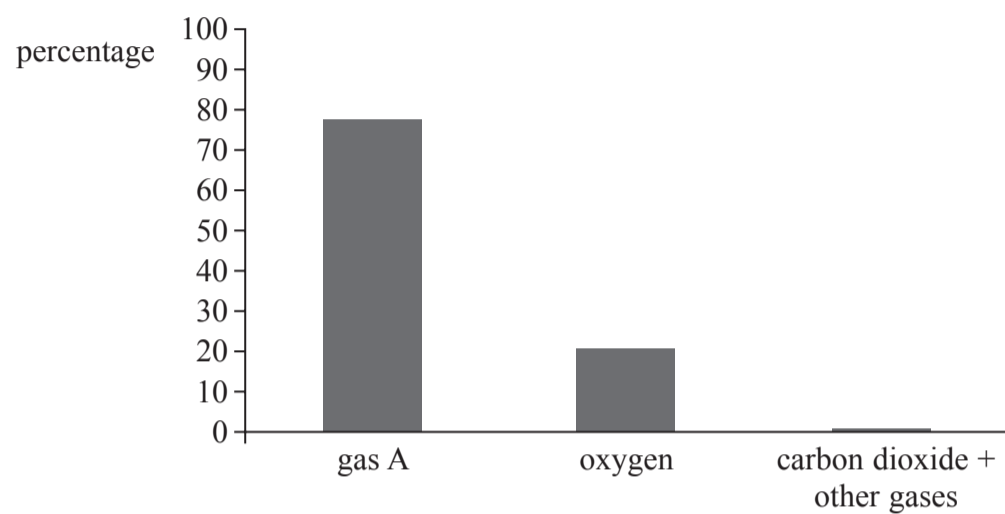
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The atmosphere

4 (a) The bar chart shows the percentage of gases in the Earth's atmosphere.



(i) Give the name of gas A.

(1)

(ii) Which of the gases listed below is naturally present in the atmosphere?

Put a cross (☒) in the box next to your answer.

(1)

- A argon
- B carbon
- C chlorine
- D hydrogen

(b) (i) Complete the sentence by putting a cross (☒) in the box next to your answer.

The gases in the Earth's earliest atmosphere were thought to originate from

(1)

- A plants
- B the ocean
- C volcanoes
- D ice caps



(ii) Explain how the growth of primitive plants changed the percentage of oxygen and carbon dioxide in the Earth's early atmosphere.

(2)

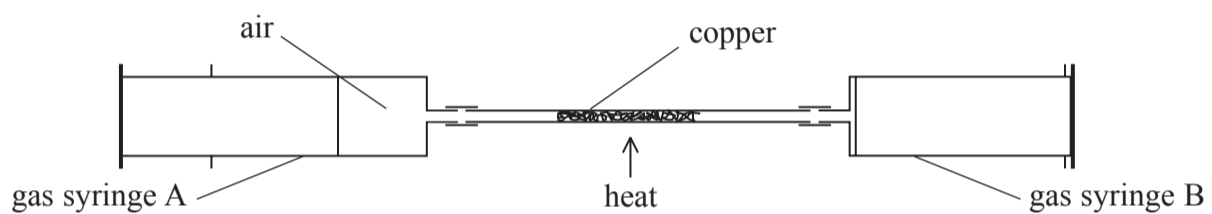
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* (c) Experiments can be carried out to find the volume of oxygen in a given volume of air.
When hot, copper reacts with oxygen.

In one experiment the following apparatus is used.
At the start of the experiment, 100 cm³ of air is in gas syringe A.
The air is passed backwards and forwards over the heated copper.



Describe how the apparatus can be used to show that the 100 cm³ of air contained 21 cm³ of oxygen.

(6)

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(Total for Question 4 = 11 marks)



Calcium carbonate

5 The picture shows a piece of limestone rock containing fossils.



(a) (i) Complete the sentence by putting a cross (☒) in the box next to your answer.

Limestone is a form of calcium carbonate.

The elements present in calcium carbonate are

(1)

- A calcium and oxygen only
- B calcium and carbon only
- C calcium and carbonate only
- D calcium, carbon and oxygen only

(ii) Limestone is a sedimentary rock.

Explain how fossils are formed in limestone.

(3)

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(b) Marble is also a form of calcium carbonate.
It is a metamorphic rock.

Explain how marble is formed from limestone.

(2)

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(c) (i) Complete the sentence by putting a cross (☒) in the box next to your answer.

When calcium carbonate is heated it reacts to form calcium oxide and carbon dioxide.

This reaction is an example of

(1)

- A electrolysis
- B incomplete combustion
- C cracking
- D thermal decomposition

(ii) Write the word equation for this reaction.

(1)

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(d) Describe what you would see when water is added drop by drop to a sample of cold calcium oxide.

(2)

(Total for Question 5 = 10 marks)

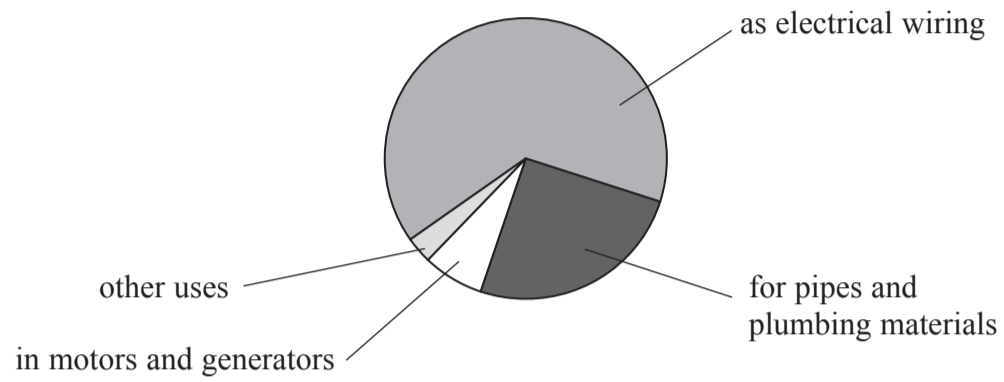


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Metals

6 The pie chart shows the main uses of copper.



(a) Use the pie chart to give the biggest use for copper.

(1)

(b) Copper can be extracted from a naturally occurring substance called malachite.

State the name given to naturally occurring substances from which metals are extracted.

(1)



(c) Overhead power cables supported on pylons are used to carry electricity.



The table shows information about three metallic substances.

metallic substance	density / kg m^{-3}	cost per tonne / £	relative strength	relative ability to conduct electricity	relative resistance to corrosion
copper	8920	5279	high	very good	good
aluminium	2700	1425	high	good	good
steel	7820	505	very high	good	poor

(i) The pylons are made of steel.

Use information from the table to explain which properties of steel make it the most suitable of these three metals for the pylons.

(2)

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(ii) Use information from the table to explain which properties of aluminium make it more suitable than copper for making overhead power cables.

(2)

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* (d) Iron for making steel, copper and aluminium is obtained from substances found in the Earth's crust.

The metals are made into many useful things.
When no longer required the metal articles are thrown away as waste or recycled.

Explain why it is important to recycle these metals rather than put them in general household waste.

(6)

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(Total for Question 6 = 12 marks)

TOTAL FOR PAPER = 60 MARKS



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