Write your name here		
Surname	Other	names
Edexcel GCSE	Centre Number	Candidate Number
Chemistry Unit C1: Chemistry		ce
	ı	Foundation Tier
Wednesday 9 November Time: 1 hour	2011 – Morning	Paper Reference 5CH1F/01

#### **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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1/1/1/1/

	0 <b>He</b> helium	20 <b>Ne</b> neon 10	40 <b>Ar</b> argon 18	84 <b>Kr</b> krypton 36	131 <b>Xe</b> xenon 54	[222] <b>Rn</b> radon 86	fully
	_	19 <b>F</b> fluorine	35.5 <b>CI</b> chlorine 17	80 <b>Br</b> bromine 35	127 	[210] <b>At</b> astatine 85	orted but not
	9	16 <b>O</b> oxygen 8	32 <b>S</b> sulfur 16	79 <b>Se</b> selenium 34	128 <b>Te</b> tellurium 52	[209] <b>Po</b> polonium 84	ve been rep
	S	14 N nitrogen 7	31 <b>P</b> phosphorus 15	75 <b>As</b> arsenic 33	122 <b>Sb</b> antimony 51	209 <b>Bi</b> bismuth 83	s 112-116 ha authenticated
(O	4	12 <b>C</b> carbon 6	28 <b>Si</b> silion 14	73 <b>Ge</b> germanium 32	119 <b>Sn</b> tin 50	207 <b>Pb</b> lead 82	Elements with atomic numbers 112-116 have been reported but not fully authenticated
ent	т	11 <b>B</b> boron 5	27 AI aluminium 13	70 <b>Ga</b> gallium 31	115 In indium 49	204 <b>T</b> thallium 81	ents with ato
Elen				65 <b>Zn</b> zinc 30	112 <b>Cd</b> cadmium 48	201 <b>Hg</b> mercury 80	Elem
the				63.5 <b>Cu</b> copper 29	108 <b>Ag</b> silver 47	197 <b>Au</b> gold 79	Rg roentgenium 111
e of				59 <b>Ni</b> nickel 28	106 <b>Pd</b> palladium 46	195 <b>Pt</b> platinum 78	[271] <b>Ds</b> damstadtium 110
iodic Table of the Elements				59 <b>Co</b> cobalt 27	103 <b>Rh</b> rhodium 45	192   <b>Ir</b>   iridium 77	[268] <b>Mt</b> meitnerium 109
odic	T T			56 Fe iron 26	Ru ruthenium 44	190 <b>Os</b> osmium 76	[277] <b>Hs</b> hassium 108
				55 Mn manganese 25	[98] Tc technetium 43	186 <b>Re</b> rhenium 75	[264] <b>Bh</b> bohrium 107
The Per		mass <b>ool</b> umber		52 Cr chromium 24	96 <b>Mo</b> molybdenum 42	184 <b>W</b> tungsten 74	[266] Sg seaborgium 106
	Kev	relative atomic mass <b>atomic symbol</b> name atomic (proton) number		51 V vanadium 23	93 <b>Nb</b> niobium 41	181 <b>Ta</b> tantalum 73	[262] <b>Db</b> dubnium 105
		relativ <b>atc</b> atomic		48 <b>Ti</b> titanium 22	91 <b>Zr</b> zirconium 40	178 <b>Hf</b> hafnium 72	[261] Rf rutherfordium 104
				45 Sc scandium 21	89 <b>Y</b> yttrium 39	139 <b>La*</b> lanthanum 57	[227] <b>Ac*</b> actinium 89
	8	9 <b>Be</b> beryllium 4	24 <b>Mg</b> magnesium 12	40 <b>Ca</b> calcium 20	88 Sr strontium 38	137 <b>Ba</b> barium 56	[226] <b>Ra</b> radium 88
	-	7 <b>Li</b> lithium 3	23 <b>Na</b> sodium 11	39 <b>K</b> potassium 19	85 <b>Rb</b> rubidium 37	133 <b>Cs</b> caesium 55	[223] <b>Fr</b> francium 87

\* The lanthanoids (atomic numbers 58-71) and the actinoids (atomic numbers 90-103) have been omitted.

The relative atomic masses of copper and chlorine have not been rounded to the nearest whole number.

P 4 0 1 7 6 A 0 2 2 0

# **Answer ALL questions.**

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

ar	swer, pu	it a line through the box $oxtimes$ and then mark your new answer with a cross $oxtimes$	
		Problems caused by acids	
1		drochloric acid is produced in the stomach. en 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)
	$\times$	A HCl	
	$\times$	<b>B</b> H <sub>2</sub> Cl	
	$\times$	C HCl <sub>2</sub>	
	$\times$	<b>D</b> HCl <sup>2</sup>	



					(1)
$\square$ A	$\square$	В	<b>C</b> C	<b>■ D</b>	
(b) Indigestion car Indigestion tab	n cause pain in the colets can be taken to	chest. relieve this pain			
		Relief Tablets magnesium carbonate 500  Fost oc effective from oc indigest heentis	mg ing, erelief id		
			7		
(i) Explain h	ow indigestion table	ets relieve this pa	in.		(2)
4		0 1 7 6 A			

(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.

(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	
×	A magnesium oxide	(1)
	B magnesium nitrate	
×	C magnesium chloride	
	D magnesium sulphate	
	ste gases from coal-fired power stations can be acidic. se waste gases can be passed through calcium carbonate.	
	lain how the calcium carbonate helps to reduce the amount of acid rain.	
Znp	and now the earerent earerentee helps to reduce the uniount of ucid runn.	(2)
	(Total for Question 1 = 8 ma	nrks)
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# **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.

	percentage of fraction in crude oil from				
fraction	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)



Kerosene is used as a fuel for	(1)
	(1)
■ B large ships	
C jet aircraft	
<b>D</b> power stations	
e) Petrol fractions contain the hydrocarbon octar	ne, $C_8H_{18}$ .
Explain what is meant by the term <b>hydrocart</b>	<b>2</b> (2)
One product obtained when hydrocarbons bur	n in air is carbon dioxide.
Describe a test to show that a gas is carbon di	
Describe a test to show that a gas is carbon di	oxide. (2)
Describe a test to show that a gas is carbon di	
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Describe a test to show that a gas is carbon di	
Describe a test to show that a gas is carbon di	(2)
Describe a test to show that a gas is carbon di	(2)
Describe a test to show that a gas is carbon di	(2)
Describe a test to show that a gas is carbon di	(2)



	ene is an unsaturated hydrocarbon.  te what is meant by the term <b>unsaturated</b> .	
Sta	to what is meant by the term <b>ansaturation</b> .	(1
(b) Cor	nplete 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
$\boxtimes$	A orange	(1
$\times$	B brown	
$\boxtimes$	C colourless	
$\boxtimes$	<b>D</b> clear	
(ii)	The formula of ethene is	(1
$\boxtimes$	$\mathbf{A}$ $\mathrm{CH}_4$	(1
$\times$	$\mathbf{B}$ C <sub>2</sub> H <sub>4</sub>	
$\boxtimes$	$\mathbf{C}$ $\mathbf{C}_2\mathbf{H}_6$	
$\boxtimes$	$\mathbf{D} \ \mathrm{C}_3\mathrm{H}_8$	

P 4 0 1 7 6 A 0 8 2 0

(c) A gas containing ethene can be produced from liquid paraffin using this	is apparatus.
ceramic wool soaked in liquid paraffin porous pot	_ gas
°	
heat heat	water
Describe how liquid paraffin becomes ethene in this experiment.	(3)
	(3)
(d) Ethene is used to make poly(ethene).	
Describe how ethene molecules form poly(ethene) molecules.	(2)
	(-)



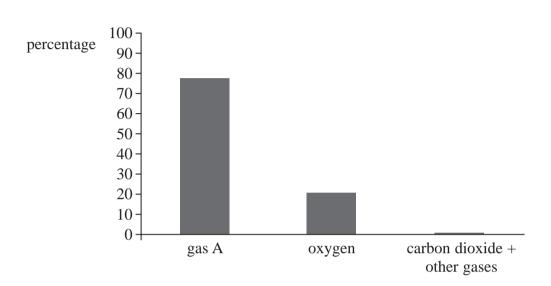
Explain the problems caused by waste poly(ethen	e). (2)
	(Total for Question 3 = 10 marks)





## 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)

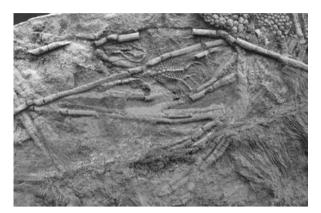
- A plants
- **B** the ocean
- C volcanoes
- **D** ice caps

(ii) Explain how the growth of primitive plants changed the percentage of oxygen and carbon dioxide in the Earth's early atmosphere.	(2)
*(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 cm <sup>3</sup> of air is in gas syringe A.  The air is passed backwards and forwards over the heated copper.	
gas syringe A heat gas syri	nge B
Describe how the apparatus can be used to show that the 100 cm <sup>3</sup> of air contained 21 cm <sup>3</sup> of oxygen.	(6)
(Total for Question 4 = 11 mar	·ks)



## **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)

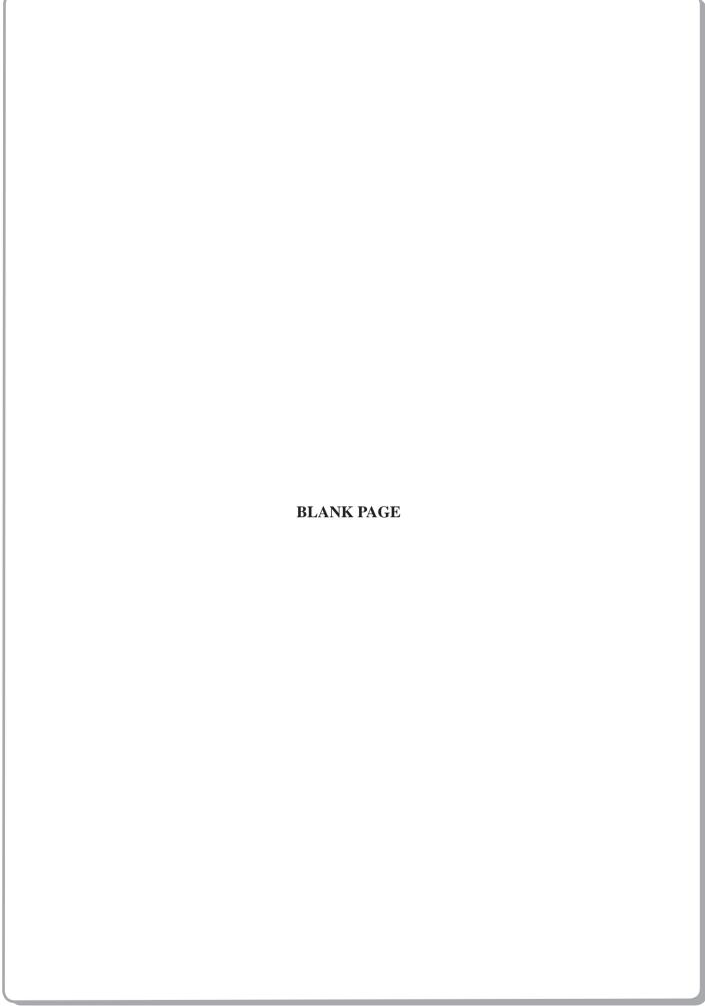
- A calcium and oxygen only
- **B** calcium and carbon only
- C calcium and carbonate only
- D calcium, carbon and oxygen only
- (ii) Limestone is a sedimentary rock.

Explain how fossils are formed in limestone.

(3)



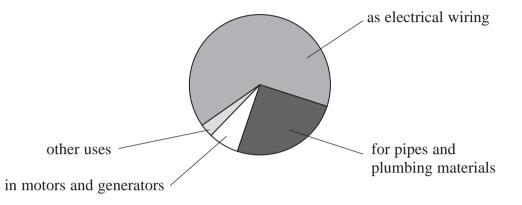
Exp	plain how marble is formed from limestone.	
		(2)
e) (i)	Complete the sentence by putting a cross ( ) in the box next to your answ	
	When calcium carbonate is heated it reacts to form calcium oxide and carb	on dioxide.
	This reaction is an example of	(1)
×	A electrolysis	
$\times$	<b>B</b> incomplete combustion	
$\times$	C cracking	
$\times$	<b>D</b> thermal decomposition	
(ii)	Write the word equation for this reaction.	
		(1)
l) Des	cribe what you would <b>see</b> when water is added drop by drop to a sample of	cold
	rium oxide.	(2)
		. ,
	(Total for Question 5 = 10	) marks)
	(Total for Question 5 – To	J IIIai Ks)





#### Metals

6 The pie chart shows the main uses of copper.



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

(1)

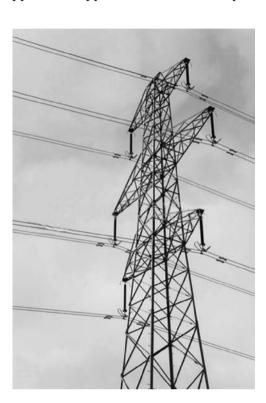
(b) Copper can be extracted from a naturally occurring substance called malachite.

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 <sup>-3</sup>	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 pyl	ons are	made	of	steel	L
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Use information from the table to explain which properties of steel make it the most suitable of these three metals for the pylons.

(2)

• • • • • • •	 	 • • • • • •	• • • • • •	 	 	• • • • •	• • • • •	• • • • •	• • • • •	 • • • • • •	• • • • •	• • • • •	 • • • • • •	 	 	 • • • • •	 • • • • •	 • • • • • •	• • • • • •	 	 • • • • • •	 	 	 	



	(2)
ron for making steel, copper and aluminium is obtained from substances found he Earth's crust.	in
The metals are made into many useful things.  When no longer required the metal articles are thrown away as waste or recycle	ed.
Explain why it is important to recycle these metals rather than put them in gene tousehold waste.	ral
lousenoid waste.	(6)
	2 marks)



