Surname		ther names
Edexcel GCSE	Centre Number	Candidate Number
Chemistr	v/Sciar	160
Unit C1: Chemistry		l
	in Our World	

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.



	6) E	- 05-			- • • ·	[] =	
	0 He helium	20 Ne	40 Ar argon 18	84 Kr krypton 36	131 Xe xenon 54	[222]	ot fully
	7	19 fluorine	35.5 CI chlorine 17	80 Br bromine 35	127 	[210] At astatine 85	oorted but no
	9	16 o oxygen 8	32 S sulfur 16	79 Se selenium 34	128 Te tellurium 52	[209] Po polonium 84	ave been rep 1
	S	14 N nitrogen 7	31 P phosphorus 15	75 As arsenic 33	122 Sb antimony 51	209 Bi bismuth 83	s 112-116 ha authenticated
(D	4	12 carbon 6	28 Si silicon 14	73 Ge germanium 32	119 Sn tin 50	207 Pb lead 82	mic numbers
nent	ო	11 boron 5	27 Al aluminium 13	70 Ga gallium 31	115 In indium 49	204 TI thallium 81	Elements with atomic numbers 112-116 have been reported but not fully authenticated
Elen				65 Zn zinc 30	112 Cd cadmium 48	201 Hg mercury 80	Elem
The Periodic Table of the Elements				63.5 Cu copper 29	108 Ag silver 47	197 Au gold 79	Rg roentgenium 111
e of				59 Ni nickel 28	106 Pd palladium 46	195 Pt platinum 78	[271] Ds damstadium 110
Tabl		_		59 Co cobatt 27	103 Rh rhodium 45	192 Ir iridium 77	[268] Mt meibrerium 109
odic	T Hydrogen			56 Fe iron 26	101 Ru ruthenium 44	190 0s osmium 76	[277] Hs hassium 108
Peric				55 Mn manganese 25	[98] Tc technetium 43	186 Re rhenium 75	[264] Bh bohrium 107
Lhe I		mass ɔol ıumber		52 Cr chromium 24	96 Mo molybdenum 42	184 W tungsten 74	[266] Sg seaborgium 106
	Kev	relative atomic mass atomic symbol name atomic (proton) number		51 V vanadium 23	93 Nb niobium 41	181 Ta tantalum 73	[262] Db dubnium 105
		relati ⁿ atc atomic		48 Ti titanium 22	91 Zr zirconium 40	178 Hf hafnium 72	[261] Rf rutherfordium 104
				45 Sc scandium 21	89 Y yttrium 39	139 La* Ianthanum 57	[227] Ac* actinium 89
	8	9 Be beryllium 4	24 Mg magnesium 12	40 Ca calcium 20	88 Sr strontium 38	137 Ba barium 56	[226] Ra radium 88
	←	7 Li Iithium 3	23 Na sodium 11	39 K potassium 19	85 Rb rubidium 37	133 Cs caesium 55	[223] Fr 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 .

Problems caused by acids

1	1 (a) Hydrochloric acid is produced in the stomach. When too much acid is produced it can cause indigestion.									
	(i)	G	Sive a reaso	n why hydro	ochloric a	cid is pre	sent in th	e stomach.		(1)
	(ii) C	complete the	e sentence b	by putting	a cross (⊠) in the	box next to	o your answer.	

The formula of hydrochloric acid is

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

(12) The formula of hydrochloric acid is

A HCl

 \boxtimes **B** H₂Cl

 \boxtimes C HCl₂

 \square **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 (\boxtimes) in the box next to your answer. (1) \mathbf{X} A \boxtimes **D 区 C** \boxtimes B (b) Indigestion can cause pain in the chest. Indigestion tablets can be taken to relieve this pain. Indigestion
Relief Tablets (i) Explain how indigestion tablets relieve this pain. (2)

P 4 0 1 7 6 A 0 4 2 0

4

(ii)		r
	Complete the sentence by putting a cross (in the box next to your answer	1,
	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)
\times	A magnesium oxide	
\boxtimes	B magnesium nitrate	
\boxtimes	C magnesium chloride	
\bowtie	D magnesium sulphate	
	ste gases from coal-fired power stations can be acidic. se waste gases can be passed through calcium carbonate.	
Exp	lain how the calcium carbonate helps to reduce the amount of acid rain.	(2)
	(Total for Ouestion 1 = 8	marks)
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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)

(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	
D power stations	
(e) Petrol fractions contain the hydrocarbon octane, C ₈ H ₁₈ .	
Explain what is meant by the term hydrocarbon .	(2)
(f) One product obtained when hydrocarbons burn in air is carbon dioxide.	
Describe a test to show that a gas is carbon dioxide.	
	(2)
(Total for Question $2 = 9$	marks)
	,

Ethene and poly(ethene) 3 (a) Ethene is an unsaturated hydrocarbon.				
	te what is meant by the term unsaturated .	(1)		
(b) Cor	mplete 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	(1)		
×	B brown			
\times	C colourless			
×	D clear			
(ii)	The formula of ethene is			
×	\mathbf{A} CH ₄	(1)		
×	B C_2H_4			
×	\mathbf{C} $\mathbf{C}_2\mathbf{H}_6$			
×	\mathbf{D} C_3H_8			

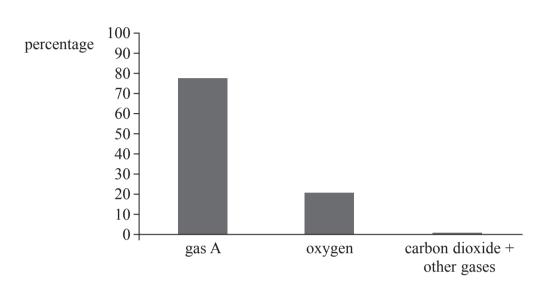
(c) A gas containing ethene can be produced from liquid paraffin using this apparatus.	
ceramic wool soaked in liquid paraffin porous pot of the soaked in liquid paraffin of the soaked i	
Describe how liquid paraffin becomes ethene in this experiment.	(3)
(d) Ethene is used to make poly(ethene). Describe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

Explain the problems caused by waste poly(ethene).
	(2)
	(Total for Orostian 2 – 10 monto)
	(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 pe and carbon dioxide in the Earth's early atmosphere.	ercentage of oxygen (2)
*(c) Experiments can be carried out to find the volume of oxygen in air. When hot, copper reacts with oxygen. In one experiment the following apparatus is used. At the start of the experiment, 100 cm ³ of air is in gas syringe A. The air is passed backwards and forwards over the heated copp air copper	Α.
gas syringe A heat Describe how the apparatus can be used to show that the 100 cm 21 cm ³ of oxygen.	
	(6)
(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

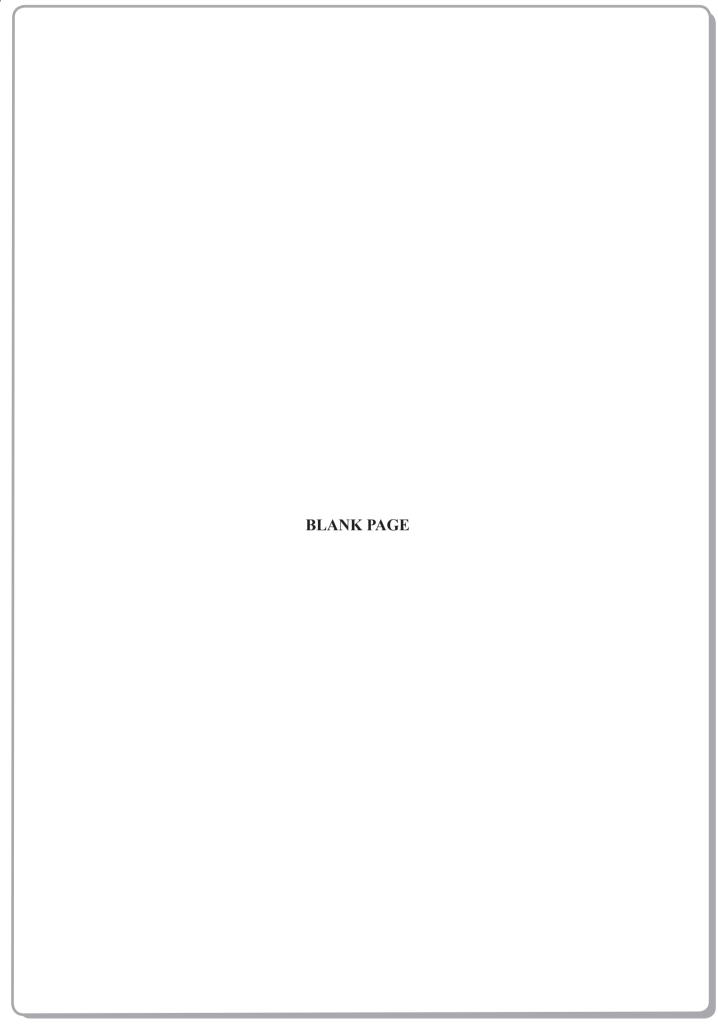
(1)

- 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.

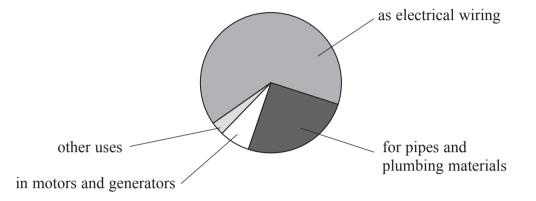
(3)

	a metamorphic rock. lain how marble is formed from limestone.	(2)
(c) (i)	Complete the sentence by putting a cross (⋈) in the box next to your When calcium carbonate is heated it reacts to form calcium oxide and	
	This reaction is an example of	40
\times	A electrolysis	(1)
×	B incomplete combustion	
×	C cracking	
\times	D thermal decomposition	
(ii)	Write the word equation for this reaction.	(1)
	cribe what you would see when water is added drop by drop to a samp ium oxide.	le of cold
carc	ium oxide.	(2)
	(Total for Question 5	= 10 marks)



Metals

6 The pie chart shows the main uses of copper.



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

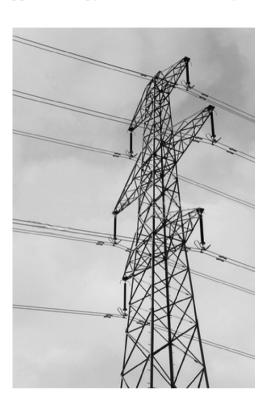
(1)

(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)

it more suitable than copper for making overhead power cables.	(2)
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.	
nousehold waste.	(6)



