Centre No. Paper Reference (complete below)		Initia	l(s)
Candidate No.			
Paper Reference(s) 5018F/1F 5038F/1F	Examir	ner's use	e only
Edexcel GCSE	Team Le	ader's u	se only
Additional Science (5018F)			ise omy
Chemistry (5038F) C2 – Topics 5 to 8		Question Number	Leave Blank
Foundation Tier		2	
		3	
Tuesday 8 November 2011 – Afternoon		4	
Time: 30 minutes		5	
Materials required for examination Calculator Items included with question papers Nil	- - -		
In the boxes above, write your centre number, candidate number, your surname, initial(s) and signature, and complete the paper reference. Check that you have the correct question paper. Answer ALL the questions. Write your answers in the spaces provided in this question paper. Do not use pencil. Use black ink. 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 (☒). Show all stages in any calculations and state the units. Include diagrams in your answers where these are helpful.			
Information for Candidates			
The marks for individual questions and the parts of questions are shown in round brackets: e.g.: (2) There are 5 questions in this question paper. The total mark for this paper is 30. There are 12 pages in this question paper. Any blank pages are indicated.	2).		

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Advice to Candidates

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You are reminded of the importance of clear English and careful presentation in your answers.



Turn over

Total

	0	4 He helium 2	20 Ne	40 Ar argon 18	84 Kr krypton 36	131 Xe xenon 54	[222] Rn radon 86	rt fully
	7		19 F fluorine 9	35.5 CI chlorine 17	80 Br bromine 35	127 	[210] At astatine 85	orted 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 d
	2		14 N nitrogen 7	31 P phosphorus 15	75 As arsenic 33	122 Sb antimony 51	209 Bi bismuth 83	s 112-116 hav authenticated
S	4		12 C carbon 6	28 Si silicon 14	73 Ge germanium 32	119 Sn tin 50	207 Pb lead 82	Elements with atomic numbers 112-116 have been reported but not fully authenticated
nent	က		11 B boron 5	27 Al aluminium 13	70 Ga gallium 31	115 In indium 49	204 T thallium 81	nents with atc
Elen					65 Zn zinc 30	112 Cd cadmium 48	201 Hg mercury 80	Elem
the					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]
Tabl					59 Co cobalt 27	103 Rh rhodium 45	192 Ir indium 77	[268] Mt meitherium 109
odic		T hydrogen			56 iron 26	Ru ruthenium 44	190 Os osmium 76	[277] Hs hassium 108
Peric					55 Mn manganese 25	[98] Tc technetium 43	186 Re rhenium 75	[264] Bh bohrium 107
The Periodic Table of the Elements			mass ɔol umber		52 Cr chromium 24	96 Mo molybdenum 42	184 W tungsten 74	[266] Sg seaborgium 106
		Key	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 atc atomic		48 Ti titanium 22	91 Zr zirconium 40	178 Hf hafinium 72	[261] Rf utherfordium 104
					45 Sc scandium 21	89 Y yttrium 39	139 La* lanthanum 57	[227] Ac* actinium 89
	2		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 lithium 3	23 Na sodium 11	39 K potassium 19	85 Rb rubidium 37	133 Cs caesium 55	[223] Fr francium 87

 st 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 3 9 8 7 3 A 0 2 1 2

The photograph shows	copper wires coated with plastic in an electric cable.		Leave blank
	copper wire		
	plastic coating		
(a) Why is copper used	d in this cable?		
Put a cross (⋈) in	the box to show your answer.		
it is brittle			
it conducts electric	ity 🛮		
it is an insulator	\boxtimes		
it is dense		(1)	
	I to coat the copper wires in this cable? the box to show your answer.	· · ·	
it is brittle			
it conducts electric	ity 🖂		
it is an insulator	\boxtimes		
it is dense		(1)	
(c) One method of disp	posing of waste plastics is by burning them.		
Suggest a problem	that can be caused by burning waste plastics.		
		(1)	
		(1)	

Leave blank

(d) For some uses, copper is mixed with another metal to form a new solid.

Give the name for solids which are mixtures of metals.

(1)

(e) The plastic used to coat the copper wires is the polymer, PVC.

This polymer is made by combining many molecules of chloroethene together.

The structure of a chloroethene molecule is C = C

Which diagram shows part of the structure of the polymer molecule?

Put a cross (\boxtimes) in the box to show your answer.

(1) Q1

(Total 5 marks)

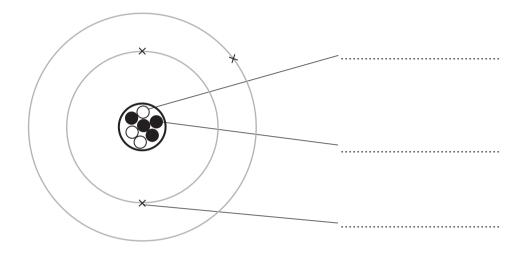
	Н		H 		
	О—Н		H—N—H		
	water		ammonia		
(a) Give the	ne name of the eleme	ent that is combine	ed in both of these mole	cules.	
				(1)	
(b) The for	rmula of a molecule	of water is H ₂ O.			
What is	s the formula of a m	olecule of ammon	ia?		
				(1)	
(c) Water a	and ammonia both h	ave the same type	of structure.		
What s	tructure do they hav	e?			
Put a c	ross (⊠) in the box	to show your ansv	ver.		
giant n	nolecular, covalent	\boxtimes			
giant ic	onic	\boxtimes			
metalli	c	\times			
simple	molecular, covalent	\boxtimes		(1)	

(d) The diagram shows the structure of graphite.	Leave blank
layers of carbon atoms free electrons between layers	
Explain how graphite conducts electricity.	
	 Q2
(Total 5 marks	

Changing various factors can affect the rates of chemical reactions.
(a) Zinc reacts with dilute hydrochloric acid to produce zinc chloride and hydrogen.
(i) Complete the word equation for this reaction.
$zinc + \dots \rightarrow zinc chloride + \dots$ (1)
(ii) The rate of this reaction is affected by the concentration of the acid and temperature of the acid.
Draw a straight line from each change made to the acid to the effect the change has on the rate of the reaction.
change made to hydrochloric acid effect of change on rate of reaction
decrease in concentration no change increase in temperature decreases
(2)
(b) In an experiment, a lump of marble is reacted with dilute hydrochloric acid. Explain how the rate of reaction would have been affected if this lump of marble had been ground to a powder before being used in the reaction.
(2)
(Total 5 marks)

4.	(a)	A proton has a positive charge.
		A neutron has no charge.
		An atom of any element is neutral.
		What charge must an electron have?
		(1)

(b) A lithium atom contains electrons, neutrons and protons. The structure of a lithium atom is shown in the diagram.



(i) Label the diagram to show the positions of an electron, a neutron and a proton. (2)

	(1)
F	Explain how the diagram shows that the mass number of this lithium atom is 7.
ii) T	The lithium atom shown in the diagram has a mass number of 7.

Leave blank (iii) The structure of an atom of sodium is shown in the diagram. The electronic configuration of a lithium atom is 2.1. What is the electronic configuration of a sodium atom? Q4 **(1)** (Total 5 marks)

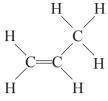
P 3 9 8 7 3 A 0 9 1 2

Turn over

Leave blank

5. The formulae of the molecules of four organic compounds, A, B, C and D, are shown below.

 C_3H_8

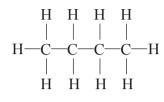


В

Put a cross (\boxtimes) in the box to show your answer.

C = C H

 \mathbf{C}



D

A

(a) Which two compounds are alkanes?

.....

(1)

(b) Cracking is used in industry to convert heavier fractions obtained from crude oil into more useful products.

Which compound **cannot** be produced by the cracking of a larger alkane molecule?

compound A

compound B

compound C

compound D

(1)

(c) Draw the structure of a molecule of compound A, showing all bonds.

(1)

(d) The atoms in a molecule of compound D are held together by shared pairs of electrons.

What type of bond is formed by a shared pair of electrons?

(1)

(e)	Compound B is an unsaturated hydrocarbon. Compound D is a saturated hydrocarbon.
	Explain why compound B is unsaturated .
	(1)
f)	A reagent can be added to a saturated hydrocarbon and to an unsaturated hydrocarbon to distinguish between them.
	Give the name of this reagent and describe what happens when it is mixed with each hydrocarbon.
	(3)

	Leave blank
(g) Molecules of compound B can form the polymer poly(propene).	
Н Н	
н С	
Explain how molecules of compound B C=C H react to form the polymer.	
H H	
	05
(2)	Q5
(Total 10 marks)	
TOTAL FOR PAPER: 30 MARKS	
TOTAL FOR PAPER: 30 MARKS END	