Centre No.						Paper Reference (complete below)								Surname	Initial(s)
Candidate No.										F	/	1	F	Signature	

Paper Reference(s)

5018F/1F 5038F/1F

Edexcel GCSE

Additional Science (5018F)

Chemistry (5038F)

C2 – Topics 5 to 8

Foundation Tier

Monday 2 March 2009 – Morning

Time: 30 minutes

Materials required for examination	**Items included with question papers**
Calculator	Nil

Examiner's use only

Team Leader's use only

Question Number	Leave Blank
1	
2	
3	
4	
5	
Total	

Instructions to Candidates

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 blue or 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. Calculators may be used.
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 16 pages in this question paper. Any blank pages are indicated.

Advice to Candidates

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

Printer's Log. No.
N34525A
W850/R1536/57570 5/4/4/2/
N 3 4 5 2 5 A 0 1 1 6

Turn over

edexcel
advancing learning, changing lives

The Periodic Table of the Elements

Key

relative atomic mass
atomic symbol
name
atomic (proton) number

1	2											3	4	5	6	7	0
							1 **H** hydrogen 1										4 **He** helium 2
7 **Li** lithium 3	9 **Be** beryllium 4											11 **B** boron 5	12 **C** carbon 6	14 **N** nitrogen 7	16 **O** oxygen 8	19 **F** fluorine 9	20 **Ne** neon 10
23 **Na** sodium 11	24 **Mg** magnesium 12											27 **Al** aluminium 13	28 **Si** silicon 14	31 **P** phosphorus 15	32 **S** sulfur 16	35.5 **Cl** chlorine 17	40 **Ar** argon 18
39 **K** potassium 19	40 **Ca** calcium 20	45 **Sc** scandium 21	48 **Ti** titanium 22	51 **V** vanadium 23	52 **Cr** chromium 24	55 **Mn** manganese 25	56 **Fe** iron 26	59 **Co** cobalt 27	59 **Ni** nickel 28	63.5 **Cu** copper 29	65 **Zn** zinc 30	70 **Ga** gallium 31	73 **Ge** germanium 32	75 **As** arsenic 33	79 **Se** selenium 34	80 **Br** bromine 35	84 **Kr** krypton 36
85 **Rb** rubidium 37	88 **Sr** strontium 38	89 **Y** yttrium 39	91 **Zr** zirconium 40	93 **Nb** niobium 41	96 **Mo** molybdenum 42	[98] **Tc** technetium 43	101 **Ru** ruthenium 44	103 **Rh** rhodium 45	106 **Pd** palladium 46	108 **Ag** silver 47	112 **Cd** cadmium 48	115 **In** indium 49	119 **Sn** tin 50	122 **Sb** antimony 51	128 **Te** tellurium 52	127 **I** iodine 53	131 **Xe** xenon 54
133 **Cs** caesium 55	137 **Ba** barium 56	139 **La*** lanthanum 57	178 **Hf** hafnium 72	181 **Ta** tantalum 73	184 **W** tungsten 74	186 **Re** rhenium 75	190 **Os** osmium 76	192 **Ir** iridium 77	195 **Pt** platinum 78	197 **Au** gold 79	201 **Hg** mercury 80	204 **Tl** thallium 81	207 **Pb** lead 82	209 **Bi** bismuth 83	[209] **Po** polonium 84	[210] **At** astatine 85	[222] **Rn** radon 86
[223] **Fr** francium 87	[226] **Ra** radium 88	[227] **Ac*** actinium 89	[261] **Rf** rutherfordium 104	[262] **Db** dubnium 105	[266] **Sg** seaborgium 106	[264] **Bh** bohrium 107	[277] **Hs** hassium 108	[268] **Mt** meitnerium 109	[271] **Ds** darmstadtium 110	[272] **Rg** roentgenium 111	Elements with atomic numbers 112-116 have been reported but not fully authenticated						

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

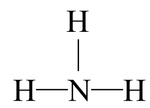
The relative atomic masses of copper and chlorine have not been rounded to the nearest whole number.

N 3 4 5 2 5 A 0 2 1 6

BLANK PAGE

Leave blank

1. (a) The structure of a molecule of ammonia is



(i) Name the element that is bonded to nitrogen in this molecule.

....

(1)

(ii) What type of bond exists between the atoms in a molecule of ammonia?

Put a cross (☒) in the correct box.

covalent ☐

ionic ☐

metallic ☐

(1)

(b) An atom of nitrogen contains 7 protons, 7 neutrons and 7 electrons.

(i) Describe where these particles are found in a nitrogen atom.

proton ....

neutron ....

electron ....

(3)

Leave blank

(ii) What is the mass number of this nitrogen atom?

Put a cross (☒) in the correct box.

7 ☒

14 ☒

21 ☒

(1)

(iii) The atomic number of a nitrogen atom is 7.
What information does the atomic number provide about the nitrogen atom?

Put a cross (☒) in the correct box.

number of neutrons ☒

number of neutrons + protons ☒

number of protons ☒

(1) **Q1**

(Total 7 marks)

N34525A0516

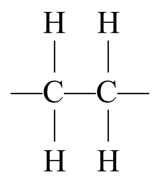
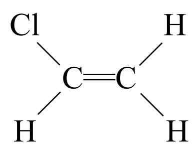
Turn over

Leave blank

2. Polymers are large molecules which are formed by a combination of many smaller molecules called monomers.

(a) The table gives information about two monomers and the polymers they form.

Complete the table.

monomer	**structural formula of the monomer showing all bonds**	**repeating unit of polymer**	**name of polymer**
ethene, C_2H_4			
chloroethene, C_2H_3Cl			poly(chloroethene)

(3)

(b) Poly(chloroethene) is too rigid for some uses.
During manufacture, a substance can be added to make the poly(chloroethene) more flexible.

What is added to make the poly(chloroethene) more flexible?

Put a cross (☒) in the correct box.

a catalyst ☐

a plasticizer ☐

a preservative ☐

(1)

Leave blank

(c) Disposal of polymers causes problems.
Describe one problem caused by

(i) burning polymers

....

....
(1)

(ii) putting polymers in a landfill site

....

....
(1)

Q2

(Total 6 marks)

3. The picture shows two coins.

Since 1992, 1p and 2p coins have been made of copper-plated steel.
Before 1992 they were made of a copper-zinc-tin alloy.
Copper-plated steel is cheaper than copper-zinc-tin alloy.

(a) What is an alloy?

....

....
(1)

(b) What property of copper-zinc-tin alloy makes it more suitable than pure copper for these coins?

....

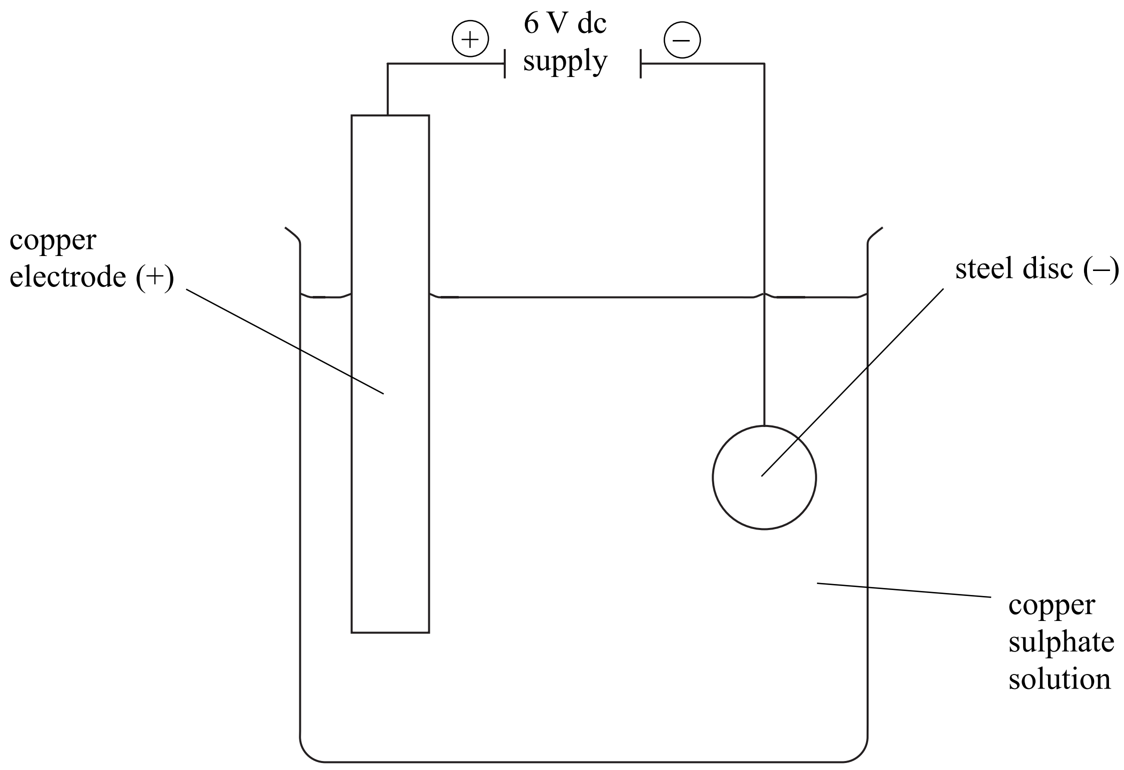
....
(1)

Leave blank

N 3 4 5 2 5 A 0 8 1 6

Leave blank

(c) A steel disc can be copper plated using the apparatus shown:



Copper sulphate solution contains copper ions, Cu^{2+}.

(i) What is the name of the process used to plate steel with copper in this way?

....
(1)

(ii) The steel disc is an electrode.
The copper ions, Cu^{2+}, move to the disc.
Explain why this happens.

....

....

....
(2)

Q3

(Total 5 marks)

BLANK PAGE

Leave blank

4. Richard was investigating the reaction between magnesium and dilute hydrochloric acid.
He used magnesium ribbon and magnesium powder in his investigation.
Richard measured the temperature of the dilute hydrochloric acid and then added 0.5 g of magnesium ribbon.
After one minute, he measured the temperature again.
An exothermic reaction had taken place.

He repeated the experiment using 0.5 g of magnesium powder instead of the ribbon.

Here are his results.

	temperature of the acid before adding the magnesium (°C)	**temperature of the reaction mixture after one minute (°C)**
magnesium ribbon	18	23
magnesium powder	18	49

(a) How do these results show the reaction is exothermic?

....

....
(1)

(b) How could Richard check that his results are reliable?

....

....
(1)

(c) Richard found the reaction with the magnesium powder was faster than with magnesium ribbon.
Why does magnesium powder react faster?

....

....
(1)

(d) Suggest a way for Richard to make the reaction between 0.5 g magnesium ribbon and dilute hydrochloric acid slower.

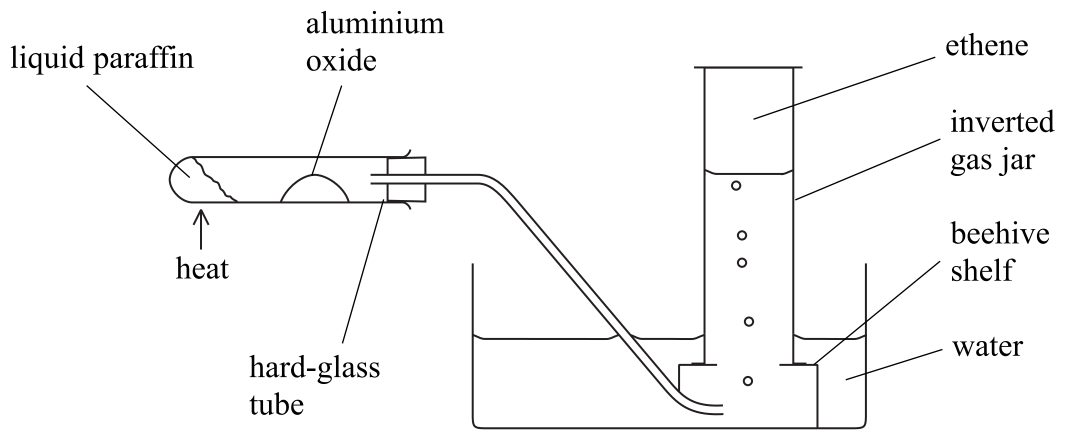
....

....
(1)

Q4

(Total 4 marks)

5. (a) Barty used the apparatus shown to investigate the cracking of liquid paraffin.



(i) What conditions are used to crack alkanes?

....

.... **(1)**

(ii) When liquid paraffin is cracked, long chain alkane molecules can form molecules of shorter chain alkanes and unsaturated hydrocarbons.
What type of hydrocarbon are the unsaturated hydrocarbons?

.... **(1)**

(iii) Explain the meaning of the term **unsaturated** molecule.

....

.... **(1)**

(b) The structures of two unsaturated molecules are shown.

molecule A	**molecule B**
$CH_2{=}CH{-}CH_2{-}CH_2{-}CH_3$	$CH_2{=}CH{-}CH_2{-}CH{=}CH_2$

Which of these molecules is polyunsaturated?
Explain your answer.

....

....

.... **(1)**

Leave blank

N 3 4 5 2 5 A 0 1 2 1 6

Leave blank

(c) Margarine can be made from monounsaturated or polyunsaturated vegetable oils.

(i) In terms of forces between particles, explain why polyunsaturated oils are far less viscous than saturated oils.

....

....

(1)

(ii) What is reacted with vegetable oils to make margarine?

....

....

(1)

(d) Food is broken down by enzymes in the human body to make new tissue and provide energy.

(i) What is an enzyme?

....

(1)

(ii) Suggest what would happen to a human body if the enzymes in it failed to work.

....

....

(1) **Q5**

(Total 8 marks)

TOTAL FOR PAPER: 30 MARKS

END

BLANK PAGE

N34525A01416

BLANK PAGE

BLANK PAGE