

November 2003

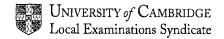
INTERNATIONAL GCSE

MARK SCHEME

MAXIMUM MARK: 80

SYLLABUS/COMPONENT: 0620/02

CHEMISTRY Core



Syllabus

Paper

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L					
1	(a)	(i)	В		[1]
		(ii)	A		[1]
		(iii)	С		[1]
		(iv)	D		[1]
	(b)	(i)	distillation ALLOW: fractional distillation		[1]
		(ii)	chromatography		[1]
	(c)	(i)	fuel gas		[1]
		(ii)	paraffin: any one of: oil stoves/heaters/for heating; aircraft fuel; ALLOW: for lamps/for lighting/for cooking bitumen: any one of: road surfaces; ALLOW: for roads roofing tar; NOT: 'tar' without qualification in/for electrical cables; NOT: electrical cables		[1] [1]
	(d)		hydrocarbons		[1]
	(e)		correct structure with correct pairings of dots and cross (correct structure with only dots or only crosses/random IGNORE: lack of inner electron shell of carbon		[2] es = 1)
	(f)		alkane(s)		[1]
				To	otal = 13
2	(a)		respiration		[1]
	(b)	(i)	lighted splint/put mouth of test tube of hydrogen in flam pops/explosion	e;	[2]
		(ii)	makes explosive mixture		[1]
		(iii)	(red) litmus paper/universal indicator paper/pH paper; turns blue ALLOW: HCl gas/HCl on glass rod; white fumes		[2]
	(c)		correct displayed/geometric formula for ethanoic acid (all bonds must be shown)		[1]
	(d)	(i)	2H ₂		[1]
		(ii)	fuel/ <u>making</u> ethyne/ <u>making</u> carbon black/ <u>making</u> synthe <u>making</u> methanol NOT: natural gas NOT: cooking	esis gas/	[1]

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		(iii)	1 st and 3 rd boxes ticked 1 box correct = 1 mark		[2]
	(e)	(i)	zinc		[1]
		(ii)	iron/nickel ALLOW: zinc		[1]
		(iii)	lead		[1]
		(iv)	calcium carbonate		[1]
		(v)	aluminium		[1]
				Tot	al = 16
3	(a)		In iron making ALLOW: in blast furnace/for neutralising <u>acid</u> soils or <u>acidic</u> lakes etc./for building/ <u>making</u> cement OR concrete/hard core/road foundations [1] NOT: removing impurities from iron ore NOT: purification of water		
	(b)		$C + O_2 \rightarrow CO_2$ correct formula for oxygen; correct formula for carbon dioxide (-1 per other error) ALLOW: $2C + O_2 \rightarrow 2CO$ (2 marks)		[2]
	(c)		exothermic NOT: combustion		[1]
	(d)		calcium oxide; carbon dioxide NOT: symbols		[2]
	(e)	(i)	2 (HC <i>l</i>)		[1]
		(ii)	limewater; turns milky/cloudy		[2]
	(f)	(i)	oxidation; the carbon has gained oxygen/oxidation number of carb increased/carbon has lost electrons (the answer must refer to the carbon) NOT: carbon gets oxidised	oon has	[2]
		(ii)	blowtorches/welding/cutting metals ALLOW: to make (monomers for) neoprene/synthetic ru NOT: other organic syntheses	ıbber	[1]
				Tot	al = 12

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4	(a)		halogen(s)	[1]
	(b)	(i)	(atoms with same atomic number) but different mass number/different numbers of neutrons/different nucleon number NOT: atoms with different atomic masses	nt [1]
		(ii)	35 + 35 44; 46 35 + 35	[1] [2] [1]
	(c)	(i)	chlorine more reactive (than bromine)/higher in the reactivity series (than bromine) (or reverse argument) ALLOW: it is more reactive NOT: chlorine higher in the table	[1]
		(ii)	potassium bromide + chlorine → potassium chloride + bromine ALLOW: completely correct symbol equation	[1]
	(d)	(i)	3.5 ALLOW: 3.3- 3.5	[1]
		(ii)	pH 3	[1]
		(iii)	pH 7	[1]
	(e)		bromine (water) decolourised/goes from red-brown/orange/brown to colourless ALLOW: it is decolourised NOT: incorrect colours to colourless	[1]
			Tota	ıl = 12
5	(a)		5 (O ₂)	[1]
	(b)		anhydrous/white copper sulphate; turns blue OR anhydrous/blue cobalt chloride; turns pink NOT: boiling point 100°C	[2]
	(c)		1 st and 2 nd boxes ticked	[2]
	(d)	(i)	carbon monoxide	[1]
		(ii)	incomplete combustion of the fuel/gas/burning in limited amount of oxygen/air NOT: incomplete burning NOT: lack of air	[1]
	(e)	(i)	gas	[1]

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Paper 2

		(ii)	coal	[1]
			any two of: erodes buildings containing (calcium) carbonate OR erodes/corrodes metals in buildings; NOT: corrodes (calcium) carbonate kills (small) animals in water OWTTE/kills pond life; (NOT: kills animals) damages trees/plants/causes leaf burn/damages plant roots; ALLOW: kills plants NOT: causes breathing difficulties NOT: destroys buildings/wildlife/plants/animals	[2]
		(iv)	white; precipitate/solid	[2]
			Tota	al = 13
6	(a)		aluminium high in reactivity series/too reactive ALLOW: aluminium higher in reactivity series than carbon ALLOW: carbon will not reduce aluminium oxide	[1]
	(b)		electrical heating NOT: heating	[1]
	(c)		conducts electricity/ ALLOW: good conductor NOT: has high melting point/inert/unreactive	[1]
	(d)		cathode	[1]
	(e)		saves energy/too much energy required to melt aluminium oxide; ALLOW: too much heat required/electricity OR heat is expensive NOT: unqualified 'expensive': will not melt the steel casing ALLOW: melting point is higher than steel NOT: melting point too high	[2]
	(f)		any two of : oxygen reacts with the carbon/graphite/(positive) electrode/anode ge oxidised;	ets
			carbon dioxide formed; carbon electrodes/anodes decrease in size/get eroded away ALLOW: anodes get eaten away/wear away NOT: anodes dissolve	[2]
	(g)		3 e ⁻ ALLOW 3e	[1]
	(h)		positive ions attracted to negative electrode/positive charges attracted to negative/aluminium has oppositely charged ions to the negative electrode ALLOW: aluminium ions are positive [1]	

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(i) 60% [1](ii) 3 from:
 malleable;
 ductile;
 sonorous;

shiny;
conduct heat;
conduct electricity [3]

ALLOW: flexible/bendy NOT: high melting/boiling points/high densities

Total = 14