

NOVEMBER 2001

INTERNATIONAL GCSE

MARK SCHEME

MAXIMUM MARK : 80

SYLLABUS/COMPONENT : 0620/2

**CHEMISTRY
(CORE)**



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- 1 (a)** Any two properties e.g. high melting point / boiling point / form coloured compounds / form complex ions / variable valency / hard / dense / (good) catalysts [2]
 IGNORE (elements) are coloured
- (b) (i)** Universal / full range indicator paper / solution; [2]
 NOT: pH paper
 indication of a (correct) colour change
 colour change without first point / universal indicator = 0
 NOT: using pH meter / pH probe
 NOT: litmus or its colour change
- (ii)** pH6 [1]
- (iii)** charged atom (or group of atoms) / charged particle [1]
 ALLOW: atom with more / less electrons
 NOT: element in its oxidised state
 NOT: charge on element
 NOT: imbalance in charge
- (iv)** 2 [1]
- (c)** magnesium, zinc, iron, nickel [1]
- (d)** add sodium hydroxide / aqueous ammonia; [3]
 white precipitate;
 soluble in excess
[Total 11]
- 2 (a)** C [1]
- (b)** B [1]
- (c)** D [1]
- (d) (i)** D [1]
- (ii)** irregularly arranged / no fixed pattern / randomly arranged / scattered; [2]
 IGNORE: far apart, etc
 moving randomly / rapidly / freely
- (e)** two or more (different) elements / atoms chemically combined / bonded (both different [2]
 atoms + 'bonded' or equivalent needed for 2 marks
 molecules formed by more than 1 type of atom bonded = 1
 any reference to mixture = 0
- (f) (i)** sodium loses electron(s) (from outer shell); [4]
 chlorine gains electron(s) (in outer shell);
one electron gained by Cl / lost by sodium;
 complete electron shells formed / 8 electrons in both ions OWTTE;
an electron transfers from Na to Cl = 3
- (ii)** 58.5 (2 marks) [2]
 1 mark for correct extraction of data but incorrect answer
 IGNORE: units
[Total 14]

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3 (a)	5	[1]
(b)	atomic / proton number	[1]
(c)	6	[1]
(d)	any element up to and including group 5 in this period: ALLOW symbols	[1]
(e) (i)	2 atoms (in molecule);	[1]
	several / a few / atoms / small clusters of atoms covalently bonded (both a few atoms and <u>covalent bonding</u> needed for 2) several / a few atoms / small clusters of atoms <u>bonded</u> = 1 no mention of bonding = 0	[2]
(ii)	2 (Cl ₂)	[1]
		[Total 8]
4 (a)	carbon dioxide	[1]
(b)	catalyst / definition of catalyst; from living organism / biological substance / protein NOT: natural substance / organic / an organism	[2]
(c)	distillation / distilling; some idea about process of distillation e.g. using a condenser / boiling <u>and</u> condensing; NOT: heating and cooling idea of one liquid coming off / condensing / evaporating first / more readily OR implication of different boiling points	[3]
(d)	correct displayed or graphical formula for ethanol including O-H bond	[1]
(e) (i)	addition	[1]
(ii)	speed up rate of reaction NOT: alters rate of reaction	[1]
(iii)	ethene	[1]
(iv)	100°C 100 / 100° = 1 mark < or > 100°C = 0 incorrect units = 0	[2]
(f)	fuel / solvent / cleaning fluid / in (alcoholic) drinks / for making named organic substance (e.g. esters / carboxylic acids) / sterilizing agent / any other suitable use	[1]
(g)	carbon dioxide; water	[2]
		[Total 15]

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- 5 (a)** element + contains only one sort of atom (BOTH NEEDED) [1]
ALLOW: contains only carbon
NOT: contains carbon
- (b)** covalent [1]
- (c) (i)** 25 [1]
- (ii)** C₁₃H₁₀N₂ [1]
- (iii)** 14 [1]
- (d)** diamond;
use of diamond e.g. cutting / drilling tools / jewellery;

graphite;
use of graphite e.g. pencil leads / lubricant / tennis racquets / golf clubs / as an
electrode, etc [4]
- (e) (i)** carbon monoxide [1]
- (ii)** CO [1]
- [Total 11]**
- 6 (a)** oxidised; reduced [2]
- (b) (i)** fizzing / bubbles / effervescence / iron dissolves / mixture gets warm / green solution
formed [1]
NOT: gas given off
- (ii)** word filter or filtration needed somewhere (can be as filter funnel);

diagram of apparatus with filter funnel and filter paper (or stated in words);

aluminium oxide on filter paper;
NOT: residue
- some indication that iron chloride solution goes through filter paper [4]
NOT: filtrate
- (c)** exothermic [1]
- (d)** welding / cutting metals [1]
NOT: to melt things
- [Total 9]**

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7 (a)	2.8%	[1]
(b)	evaporate some of the water NOT: heat the water	[1]
(c)	decreases	[1]
(d)	anode / positive (electrode) / carbon (electrode) / graphite (electrode)	[1]
(e)	conducts electricity NOT: inert	[1]
(f)	is a liquid	[1]
(g)	sodium hydroxide; hydrogen	[2]
(h)	1950-1960	[1]
(i) (i)	addition; polymerisation	[2]
(ii)	does not conduct electricity / non-conductor	[1]
		[Total 12]