CAMBRIDGE
INTERNATIONAL EXAMINATIONS

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NOVEMBER 2002

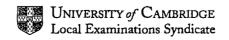
INTERNATIONAL GCSE

MARK SCHENE

MAXIMUM MARK : 80

SYLLABUS/COMPONENT: 0620/2

CHEMISTRY (CORE)



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1 (a)(i) alkane (ii) correct formula showing all atoms and bonds	
ALLOW: correct dot and cross diagrams (iii) natural gas	[1]
(b)(i) 78%	[1]
ALLOW: 77-79% (ii) boron/ carbon/ oxygen/ fluorine/ neon	[1]
(c)(i) speed up reaction/ lower activation energy etc NOT: starts the reaction/ alters the rate of the reaction	[1]
(ii) increases	[1]
(d)(i) 2 (NH₃)(ii) reversible reaction/ reaction reaches equilibrium/ equilibrium reaction/ reaction can go backwards as well as forwards	[1] [1]
(e) molecules arranged randomly;molecules close togethergas structure = 0	[2]
(f) (damp red) litmus paper/ universal indicator paper turns blue ALLOW: HCl vapour; white fumes	[2]
(g)(i) increase growth of plants (ii) sulphuric acid	[1] [1]
2 (a) charged species/ charged atom/ charged group of atoms	[1]
(b) calcium/ Ca ²⁺	[1]
(c) 2 (in front of e ⁻)	[1]
(d) any two of: calcium sulphate/ sodium chloride/ sodium hydrogencarbonate/ sodium sulphate ALLOW: calcium hydrogencarbonate; calcium carbonate	[2]
(e) CaCl ₂	[1]
(f) $\sqrt[4]{\times}$ (2 if all correct 1 if one mistake)	[2]
(g) filter paper in filter funnel;receptacle underneath with water shown in it - labelled;clay/ residue on filter paper -labelled	[3]

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3 (a) chloring: w	pllow groon/ groon:	
3 (a) chlorine: ye	ellow-green/ green;	

3 (a) chlorine: yellow-green/ green; NOT: yellow iodine: black/ grey/ grey-black; fluorine: gas bromine: liquid [4] (b) ALLOW: between 140 and 250(°C) (inclusive) [actual = 184°C] [1] (c)(i) chlorine + potassium bromide → bromine + potassium chloride (2 if all correct / -1 per error) [2] (ii) chlorine bromine iodine [1] (d) Any suitable use e.g. in swimming pools/ disinfection/ sterilizing water supplies etc/ killing bacteria / for bleaching/ in making insecticides/ making dry cleaning fluids/ making correct, named inorganic or organic chemical/ making matches/ making fireworks/ recovery of tin or aluminium from scrap metal [1] (e) covalent [1] 4 (a) Substance containing carbon and hydrogen and perhaps other elements/ oxygen [1] [1] (b) B and C ALLOW: correct formulae/ names (c) A [1] ALLOW: correct formula/ name (d) D [1] ALLOW: correct formula/ name [1] ALLOW: correct formula/ name (f)(i) gives out heat/ raises temperature of surroundings [1] ALLOW: gives out energy (ii) carbon dioxide; water [2] ALLOW: correct symbols (iii) carbon monoxide [1] ALLOW: CO $(g) C_4H_8O_2$ [1] (h) 88 [1] (i) chromatography [1]

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5 (a) rock which contains a particular metal / rock from which metal can be extracted ALLOW: mineral (in place of rock) [1] (b) limestone (c)(i) iron oxide + carbon →iron + carbon monoxide [1] ALLOW: iron(III) oxide NOT: iron(II) oxide (ii) removal of oxygen from compound / decrease in oxidation number / gain of [1] ALLOW: addition of hydrogen [1] (d)(i) the air (ii) absorbs heat / takes in heat from the atmosphere/ temperature of [1] surroundings falls ALLOW: absorbs/ takes in energy (e)(i) heated / made molten; oxygen/ oxygen enriched air blasted through it [2] (ii) car bodies/ machinery etc NOT: cutlery/ chemical plants (f)(i) lower pH, the faster the corrosion [1] NOT: more acidic, the faster the corrosion (ii) higher temperature leads to greater corrosion; [1] (acid/ air) particles moving faster at higher temperatures / particles have more energy at higher temperatures; NOT: steel particles moving faster NOT: vibrating faster [2] more collisions (with steel) (iii) sulphur dioxide / nitrogen oxides; sulphur dioxide: burning fossil fuels/ power stations/ volcanoes etc nitrogen oxides: car exhausts/ burning fossil fuels etc [2]

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APPLICATION OF THE PROPERTY OF THE PR

6 (a) distillation (b) (round-bottomed) flask [1] (c) cools down vapour / lowers temperature/ idea of cooling; so that vapour is changed to liquid / so vapour condenses [2] (d)(i) pH 7 [1] (ii) 100°C [1] NOT: 100 (e)(i) 24(g) (ii) calcium carbonate/ CaCO₃ [1] (iii) magnesium chloride (iv) acidify with hydrochloric or nitric acid; add barium chloride; [3] white precipitate. (f)(i) ions; (free to) move (ii) anode: chlorine; cathode: sodium [2] [1] (iii) graphite/ carbon (allow Pt)