UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

International General Certificate of Secondary Education

MARK SCHEME for the November 2004 question paper

0620 CHEMISTRY

0620/03

Paper 3 (Extended Theory), maximum mark 150

This mark scheme is published as an aid to teachers and students, to indicate the requirements of the examination. It shows the basis on which Examiners were initially instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began. Any substantial changes to the mark scheme that arose from these discussions will be recorded in the published *Report on the Examination*.

All Examiners are instructed that alternative correct answers and unexpected approaches in candidates' scripts must be given marks that fairly reflect the relevant knowledge and skills demonstrated.

Mark schemes must be read in conjunction with the question papers and the *Report on the Examination*.

CIE will not enter into discussion or correspondence in connection with these mark schemes.

CIE is publishing the mark schemes for the November 2004 question papers for most IGCSE and GCE Advanced Level syllabuses.



Grade thresholds taken for Syllabus 0620 (Chemistry) in the November 2004 examination.

	maximum	n minimum mark required for grade:			
	mark available	A	С	E	F
Component 3	150	52	34	25	19

The threshold (minimum mark) for B is set halfway between those for Grades A and C. The threshold (minimum mark) for D is set halfway between those for Grades C and E. The threshold (minimum mark) for G is set as many marks below the F threshold as the E threshold is above it.

Grade A* does not exist at the level of an individual component.

November 2004

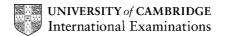
INTERNATIONAL GCSE

MARK SCHEME

MAXIMUM MARK: 150

SYLLABUS/COMPONENT: 0620/03

CHEMISTRY Extended Theory



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	(a)	carbon dioxide, water vapour, noble gases or a named noble gas Any TWO	[2]
	(b)	burning fossil fuels COND that contain sulphur	[1] [1]
		acid rain or any effect of acid rain - deforestation, effect on stone work, corrosion of metals, acidity in lakes, health etc	[1]
		motor vehicles or petrol or car exhausts health, if specified then brain, nervous system, development of children etc do not select from list illnesses	[1] [1]
		OR lead in old paint harmful effect as above	[1] [1]
	(c) (i)	combustion or burning NOT dissolving in the ocean	[1]
	(ii)	6CO ₂ + 6H ₂ O exothermic	[1] [1]
	(d) (i)	glowing splint burst into flame or rekindled Must have glowing or equivalent idea OR any similar description that includes the two points glowing and relights.	[1]
	(ii)	measure volume or count bubbles time NOT units	[1] [1]
	(iii)	rate slows down Because the reaction is photochemical or rate depends on intensity of light or light less bright or less light falling on plant or light provides energy for photosynthesis etc.	[1] [1]
		TOTAL	= 15
•		dilute filter saturated cool blue	
		sulphate	[6]
		TOTAL	L = 6
}	(a) (i)	no change in concentration of reagents or rates equal Accept no change in amounts or it is as if the reaction has Stopped	[1]
	(ii)	back reaction is endothermic or the forward reaction is exothermic Increase in temperature favours the endothermic reaction which is the back	[1]
		reaction or vice versa. NB look for correct conclusion re thermicity and comment re position of equilibrium.	[1]

2

3

1

	Page	2	Mark Scheme	Syllabus	Paper
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	(ii		increased rate because molecules collide more frequently or concentrat increased or molecules are closer NOT they have more KE increased yield high pressure favours side with few molecules or smaller to reduce the pressure this is product side this can be implied		[1] [1]
	(b) (i)		CO_2 and H_2O balanced $2CH_3OH + 3O_2 = 2CO_2 + 4H_2O$		[1] [1]
	(ii	•	methyl ethanoate water		[1] [1]
	(ii	ii)	Methanoic (acid) accept formic acid		[1]
				٦	TOTAL = 13
4	(a) (i)		Correct equation with a more reactive metal		[41
4	(a) (i)		Correct equation with a more reactive metal		[1]
	(ii		Electron loss		[1]
	(ii	•	Because they can accept electrons or take electrons aw from	ay	[1]
	(iv	v)	Silver or silver(I)		[1]
	(b) (i))	increase		[1]
	(ii		zinc COND and a correct reason - such as it loses electrons n it is more reactive Need both zinc and reason for the mark.	nore easily o	r [1]
			(iii)from the more reactive to the less reactive NOT just	from zinc to l	ead [1]
					TOTAL = 7
5	(a)		Group II metals will lose 2e Group VI elements will gain 2e		[1] [1]
	(b)		$\mathrm{SC}\mathit{l}_2$ COND 8e around both chlorine atoms 8e around sulphur with 2nbp and 2bp If x and o reversed ignore if this is the only error		[1] [1] [1]
	(c) (i))	lons cannot move in solid or can move in liquid		[1]
	(ii		No ions in sulphur chloride or it is covalent or only mole strontium chloride has ions	cules or only	[1]
					TOTAL = 7

Page 3	Mark Scheme	Syllabus	Paper
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[1]
[2]
[1] [1]
[1]
[1]
of
[2]
[1]
ΓAL = 10
[2]
[1]
[1] [1] [1]
[5]

	Page 4	Mark Scheme	Syllabus	Paper
		IGCSE – November 2004	0620	3
8	(a) (i)	C ₆ H ₁₂ between 60 to 65°C		[1] [1]
	(ii)	C ₁₂ H ₂₄ COND giving some indication of the method		[1] [1]
	(b)	add bromine water or potassium manganate(VII)		[1]
		 <u>butene</u> it goes from brown/orange/yellow to colourless or manganate (VII) from pink to colourless NOT clear 		[1]
		Cyclobutane it remains brown/orange/yellow or mangana or no colour change Accept does not react Provided colour of reagent somewhere in the answer [3]	, ,	pink [1]
	(c) (i)	alcohol		[1]
	(ii)	CH ₃ -CH ₂ -CHC <i>l</i> -CH ₃		[1]
	(iii)	-CH(CH ₃)-CH(CH ₃)- or any equivalent diagram [1] for repeat unit and [1] for continuation		[2]

TOTAL = 11