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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	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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[1]
[1]
[1]
[1] tc [1]
[1] [1]
[1]
[1] [1]
[1] ots.
[1] [1]
[1] ht
ΓAL = 15
[6]
OTAL = 6
[1]
[1] ck [1]
h

F	ag	e 2	Mark Scheme	Syllabus	Paper
			IGCSE – November 2004	0620	3
	((iii)	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
(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
	((iii)	Methanoic (acid) accept formic acid		[1
				1	TOTAL = 13
l (:	a) /	/i\	Correct equation with a mare reactive metal		[4
٠,	a) (. ,	Correct equation with a more reactive metal		[1
		(ii)	Electron loss		[1
	((iii)	Because they can accept electrons or take electrons aw from	ay	[1
	((iv)	Silver or silver(I)		[1
(1	b) ((i)	increase		[1
	((ii)	zinc COND and a correct reason - such as it loses electrons not 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	a)		Group II metals will lose 2e Group VI elements will gain 2e		[1 [1
(1	b)		SC <i>l</i> 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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6	(a) (i)	correct structure CH_2 = CCl_2		[1]
	(ii)	because it has a lower M_r or density or its molecules move faster it is lighter ONLY [1] only comment - smaller molecules [0] answer implies or states sieve idea then [0]		[2]
	(b) (i)	ester linkage		[1]
		COND polymer chain showing different monomers and continuation -OOC-C ₆ H ₄ -COOCH ₂ CH ₂ O-		[1]
	(ii)	fats or lipids		[1]
	(iii)	does not decompose easily when heated accept similar statements		[1]
	(c) (i)	does not decompose or non-biodegradable shortage of space visual pollution poisonous/toxic/harmful gases when <u>burnt</u> NOT carbon monoxide, sulphur dioxide. If gas named has to be a correct one eg HC <i>l</i> , HCN dangerous to animals		or of
		Any TWO		[2]
	(ii)	conserve petroleum or save energy NOT cheaper		[1]
		NOT cheaper	-	TOTAL = 10
7	(a) (i)	$Zn(OH)_2 = ZnO + H_2O$ reactant [1] products [1]		[2]
	(ii)	it would melt or it does not decompose or it does not read NOT no change	ct	[1]
	(iii)	blue (solid) to black (solid) brown gas		[1] [1] [1]
		Mark consequentially to any error but not involving sim . There has to be some evidence that the candidate has at through the calculation and not merely inserted whole number of example 2, 1, 160 or 1, 0.5, 80 number of moles of $Fe_2(SO_4)_3 = 1/40$ or 0.025 number of moles of Fe_2O_3 formed = 1/40 or 0.025 mass of iron(III) oxide formed = 0.025 x 160 = 4g number of moles of SO_3 produced = 3/40 or 0.075 volume of sulphur trioxide at r.t.p. = 0.075 x 25 = 1.8dm ³	tempted to w	ork [5]

TOTAL = 11

	raye 4	Walk Scheme	Syllabus	rapei
		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) butene it goes from brown/orange/yellow to colourless		[1]
		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

Mark Scheme

Syllabus

Paper

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