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INTERNATIONAL EXAMINATIONS

NOVEMBER 2002

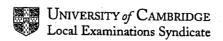
INTERNATIONAL GCSE

MARKSCHEME

MAXIMUM MARK: 80

SYLLABUS/COMPONENT: 0652/3

PHYSICAL SCIENCE (EXTENDED)



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Pa	ge 1	Mark Scheme	Syllab	3
, , ,		IGCSE Examinations – November 2002	0652	200
				W.PapaCanto
	(a)	5.8-9.7	1	•
		metallic	1	•
		acid	1	
	(b)	idea that mp depends on structure and idea that there are different structures	(1)	
	<i>1</i>	gases (simple) molecular and metal giant (accept metallic)	(1)	max two marks here
		gases weakly bound and metals strongly bound or gases weak force and metals strong forces	(1)	
		idea of strength of metallic bond decreasing as the size of the ion increases => weaker electrostatic attraction	(1+1)	5
2	(a)	moment = force x (perpendicular) distance (accept F x d but not F x a)	1	
		80 x 30 or 80 x 0.3	4	

2400 Ncm or 24 Nm (not N/cm etc. unit

rate of doing work / rate of transfer of energy / work over time or equivalent (not symbols

penalty)

unless defined)

moment changes

distance changes

forces changes

(b) (i)

(ii)

1

1

1

1

1

max 2

6

P	Page 2			lark Scheme		Syllab
			IGCSE Exami	nations – November 2	002	0652
						ambride
3	(a)	(i)	-2 or 2-		. 1	Se. COM
		(ii)	+3 or 3+	1	, 1	

3	(a)	(i)	-2 or 2-		1	
		(ii)	+3 or 3+	· · · · · · · · · · · · · · · · · · ·	1	
	,	(iii)	FeCl ₃	*	1	
		(iv)	add (aqueous) ammonia or an hydroxide	nmonium	1	mandatory
			green precipitate	: _	1	
		i	orange/red/brown precipitate		1	
	(b)		$Fe_2O_3 + 3C \rightarrow 2Fe + 3CO$	formulae con	rect 1	
			$2Fe_2O_3 + 3C \rightarrow 4Fe + 3CO_2$	correctly bala	ınced 1	
			$Fe_2O_3 + 3CO \rightarrow 2Fe + 3CO_2$	•.		
	(c)	(i)	limestone /calcium carbonate	· •	1	
		(ii)	to remove impurities from or	re	1	10
4	(a)	(i)	evidence of g→kg		1	
			1.2 x 10 ⁻² N or 0.012 N* (12 N scores 1)		1	
	÷	(ii)	as (a)(i)		1	
g.,		(iii)	⅓ mv²		1	
			evidence of 0.2 squared	:	1	
		4	2.4 x 10 ⁻⁵ J*		1	
	(b)	(i)	mgh		1	
			3.6 x 10 ⁻³ J* ecf for mass from (a)(iii) allow 3.6 J if mass penalised	in (a)(iii)	1	

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Page 3	Mark Scheme		Syllab
	IGCSE Examinations – November 2002		0652
			00
			My Strate
			770
			80
(ii)	line of negative slope (curved or straight)	1	
	passing through (0.(b)(i) value)	1	•

(ii) line of negative slope (curved or straight) 1 passing through (0,(b)(i) value) 1 and (1.5 s, 0) (iii) gravitational potential energy → heat 1 (ignore mention of k.e.) 1 of air or fruit or explanation that k.e. not gained because constant speed 12 *one unit penalty only for all the parts in this question to remove excess oxide or MgO 1 5 (a) not "to remove solid or residue" (b) calcium sulphate is insoluble / not possible to (i) separate (from oxide) by filtering 1 (ii) add calcium nitrate (solution) to sulphuric acid 1 filter 1 dry residue by warming 1 40 (ignore unit) 1 (c) 0.2 (ignore unit) (ii) (iii) 0.2 mol H₂SO₄ needed / ratio 1:1 1 2 mol in $1000 \text{ cm}^3 / \text{vol} = \text{no of}$ 1 moles/concentration 100 cm³ or 0.1 dm³ (unit penalty) 1

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Page 4	Mark Scheme	Sy.	V.	per
	IGCSE Examinations – November 2002	065	10.	

6 mention of light (a) 1 wave behaves as lenses /refraction of light rays 1 (b) use set up shown / project light on to screen measure distance between 2 light or dark bands use of ruler / mention of middle or edges of bands improved by using several bands max idea of need to work out scaling freezing using strobe (c) $v = f\lambda$ 1 0.60 (or 0.5952) or 2.5/4.2 multiplication by 60 1 36 (35.7) no unit penalty 1 10 7 (a) (i) CH₃OH 1 mandatory (ii) any shared pairs seen 1 all shells filled (each H-2, C and O-8) 1 same functional group (OH) / same general formula (C_nH_{2n+2}O) / undergo similar reactions/ all alcohols/ similar chemical properties 1

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(b) (i)
$$C_2H_4 + H_2O \Rightarrow C_2H_5OH$$
 formulae correct 1 correctly balanced 1

(ii) high temperature not "heat"

high pressure not "pressure"

2

(c) (catalytic) cracking of alkanes

catalyst

or any equivalent method with including 2 marks for relevant equations - answers alone gain two marks

Mark Scheme IGCSE Examinations – November 2002 Page 6 Syllab 0652

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9	(a)		oxide forms layer which bonds to aluminium (or layer is tough and impermeable)	1
			rust (iron oxide) flakes of leaving another exposed surface/ rust traps water and air(O ₂) in contact with iron	1
	(b)		amphoteric oxides dissolve in alkalis	1
			NaOH removes(dissolves) oxide (layer) / Al reacts with NaOH	1
	(c)	(i)	bauxite	1.
		(ii)	Al too (allow "very") reactive / bond with oxide too strong / too much energy is needed / carbon is not reactive enough to reduce aluminium oxide not "it is more reactive"	1
				6
10	(a)		induction	1
			changing	1
			primary	1

voltage

 $N_s/N_p = V_s/V_p$ or equivalent

25 (ignore any unit)

(b)

6

Total 80