CAMBRIDGE
INTERNATIONAL EXAMINATIONS

Mide Con

NOVEMBER 2002

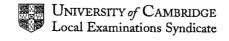
INTERNATIONAL GCSE

MARK SCHEME

MAXIMUM MARK: 80

SYLLABUS/COMPONENT: 0653/3

COMBINED SCIENCE (EXTENDED)



Page 1	Mark Scheme	Syll
	IGCSE Examinations – November 2002	0653 Ph
•		
		ambridge
		04.
		1 28
		26°C
		TOM

1(a)

feature	arteries	veins	capillaries	
valves present	X	V	х	
walls are one cell thick	X	, x	V	

		' '
	one mark per correct column;;;	3
(b)(i)	more room for haemoglobin;	-
	haemoglobin, combines with / carries, oxygen;	
e.	so more oxygen can be, carried / transported;	max 2
(ii)	increases surface area (to volume ratio);	
	speeds uptake / release / diffusion, of oxygen;	2
(c)	anaerobic respiration;	
	lactic acid produced;	2
2(a)	the breakdown of the nucleus of an atom;	
	the time taken for half the mass (of a nuclide) to decay / eq;	2
(b)	4 half lives;	
	7.64 years;	2
(c)	defected in opposite directions;	
	alpha towards negative / beta towards positive;	
·	beta deflected more than alpha;	max 2
(d)	electrons are lost from the atoms (of the material);	1

·		2.
Page 2	Mark Scheme	Sylla
	IGCSE Examinations – November 2002	0653
		90

	Pag	e 2	Mark Scheme	Sylla	
			IGCSE Examinations – November 2002	0653	
		,		S.	
				7/8	
					100
				•	e.G
3((a)(i)		concentration, of acid solution;	Sylla O653	OH
		whether	stirred or not;		
		surface a	area / mass, of magnesium;		max 1
(i	i)	same an	nount of, magnesium /reactants, used;		1
(t	o)(i)	the high	er the temperature the higher the rate;		1
`,	, ()				-
(i	i)	higher to	emperature means faster particles;		
`	,	•	collisions (per unit time);		
			acid particles and magnesium;		2 max
		between.	acia particios and magnesiam,		Z IIIAX
i	e)(i)	bydroge	n + magnesium sulphate ;		1
(0	·)(1)	nydroge	n + magnesium surphate,		1
<i>(</i> :	:\	LI.			
(i	1)	H;	en de la companya de La companya de la co		
		÷ ;			2
4	(a)	only was	shes slowly into the lake;		
		because	it is not very soluble;		
		does not	break down quickly / is persistent;		2 max
		-			
(t)	peregrin	es are carnivores / eat other birds or animals;		
		peregrin	es are at the end of a food chain;		
		DDT do	es not break down in animals' bodies;		
			rates up food chain;		3 max
			•		Jinan
(c	e)(i)	using a	predator / parasite / disease-causing organism;		
, •	/\ - /		ol a pest;		2
					4
(i	i)	named p	est ·		
(1	· <i>)</i>	_	ontrol organism;		•
		nameu C	ondor organism ,		2

Page 3	Mark Scheme	Sylla.	D	
	IGCSE Examinations – November 2002	0653	800	

Cambridge.com normal approx 90° and labelled; 5 (a) both angles correctly labelled; (b) it is less than 40°; (up to critical angle), some light is reflected and some refracted; (c) at critical angle refraction occurs along the surface; more than the critical angle there is, no refraction / total internal reflection; critical angle is (approx) 43 ° between 42 and 48; max 3 distance between lens and point where rays are brought to a focus; (d)(i)parallel rays; 2 (ii) real can be projected onto a screen / vice versa; 1 6(a)(i)ions; sodium and chloride; 2 (ii) sodium ions are positive; attracted to, negative electrode / cathode; ions gain electrons from the cathode; each ion gains one electron; 3 max sodium too reactive to form from aqueous solution; (iii) sodium more reactive than hydrogen; so hydrogen forms (in preference to sodium); 2 max they lose electrons; 1 (b)(i) (ii) green to purple; solution become alkaline / sodium hydroxide is an alkali / OH-2 ions form;

Page 4 Mark Scheme		Syllabus	
	IGCSE Examinations – November 2002	0653	

'abus AdhaCambridge.Com 7(a) a group of cells; that are similar / that perform a particular function; line to, cell/vacuolar membrane; (b) (c) water; has gone out of the cells; by osmosis; from dilute solution to more concentrated solution; 4 (d) water enters both animal and plant cells; plant cell wall stops it from bursting / animal cell has no cell wall; 2 8 (a) 70 m/s; 1 working; (b) 10 m/s⁻²; 2 area under curve / other correct working; (c) 245 m; 2 between 7 and 8 seconds; (d) from area under graph / by calculating distance after 8 s / other correct working; 2 potential energy = $mgh / 0.05 \times 10 \times 300$; (e)(i)= 150 J;(allow ecf for one mark if out by a factor of 10) 2 converted to, sound / heat; (ii) 1

			4.	•
Page 5	Mark Scheme	Sylla	O.	St.
	IGCSE Examinations – November 2002	0653	0	

9(a) Cl 37 has more neutrons; two more; 17; (ii) 18; 2 (b)(i) covalent; 1 $\text{Cl}_2 + \text{H}_2 \rightarrow 2\text{HCl}$ (ii) all formulae correct; 2 balancing; outer shell of H has 1 electron and outer shell of Cl has 7; (iii)

2

correct diagram showing shared pair;