CAMBRIDGE
INTERNATIONAL EXAMINATIONS

June 2003

INTERNATIONAL GCSE

MARK SCHEME

MAXIMUM MARK: 80

SYLLABUS/COMPONENT: 0625/02

PHYSICS

Paper 2 (Core)

UNIVERSITY of CAMBRIDGE
Local Examinations Syndicate

Page 1	Mark Scheme	Syllabus	Paper
	IGCSE EXAMINATIONS – JUNE 2003	0625	2

NOTES ABOUT MARK SCHEME SYMBOLS

B marks — are independent marks, which do not depend on any other marks. For a B mark to be scored, the point to which it refers must actually be seen in the candidate's answer.

M marks — are method marks upon which accuracy marks (A marks) later depend. For an M mark to be scored, the point to which it refers **must** be seen in the candidate's answer. If a candidate fails to score a particular M mark, then none of the dependent A marks can be scored.

C marks — are compensatory method marks which can be scored even if the points to which they refer are not written down by the candidate, provided subsequent working gives evidence that they have known it, e.g. if an equation carries a C mark and the candidate does not write down the actual equation but does correct working which shows he knew the equation, then the C mark is scored.

A marks — are accuracy or answer marks which either depend on an M mark, or allow a C mark to be scored.

c.a.o. — means 'correct answer only'.

e.c.f. — means 'error carried forward'. This indicates that if a candidate has made an earlier mistake and has carried his incorrect value forward to subsequent stages of working, he may be given marks indicated by e.c.f. provided his subsequent working is correct, bearing in mind his earlier mistake. This prevents a candidate being penalised more than once for a particular mistake, but **only** applied to marks annotated 'e.c.f.'.

e.e.o.o. — means 'each error or omission'.

Brackets ( ) — around words or units in the mark scheme are intended to indicate wording used to clarify the mark scheme, but the marks do not depend on seeing the words or units in brackets, e.g. 10 (J) means that the mark is scored for '10', regardless of the unit given.

<u>Underlining</u> — indicates that this **must** be seen in the answer offered, or something very similar.

Un.pen. — means 'unit penalty'. An otherwise correct answer will have one mark deducted if the unit is wrong or missing. This **only** applies where specifically stated in the mark scheme. Elsewhere, incorrect or missing units are condoned.

OR/or — indicates alternative answers, any one of which is satisfactory for scoring the marks.

Page 2	Mark Scheme	Syllabus	Paper
	IGCSE EXAMINATIONS – JUNE 2003	0625	2

QUESTION		SCHEME	TARGET GRADE	MARK
1	(a)	8	F	B1
	(b)	EITHER: greater AND Thickness of rule OR overlap at ends — OR: smaller AND thread stretched when on rule OR worn rule ends	F	B1 2
2	(a) (i)	10	F	B1
	(ii)	stretch OR shape (or suitable sketch)	C	B1
	(b) (i)	120	F	B1
	(ii)	up(wards) OR vertical (NOT vertically down) Accept arrow on diagram	F	B1
	(iii)	increase size/area of blocks/larger blocks OR increase number of blocks OR less soil in pot (NOT put pot on harder ground)	F	B1 5
3	(a)	0.97 – 0.51	F	C1
		0.46	F	A1
	(b) (i)	15	F	B1
	(ii)	515 e.c.f.	C	B1
	(iii)	D = M/V in any form, seen or implied (words/letters/mix)	F	C1
		EITHER: $\frac{460}{515}$ OR: $\frac{0.46}{515}$ OR: $\frac{0.46}{515 \times 10^{-6}}$ e.c.f.	C	C1
		0.8932… OR $8.932\ldots \times 10^{-4}$ OR 893.2…No e.c.f. (any number of significant figures)	C	C1
		0.89 OR 8.9×10^{-4} OR 890 (e.c.f. for significant figures)	C	A1
		g/cm^3 ($0.89\ kg/dm^3$ is OK) OR kg/cm^3 (NOT 8.9^{-04}) OR kg/m^3	F	B1 9

4	**(a)**	idea of air molecules moving (allow vibrating) (N.B. 'collide' = 'moving')	F	C1	
		idea of air molecules striking something (condone themselves)	F	C1	
		idea of air molecules striking walls	C	A1	
	(b)	**(i)** moves down	F	B1	
		(ii) increases (e.c.f.)	F	M1	
		idea of more collisions (per unit time) (e.c.f.) OR $P \propto \frac{1}{V}$ — must follow from (i)	C	A1	
				6	
5	**(a)**	line starting at 0 °C	F	B1	mark along-side graph
		reasonably horizontal line at any temp for ⩾ half the time	C	M1	
		horizontal from zero time as far as dotted line (ignore anything to R. of line)	C	A1	
	(b)	**(i)** water boils OR heat loss = heat supplied (NOT evaporates/ turns to gas) — mark (i) and (ii) together	C	B1	
		(ii) gives water/molecules energy to escape OR break bonds OR change state OR heat loss from sides/surface/to air	C	B1	
				5	
6	**(a)**	**(i)** normal correct, by eye	F	B1	mark along-side diagram
		(ii) reflected ray correct, by eye (ignore normal; ignore any arrow)	F	B1	
		(iii) both *i* and *r* correctly marked (condone sloppy normal and sloppy refracted ray)	F	B1	
	(b)	parallel to ray striking mirror 1 (allow incident ray) OR same direction (NOT equal/same as) (N.B. sentence must be completed, i.e. no inference from line on diagram)	C	B1	
				4	

Page 4	Mark Scheme	Syllabus	Paper
	IGCSE EXAMINATIONS – JUNE 2003	0625	2

7	(a)		680 1020 1360 1700	F	B1	
	(b)		5 points plotted $\pm \frac{1}{2}$ small square (-1 e.e.o.o.) ignore 0,0 (e.c.f.)	F	B2	
			reasonable line through his points – drawn with rule/thickness reasonable	F	B1	
	(c)	(i)	flash	F	B1	
			light travels quickly OR sound travels slowly (accept figure)	F	C1	
			light travels faster than sound (accept figure)	F	C1	
			light travels much faster than sound (accept figures)	C	A1	
		(iii)	1400 - 1450 OR correct value from his graph $\pm \frac{1}{2}$ square	F	B1	
			clear and correct indication on graph of how obtained (minimum: dot at appropriate point)	F	B1 10	
8	(a)		Charge(s) OR energy (NOT electricity (condone as extra), charged particles (condone as extra), current, electrons (condone as extra), voltage)	C	B1	
	(b)	(i)	0	C	B1	
		(ii)	mention of 6V	F	B1	
			mention of rising OR not instantaneous (NOT 'reads')	C	B1	
		(iii)	any realistic example of something turned on/off after a time lapse, e.g. electronic egg timer, turn-off bedside radio	F	B1 6	
9	(a)	(i)	wire shown curved between A and B	F	C1	mark along-side diagram
			wire displaced all along between A and B, and reasonably smooth	C	A1	
		(ii)	idea of force (in any direction)	F	M1	
			on current/current-carrying conductor	C	A1	
			when in magnetic field	C	A1	

	(b)		line curved in opposite direction	F	B1 (mark along-side diagram)
					6
10	**(a)**	**(i)**	electrons OR cathode rays (NOT beta-particles)	F	B1
			something 'hitting' the screen (NOT 'form a spot')	F	B1
			idea of fluorescence (of the screen, NOT 'the gas')	C	B1
		(ii)	focus	C	B1
		(iii)	time base OR ms/cm	C	B1
		(iv)	electrons/cathode rays deflected (e.c.f. from (i); allow 'attracted' if intention clear)	F	B1
			something deflected horizontally	C	M1
			some idea of repeated sweeps/back and forth	C	A1
	(b)	**(i)**	(y-)input (allow y-plates)	F	B1
		(ii)	1. trace moves horizontally/sideways/left/right	C	B1
			2. trace moves vertically/up/down	C	B1
					11
11	**(a)**		Connection to either side of cell, but not shorted out	F	B1
			VR in series with lamp, and not shorted out OR correctly connected as a potential divider (condone inclusion of a switch)	F	B1
	(b)	**(i)**	$R_1 + R_2$	F	C1
			12	F	A1
		(ii)	1. Resistance = p.d./current in any form (words/letters/mix)	F	C1
			6/12 e.c.f.	C	C1
			0.5 or $\frac{1}{2}$ e.c.f.	C	A1

2. his calculated current
his calculated current
his calculated current } all 3 — C — B1

A OR amp OR ampere somewhere in (ii) — F — B1

(iii) voltmeter shown correctly connected (any recognisable symbol; allow re-drawn circuit) — C — B1 10 (mark along-side diagram)

---

12 **(a)** his weight — F — B1

(b) distance OR height — F — B1

(c) **(i)** 1000N climber OR heavier OR first — F — B1

(ii) his answer to (i) — F — B1

(d) **(i)** chemical (accept fuel) — C — B1

(ii) food (accept muscles) — C — B1

(iii) maintaining body function
heat loss
K.E.
sounds } any 1 — C — B1 7

Mark first correct answer, condone extras