June 2004

INTERNATIONAL GCSE

MARK SCHEME

MAXIMUM MARK: 80

SYLLABUS/COMPONENT: 0625/02

PHYSICS

Paper 2 (Core)

UNIVERSITY of CAMBRIDGE
International Examinations

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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** applies 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.

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QUESTION		SCHEME	TARGET GRADE	MARK
1	(a)	10	F	B1
	(b)	division by 5 OR division by 6	F	C1
		2.0 OR 2 c.a.o	C	A1
	(c)	10 × his(b) OR 11 × his(b)	F	C1
		20 c.a.o	C	A1 5
2	(a)	straight vertical arrow upwards to/from rail	F	B1
		arrow to R of centre of rail	F	C1
		arrow at R.H. end of rail (within 2× width of resting block)	F	A1
	(b)	moment ticked	F	B1
	(c)	reduce weight/mass OR shorten rail, lighter rail, thinner rail, open sideways, suitable long handle, suitable 2 pulley system	F	B1 5
3	(a)	PQ or 0-50s or the horizontal part NOT just P or just Q	F	B1
	(b)	changing speed (however indicated) NO e.c.f from (a). ACCEPT “acceleration” but NOT “increasing speed”	F	B1
	(c)	distance = area indicated in words or figures anywhere in (c)	F	B1
		(i) 20 × 50	F	C1
		1000	F	A1
		(ii) ½ × 20 × 50 OR ½ × his(i)	C	C1
		500	C	A1
		(iii) his(i) + (ii) correctly evaluated	F	B1
		(iv) his(iii)/100 OR total distance/total time stated	F	C1
		correct evaluation	F	A1 10

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4	**(a)**	(horizontal) force allow F		F	B1
		distance (travelled from A to B) condone "perpendicular" allow D OR d OR S		F	B1
	(b)	goes faster OR less time		F	B1
		accelerates		C	B1
	(c)	**(i)**	2nd person (however expressed)	F	B1
		(ii)	more work/energy OR bigger force OR pulls harder	F	B1
			smaller time OR greater speed ("more work/second" gets B1, B1)	C	B1 7
5	**(a)**	drops OR decreases OR cools down		F	B1
	(b)	idea of loss of molecules (from surface) OR molecules evaporate		F	M1
		more energetic/faster molecules (SPECIAL CASE remaining molecules slower B1)		C	A1
	(c)	any sensible example where cooling is noticeable e.g. (feeling cold) after swimming, sweating, refrigerators		C	B1 4
6	**(a)**	(increased) internal energy OR (increased) KE of molecules OR (increased) thermal/heat (energy)		C	B1
	(b)	any mention of thermal capacity		C	C1
		smaller thermal capacity		C	A1 3
7	**(a)**	light wave fastest water wave slowest	)	2F	B1+B1
	(b)	longitudinal		F	B1
		transverse		C	B1
		transverse		F	B1
	(c)	light wave ticked	use ✓+✗ = 0 if extras	F	B1 6

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8		A	magnet OR magnetised	F	B1
		B	magnet OR magnetised	F	B1
		C	iron OR unmagnetised	C	B1
		D	aluminium	C	B1
					4
9	**(a)**		points plotted correctly ($\pm$ ½ small square)	3F	B3 (-1 eeoo)
	(b)		smooth curve through points by eye, not too thick	F	B1
	(c)		correct construction lines shown (allow dot on curve at correct place)	C	B1
			correct value from his graph, based on 800-400 ($\pm$ ½ square)	F	B1
	(d)	**(i)**	smaller	F	B1
		(ii)	the same OR no change	C	B1
					8
10	**(a)**	**(i)**	less turns on secondary ACCEPT "because Np=4800 and Ns=200" ACCEPT "sycoil < pycoil" NOT "secondary < primary"	F	B1
		(ii)	$V_2/V_1 = N_2/N_1$ in any form	F	C1
			correct substitution	F	C1
			10	F	A1
		(iii)	1. decreases	F	B1
			2. runs slower OR will not work e.c.f. from **(iii)1**.	F	B1
	(b)		ignore stage 1 from stage 2 onwards……		
			B) E) (3 marks for any 3) A) (2 marks for any 2) D) (1 mark for any 1)	3C	B3
					9

11	**(a)**	**(i)**	thermistor	F	B1
		(ii)	variable resistor (accept rheostat)	F	B1
		(iii)	light-dependent resistor (ACCEPT LDR)	F	B1
	(b)	**(i)**	1. resistance = p.d./current OR R=V/I OR any correct reorganization ACCEPT mixture of words and letters	F	B1
			2. 12/0.5 OR correct sub in his 1, if shown	F	C1
			24 c.a.o	F	A1
			Ω OR ohm	C	B1
		(ii)	1. decreases	F	B1
			2. idea of greater resistance	F	B1
			3. dimmer OR does not glow/work/shine NOTE: NO e.c.f. in **(ii)**	C	B1 10
12	**(a)**	**(i)**	beard tip to dot perpendicular to mirror (by eye)	F	B1
			distance beard tip to mirror = dist. mirror to dot (by eye)	F	B1
		(ii)	reflected ray along line from eye to his dot (by eye)	C	M1
			incident ray from beard tip to join reflected ray at mirror	C	A1
			arrows from beard to eye	C	B1
		(iii)	virtual	C	B1
		(iv)	angle of incidence = angle of reflection OR i = r OR “they are equal” OR “sini = sinr”	F	B1
	(b)	**(i)**	right hand	F	B1
		(ii)	mark shown under L.H. eye on Fig. 11.2	F	B1 9