UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS International General Certificate of Secondary Education

MARK SCHEME for the May/June 2011 question paper

for the guidance of teachers

0625 PHYSICS

0625/22

Paper 2 (Core Theory), maximum raw mark 80

Mark schemes must be read in conjunction with the question papers and the report on the examination.

• Cambridge will not enter into discussions or correspondence in connection with these mark schemes.

Cambridge is publishing the mark schemes for the May/June 2011 question papers for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level syllabuses and some Ordinary Level syllabuses.



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NOTES ABOUT MARK SCHEME SYMBOLS & OTHER MATTERS

- 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 a 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 must 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 which are one of the ways which 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 <u>must</u> be seen in the answer offered, or something very similar.
- OR/or indicates alternative answers, any one of which is satisfactory for scoring the marks.
- Significant Answers are acceptable to any number of significant figures \geq 2, except if specified otherwise, or if only 1 sig. fig. is appropriate.
- Units Incorrect units are not penalised, except where specified. More commonly, marks are allocated for specific units.
- Fractions These are only acceptable where specified.
- Extras Ignore extras in answers if they are irrelevant; if they contradict an otherwise correct response or are forbidden by mark scheme, use right + wrong = 0
- Ignore Indicates that something which is not correct is disregarded and does not cause a right plus wrong penalty.
- Not/NOT Indicates that an incorrect answer is not to be disregarded, but cancels another otherwise correct alternative offered by the candidate i.e. right plus wrong penalty applies.

	Page 3	Mark Scheme: Teachers' version	Syllabus	Paper	
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1	(a) water			B1	
	(b) volun	ne (of water) OR water level		B1	
	(c) (the)	stone		B1	
	(d) volun	ne (of water) e.c.f. from 2.		B1	
	(e) subtra 1st vo	acting blume from 2nd volume (however expressed)		M1 A1	[6]
2	(a) condu	uction		B1	
	(b) condu conve	uction ection		B1 B1	
	(c) radiat	ion		B1 [[4]
3	energy C from Sun heats wat	DR heat OR radiation OR IR ignore light er OR generates electricity		B1 B1 B1	[3]
4	(a) (i) 1	5 (m/s)		B1	
	(ii) C	(m/s)		B1	
	(b) (i) ii	ncreasing OR accelerating		B1	
	(ii) c	onstant OR nothing		B1	
	(iii) c	ecreasing OR decelerating (however expressed)		B1	
	(c) area ½ × 3 75 (m	of triangle OR area under graph OR appropriate equa 0 × 5)	ation of motion	C1 C1 A1	
	(d) speed 750/3 25 (m	d = distance/time in any form, letters, words, numbers 0 1/s)		C1 C1 A1 [1	1]

Page 4			Mark Scheme: Teachers' version	Syllabus	Paper	Paper	
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5	(a)	(i)	X a X a	t correct distance behind mirror (by eye) t same height as girl's eye (by eye)		B1 B1	
		(ii)	line line par	drawn from eye to bottom of mirror at same angle as above (by eye) drawn from mirror to t from where line meets body down to floor, clearly indic	girl ated	M1 A1 B1	
	(b)	refl refl refl (if a	ecteo meo ecteo ecteo any e	d portions of both first two waves starting where incomir et harbour wall d portions parallel (by eye) d portions both at correct angle to wall (by eye) extra waves shown –1 for each one incorrect)	ng portions	B1 B1 B1	[8]
6	(a)	(i)	incr	reases		B1	
		(ii)	incr	reases		B1	
		(iii)	dec	reases		B1	
	(b)	to a OR OR refe	allow to a to a erenc	for expansion (of concrete) Illow for contraction (of concrete) Ivoid concrete cracking the to temperature change/summer		M1 A1	[5]
7	(a)	cha mo	arge(ving/	s) OR electron(s) flowing		M1 A1	
	(b)	(i)	con	ductor(s)		B1	
		(ii)	met	tal or any named metal		B1	
	(c)	(i)	insı	ulator(s) ignore bad conductors		B1	
		(ii)	any	sensible example of an insulating material		B1	[6]

	Pa	ge 5		Mark Scheme: Teachers' version Syllabus		Paper	
				IGCSE – May/June 2011	0625	22	
8	(a)	serie	es			B1	
	(b)	(i) a	antic	lockwise current clearly indicated		B1	
		(ii) v	voltn	neter connected across R only		B1	
	(c)	(i) I	rheo	stat OR <u>variable</u> resistor		M1	
		(ii) (chan	nge resistance/current		A1	
	(d)	(i)	1.5 (A)		B1	
		(ii)	R = ۱	V/I in any form		C1	
		() (6/1.5	5 e.c.f. (i)		C1	
		4	4	e.c.f. (i)		A1	
		9	Ω	DR ohm(s)		B1	
	(e)	batte	ery	OR cell		B1	[11]
9	(a)	can l	be s\	witched off		B1	
		can	be m	lade (very) strong/variable		BJ	
	(b)	1000) turr	ns AND iron core AND 3A –1 e.e.o.o.		B2	[4]
10	(a)	elect	trom	agnetic		B1	
		short	t OI	R small		B1	
	(b)	film (OR p	photograph OR charge coupled device (CCD)		B1	
	(c)	(high	nly) a	bsorbed/stopped by bone NOT deflected/reflected		B1	
		little/	no a	bsorption by flesh OR penetrates/passes through fle	esn	B1	
	(d)	photo behir	ogra nd so	phic film badges creen when operating X-ray machine any 1		B1	
		prote	ective	e clothing			101
		minir	mise	exposure 2			[6]

	Pag	ge 6	Mark Scheme: Teachers' version	Syllabus	Paper	
			IGCSE – May/June 2011	0625	22	
11	(a)	S ₁			B1	
	(b)	(i)	current filament hot electrons gain energy electrons gain enough energy to overcome forces/break	free	B1 B1 C1 A1	
		(ii)	thermionic emission		B1	
	(c)	ano ano elec	de becomes positive de attracts electrons ctrons travel/move across tube (to anode)		B1 B1 B1	[9]
12	(a)	WOL	Ild be stopped by carton/air		B1	
	(b)	WOL	uld be unaffected/little affected (by carton/contents)		B1	
	(c)	stro idea	ntium(-90) a of effectively constant strength barium-139 would decay too guickly		M1	
	(d)	mor 200 mor	e		B1 B1 B1	[7]