MARK SCHEME for the October/November 2010 question paper

for the guidance of teachers

0625 PHYSICS

0625/22

Paper 2 (Core Theory), maximum raw mark 80

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, which would have considered the acceptability of alternative answers.

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

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

CIE is publishing the mark schemes for the October/November 2010 question papers for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level syllabuses and some Ordinary Level syllabuses.



UNIVERSITY of CAMBRIDGE International Examinations

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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.
- 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.
- Spelling Be generous about spelling and use of English. If an answer can be understood to mean what we want, give credit.
- Significant Answers are acceptable to any number of significant figures ≥ 2, except if specified figures otherwise, or if only 1 sig. fig. is appropriate.
- Units Ignore units, except where a mark is specified for a particular unit.
- 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

Work which has been crossed out, but not replaced, should be marked as if it had not been crossed out.

	Page 3	Mark Scheme: Teachers' version	Syllabus	Paper
		IGCSE – October/November 2010	0625	22
1	(a) 13.6 (s)			B1
	(b) 13.6/40 0.34 (s)			C1 A1
	(c) more ac	curate OR errors less significant OR time for 1	interval too small	B1
	(d) 4 interva 4 × his (1.36 – 1	C1 C1 A1		
	(e) drops ac	ccelerate/go faster		B1
				[Total: 8]
2	(a) extensio	on indicated between two broken lines		B1
	(cor	pints correctly plotted $\pm \frac{1}{2}$ small square -1 e.e.o.o. ndone 0,0 not plotted) ight line through points and origin, by eye		B2 B1
	รแล	ight line through points and origin, by eye		DI
	(ii) prop	portional		B1
	2 . 2	newton(s) 25 – 26 (mm) 75 – 76 (mm)		B1 C1 A1
				[Total: 8]
3	(a) (i) (eng	gine) thrust and (air) friction		B1
	(ii) forc	e shown vertically upwards, anywhere on plane		B1
	220	s/t in any form 0/2.75 (km/h)		C1 C1 A1
	OR OR OR	dwind on outward journey tailwind on return journey shorter route on return journey air friction is less		
		idea of less weight T flies slower		B1
				[Total: 6]

Page 4		Mark Scheme: Teachers' version		Syllabus	Paper
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kinetic consta	work potential/gravitational/PE/GPE/position kinetic/KE/movement constant/the same/uniform joule(s) OR J condone j			B B B B B	
					[Total: 5
(a) (i)	interi	nal energy			В
(ii)	thern	nal capacity			В
(iii)	boilir	ng point			В
	creases anges	temperature ris rod/brass expa	es OR mercury/alcohol/liqu nds	iid expands	B1 + B B1 + B
					[Total: 7
(a) 40) cond	one no unit			В
(b) (i)	ray ro	eflected at angle > 4	0° to dotted line		В
(ii)	60 0	condone no unit			В
(iii)) his (i	i) – 40			C
	20 e	e.c.f. condone no u	nit		Α
(c) (i)) 2 (cn	ר)			Е
(ii)) idea 10 (c	of distance behind = m)	distance in front		C A
					[Total: 8
(a) (i)	refra	ction			В
(ii)	dispe	ersion			E
(b)					
(~)		red]		E
-		yellow	e.c.f. from red		E
-			_		

	Page 5		Mark Scheme: Teachers' version	Syllabus	Paper
			IGCSE – October/November 2010	0625	22
	(c) any gai (igi		B1 + B1		
					[Total: 6]
8	(a) (i)	amp	litude		B1
	(ii)	wav	elength		B1
	bac		g moves air ‹wards & forwards OR up & down		M1
			compressions & rarefactions		A1
	(ii)	gets	quieter/softer/less loud		B1
					[Total: 5]
9	(a) (i)	 (a) (i) (accept any recognisable symbols for M1 and A1 marks) battery/cell, ammeter, coil in series (ignore any switch or rheostat) voltmeter clearly in parallel with coil standard symbols used for battery/cell, voltmeter and ammeter 		or rheostat)	M1 A1 B1
	(ii)	R =	V/I in any form		B1
	(iii)	dian resis	th (of wire)) neter/cross-section/area (of wire)) any 2 stivity/type of material) perature)		B1 + B1
	(b) EIT	b) EITHER			
	(cir (re:	6/1.5 (circuit res. =) 4 (Ω) (res. of AB =) 1 (Ω) e.c.f. 0.5 (Ω/m) e.c.f.			C1 C1 C1 A1
	OR	OR			
	p.d res	p.d. across $3\Omega = 4.5$ (V) p.d. across AB = 1.5 (V) res. of AB = 1 (Ω) e.c.f. 0.5 (Ω /m) e.c.f.			C1 C1 C1 A1
					[Total: 10]

	Page 6	Mark Scheme: Teachers' version	Syllabus	Paper		
		IGCSE – October/November 2010	0625	22		
10		deflects NOT vibrates OR oscillates eturns to zero/centre again		M1 A1		
	e c	nduction/induced current or emf axle/wire cuts magnetic field not when axle out of field		B1 B1 B1		
	(iii) c	opposite deflection		B1		
	(b) need		B1			
				[Total: 7]		
11	(a) —	condone — OR ·	-0>-0-	B1		
	(b) curre		B1 B1			
	(c) live ti		B1			
				[Total: 4]		
12	(a) (i) ii	t is an electron		B1		
	.,.,			2.		
		no/negligible mass/weight allow "its mass" OR not one of nuclear particles		B1		
		negative charge allow "its charge" one unit of		M1 A1		
	(b) 250			B1		
	98			B1		
				[Total: 6]		