

MARK SCHEME for the October/November 2008 question paper

0625 PHYSICS

0625/02

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.

All Examiners are instructed that alternative correct answers and unexpected approaches in candidates' scripts must be given marks that fairly reflect the relevant knowledge and skills demonstrated.

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 2008 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 AND 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.
Spelling	Be generous about spelling and use of English. If an answer can be understood to mean what we want, give credit.
Significant figures	Answers are acceptable to any number of significant figures ≥ 2 , except if specified otherwise, or if only 1 sig. fig. is appropriate.
Units	It is expected that all final answers will have correct units. Deduct one unit penalty for each incorrect or missing unit, maximum 1 per question. No unit penalty if unit is missing from final answer but is shown correctly in the working.
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.

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

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1	(a)	attempt at subtraction 3 hrs 20 mins 200 mins	C1 C1 A1	
	(b)	200/20 OR 200/10 e.c.f. from (a) 10 OR 20 e.c.f.	C1 A1	[5]
2	(a)	$L \times B \times H$ $2 \times 1.5 \times 1$ $3 \text{ (m}^3\text{)}$	C1 C1 A1	
	(b)	$M = V \times D$ 3000 (kg) e.c.f. correct units in both (a) and (b)	C1 A1 B1	[6]
3	(a)	YZ OR WZ <u>and</u> WY OR XZ <u>and</u> XY	B1	
	(b) (i)	4.2 – 4.6 (N)	B1	
	(b) (ii)	his (i) N	B1 B1	
	(b) (iii)	increases	B1	
	(iv)	goes up OR oscillates OR accelerates	B1	[6]
4	(a)	radio OR TV ultra-violet	B1 B1	
	(b)	long wavelength written at LH end	B1	
	(c)	any three acceptable uses	B1,B1,B1	
	(d)	red violet (NOT blue, purple, mauve)	B1 B1	[8]

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5	(a)	(i)	reflected		B1		
		(ii)	same frequency		B1		
	(b)	(i)	480 (m)		B1		
		(ii)	distance/time		C1		
			his(i)/1.6 300 (m/s) e.c.f.		C1 A1		
	(iii)	measured distance incorrect)				
		measured time incorrect OR effect of reaction time) any 2	B1,B1			
		any reference to temperature)				
		any reference to wind)				
		any reference to humidity)				
any reference to pressure)					
	time interval very small to measure on a stopwatch)					
					[8]		
6	(a)	distance approximately marked (± 5 mm)		C1			
		distance accurately marked (± 2 mm)		A1			
	(b)	(i)	falls		B1		
		(ii)	air mols bombard surfaces cause pressure on Hg		B1 B1		
	(c)	Hg at same height as in LH tube (by eye)		B1			
	(d)	rises	rises)	B1 \times 4		
		falls	stays the same)			
						[10]	
	7	(a)	(i)	normal correct, by eye		B1	
			(ii)	reflected ray in correct direction, by eye (condone poor normal)		B1	
(iii)			<i>i</i> correctly labelled (condone poor normal)		B1		
(iv)			<i>r</i> correctly labelled (condone poor normal)		B1		
(b)		$i = r$		B1			
(c)		(i)	second mirror correct, by eye		B1		
		(ii)	ray parallel to original ray		B1	[7]	

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- 8 (a) (i) N at left and S at right B1
- (ii) attract e.c.f. B1
- (b) (i) N at left and S at right B1
- (ii) attract e.c.f. B1
- (c) attract B1
- (d) nothing B1 [6]
- 9 (a) a B1
- (b) B B1
- (c) $I = V/R$ C1
6/4 A1
1.5 A1
A OR amp(s) OR ampere(s) B1
- (d) connection 2 B1
both receive full voltage OR both run at full brightness B1
if one blows/switched off, other will continue working B1 [9]
- 10 (a) contact position shown at centre of potential divider, by eye B1
- (b) current in coil)
core magnetised)
armature attracted) any 3 B1,B1,B1
armature pivots)
armature pushes contacts closed)
- [4]

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11 (a)	core		B1	
(b)	a.c.		B1	
(c)	$V_P/V_S = N_P/N_S$ in any form correct substitution 200		C1 C1 A1	
(d)	voltage too high OR lamp will blow		B1	[6]
12 (a)	84		B1	
(b)	218		B1	
(c) (i)	2		B1	
(ii)	4 allow both marks for interchanged answers for (i) and (ii), if answers to (a) and (b) were interchanged		B1	
(iii)	alpha-particle		B1	[5]