

**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 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.
- underlining** indicates that this must 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  $\geq 2$ , 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 and WY OR XZ and XY  
B1
- (b) (i)** 4.2 – 4.6 (N)  
B1
- (ii)** his **(i)**  
N  
B1  
B1
- (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 C1  
300 (m/s) e.c.f. 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 ( $\pm 5$  mm) C1  
distance accurately marked ( $\pm 2$  mm) A1
- (b) (i) falls B1  
(ii) air mols bombard surfaces B1  
cause pressure on Hg 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)  $i$  correctly labelled (condone poor normal) B1  
(iv)  $r$  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 C1  
 correct substitution C1  
 200 A1
- (d) voltage too high OR lamp will blow B1 [6]
- 12 (a) 84 B1
- (b) 218 B1
- (c) (i) 2 B1  
 (ii) 4 B1  
 allow both marks for interchanged answers for (i) and (ii),  
 if answers to (a) and (b) were interchanged
- (iii) alpha-particle B1 [5]