UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

International General Certificate of Secondary Education

MARK SCHEME for the October/November 2006 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 students, 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.

The grade thresholds for various grades are published in the report on the examination for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level syllabuses.

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

CIE is publishing the mark schemes for the October/November 2006 question papers for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level syllabuses and some Ordinary Level syllabuses.

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 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 <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.

QU.			SCHEME				

1 (a) 55 (s)

   (b) 55/5 ecf   C1

       11 (s) ecf   A1

(c)	EITHER	OR	OR	OR	
	300/hour	1 takes 11s	5 takes 55s	1hour for 300	B1
	= 5/min	300 take 3300s	300 take 60x55s	3600/300s for 1	B1
	takes less than 1 min for 5	less than 1hr for 300	less than 1hr for 300	1 takes less time than this	B1

       YES/NO ticked according to his working   <u>B1</u>
                                                                                  <u>7</u>

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2   2nd box ticked   B1

   3rd box ticked   <u>B1</u>
   (use ✓ + ✗ = 0 for extras)   <u>2</u>

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3 (a) OP   accelerating   B1

         PQ   accelerating   B1

         QR   constant speed   B1

         RS   slowing down   (however expressed)   B1

   (b) O <u>and</u> S (both)   B1

   (c) 6 (m/s)   B1

   (d) 70 (s)   B1

   (e) find area OPQRS   (however expressed)   <u>B1</u>
                                                                <u>8</u>

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4 (a) (i)   radiation   B1

      (ii) conduction   B1

   (b) (i)   kinetic (however expressed)   B1

               potential (however expressed)   B1

      (ii) idea of energy loss or friction   <u>B1</u>
                                                                 <u>5</u>

5 **(a)** (magnitude of) force

distance (from fulcrum)

(b) **(i)** force — B1

moment OR turning effect — B1

(ii) $F_1 + F_2 + W$ — B1

(iii) F — <u>B1</u>
<u>6</u>

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6 **(a)** **(i)** eye to image line perpendicular to mirror, by eye — B1

object distance = image distance, by eye — B1

(ii) normal correctly drawn, by eye — B1

(iii) ray to bottom edge of mirror correct — M1

reflected ray at correct angle to mirror, by eye
(condone sloppy normal) — A1

(b) sensible attempt at explanation — B1

(c) **(i)** 2 (m) (NO ecf) — B1

(ii) distance lady to mirror = 3 (m) — C1

distance moved = 2 (m) (NO ecf) — A1

away from mirror/wall — <u>B1</u>
<u>10</u>

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7 **(a)** **(i)** large, OR accept any large example e.g. cliff — B1

(ii) speed = distance/time OR speed = 2xdistance/time
(in any form) — C1

correct substitution — C1

480 (m) c.a.o. — A1

(b) speed = 6/50 OR 3/50 — C1

0.12 (m/s) OR 0.06 (m/s) — <u>A1</u>
<u>6</u>

8 (a) (i) (group) 1

    (ii) (group) 2

    (iii) plastics OR glass OR ebonite   B1

(b) top − and bottom +   B1

(c) region/area/space etc.   B1

charge   B1

experiences a force   B1
    7

9 (a) good straight line through first 5 points, drawn with a rule   B1

(b) intelligent attempt at a reason   B1

(c) 67 – 40   C1

27 (mm)   A1

(d) 2.4 – 2.5 (N)   B1
    5

10 (a) less turns on Sy OR more turns on Py   B1

(b) voltage OR p.d. OR volts is less   B1

(c) $V_1/V_2 = N_1/N_2$ in any form   C1

correct substitution   C1

12 (V)   A1

(d) voltage too high OR bell would be damaged   B1
    6

11 (a) 92   B1

(b) orbit OR outside nucleus   B1

(c) 146   B1

(d) nucleus   B1

(e) decreases   M1

by 2   A1
    6

12 (a) reverse connections to ammeter or battery

(b) current   OR   amps   OR   amperes   B1

(c) 4 components in series (ignore symbols)   B1

4 recognisably correct <u>symbols</u> (ignore connections)   B1

(d) (i) voltmeter   OR   multimeter on volts scale   B1

(ii) voltmeter shown connected in parallel with resistor   B1

(e) I = V/R   in any form   C1

correct substitution   no ecf from wrong equation   C1

0.4 (A)   c.a.o.   A1

(f) his value of (e)   B1

(g) (i) 7.5 Ω ticked   B1

(ii) increases current   e.c.f.   <u>B1</u>
<div align="right"><u>12</u></div>