Notes about Mark Scheme Symbols

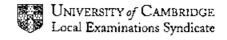|	
B marks	are independent marks, which do not depend on any other marks. For a B mark to be scored, the point to which it refers must actually be seen in the candidate's answer.
M marks	are method marks upon which accuracy marks (A marks) later depend. For an M mark to be scored, the point to which 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 allow a C mark to be scored.
c.a.o.	means "correct answer only"
e.c.f.	means "error carried forward" i.e. if a candidate has made an earlier mistake and has carried his incorrect value forward, 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 answer, 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.
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	indicates alternative answers, any one of which is satisfactory for scoring the marks.

CAMBRIDGE
INTERNATIONAL EXAMINATIONS

JUNE 2002

INTERNATIONAL GCSE

MARK SCHEME
MAXIMUM MARK : 80
SYLLABUS/COMPONENT : 0625/2 **PHYSICS** **(CORE)**

QUESTION			SCHEME	Target Grade	Mark
1	(a)		idea of weight not measured in kg OR weight is measured in N OR mass is measured in kg	F	B1
	(b)		idea of mass and weight are not the same thing OR "it isn't" OR weight is 10 x mass OR mass is quantity of matter	F	B1
					2
2	(a)		statements (i) and (ii) ticked (-1 eeoo)	2C	B2
	(b)	(i)	70 (± 1)	F	B1
		(ii)	idea of length less than 0.5 cm OR Hg shrinks into bulb OR "not seen" NOT JUST decreases in length	C	B1
					4
3	(a)	(i)	25	F	B1
		(ii)	40 x 25 ⎫ accept "reverse proof"	F	M1
			1000 (Hz) ⎭ e.g. $\frac{1000}{40} = 25$	F	A1
	(b)	(i)	idea of echo / reflection	F	B1
		(ii)	1000Hz ticked	F	B1
		(iii)	less ticked	F	B1
					6
4	(a)		nucleus	F	B1
			nucleus	F	B1
			orbit	F	B1
	(b)	(i)	15	F	B1
		(ii)	31	C	B1
		(iii)	$^{31}_{15}$P e.c.f.	C	B1
			Allow P$^{31}_{15}$ etc		6
5	(a)		stroke with a magnet one direction ⎫		
			place in solenoid / coil pass d.c. (thro' coil) NOT "a current" ⎬ any 1	F,C	M1,A1
			hammer rod pointing N ⎭		

(b)   iron filings etc   attraction / patterns ⎫
       suspend freely   points N-S   ⎬ any 1   F,C   **M1,A1**
       hold magnet near   <u>repulsion</u>*   ⎪
       hold compass near   repulsion <u>&</u> attraction ⎭
                *condone "attracts" as an extra if 2 ends mentioned. NOT
                JUST "attraction & repulsion"

(c)   idea of B suspended a distance above A   F   **B1**

       additional detail e.g. oscillation   C   **B1**

       repulsion (of like poles) (in either box)   F   **B1**

                                                   7

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6   **(a)**   **(i)**   battery / cell shown connected across filament   F   **B1**
                 (don't worry about quality of symbol)

         (ii)   electrons NOT β–particles, but condone as extra   C   **B1**

    (b)   **(i)**   connection between filament and anode   OR + and – shown   F   **M1**
                 by them (condone shorting filament)
                 – to filament and + to anode   C   **A1**

         (ii)   line along axis   at least from filament to start of plates ALLOW   F   **B1**
                 thickness to line i.e. beam

        (iii)   idea of screen glowing / spot on tube or screen   C   **B1**
                  NOT spark

    (c)   S and T   (both, either way round)   C   **B1**

                                                    7

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7   **(a)**   132 000 (V) ⎫   F   **B1**
            11 000 (V) ⎬   un. pen. if V not seen somewhere in (a)   C   **B1**
            220 (V)   ⎭   F   **B1**

    (b)   lower energy/heat/power loss / greater efficiency ⎫
                 smaller current   ⎪
                 lower volts drop   ⎬ any 1   C   **B1**
                 thinner cables   ⎪
                 less massive pylons   ⎭

                 NOT "less electricity lost"   ignore extras, unless
                                             contradictory to correct answer

                                                    4

8 **(a)**   idea of avoiding contamination of hands   F   **B1**
            to increase distance (from hands)   F   **B1**

(b)   idea of ingesting contaminated food   F   **B1**

(c)   in case hands have become contaminated   F   **B1**

(d)   idea of restricting use to authorized people   NOT   shielding   F   **B1**

       NOTE: "Radiation is harmful to the body" can be used as an
       alternative to ONE of the above only.   **5**

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9 **(a)** **(i)**   40   F   **B1**

      (ii)   0.2 (A)   C   **B1**
             0.2 (A)   C   **B1**

(b) **(i)**   10 Ω ticked   C   **B1**

      (ii)   less than 0.8A ticked   C   **B1**
             0.8A ticked   F   **B1**

                                                             6

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10 **(a)** **(i)**   involvement of 10000/500 ratio   F   **C1**
            involvement of 4/2 ratio   C   **C1**
            10 or 10/1   c.a.o.   condone unit shown e.g. 10 Pa   C   **A1**

      (ii)   bigger area (of contact)   ACCEPT reverse logic   F   **B1**
             lower pressure on ground   OR   less sinking   F   **B1**

(b) **(i)**   same pressure (on surfaces)   C   **B1**

      (ii)   down, up (both)   F   **B1**

      (iii)   difference between liquid levels / column lengths   F   **B1**
             atmospheric pressure   F   **B1**

                                                             9

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11 **(a)**   40 (mm)   F   **B1**

(b)   24   32   40   48   56   (-1 eeoo)   2F   **B2**

(c) **(i)**   his values plotted correctly ± 1 mm (-1 eeoo)   condone 0,0 not   2F   **B2**
            plotted

      (ii)   good straight line through his points   (ruler must be used)   condone   F   **B1**
            not thro' 0,0

      (iii)   1.   60 mm   OR   third value (allow 2 or 20)   e.c.f. from his graph   F   **B1**
            2.   56 (± 1) e.c.f.   F   **B1**

(d) **(i)** 68 – 40   F   C1
28 (mm)   F   A1

(ii) 3.5 ($\pm$ 0.1)(N)   OR   his correct value ($\pm$ 0.1)(N)   F   M1

(iii) his (ii)   C   A1

                                        12

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12 **(a)** **(i)** converge   C   B1

(ii) both rays completed correctly ($\pm$ 1 mm)   (needn't be drawn with a   F   B1
ruler)   (for both rays, ignore point(s) of refraction, as long as at lens)

(iii) P and F   (both) (either way round)   C   B1

(b) **(i)** ray parallel to axis   from top of object   MUST be drawn with a ruler;   C   M1
if not, mark as scheme then deduct 1 mark

then through F $\pm \frac{1}{2}$ mm on axis   C   A1

refraction at mid-line $\pm \frac{1}{2}$ mm   ACCEPT refraction at <u>both</u> surfaces   C   B1

(ii) ray to P from top of object $\pm \frac{1}{2}$ mm on axis   F   M1

then continues straight on   F   A1

(iii) image line drawn between axis and intersection
                               (ignore label and arrow)   C   B1

(iv) length / height / size ⎫
distance (from lens) ⎬ any 2   ⎫ if image   2F   B1,B1
both real   ⎪   ⎬ is wrong,
NOT shape, colour ⎭   ⎪ mark to
                                       ⎪ his
(v) image is inverted (or equiv.)   OR   opposite side of lens ⎪ image   C   B1
CONDONE "laterally"   ⎭
                                        12