MARK SCHEME for the May/June 2006 question paper

0625 PHYSICS

0625/02   Paper 2, maximum raw mark 80

These mark schemes are published as an aid to teachers and students, to indicate the requirements of the examination. They show the basis on which Examiners were initially instructed to award marks. They do not indicate the details of the discussions that took place at an Examiners' meeting before marking began. Any substantial changes to the mark scheme that arose from these discussions will be recorded in the published *Report on the Examination*.
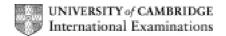
All Examiners are instructed that alternative correct answers and unexpected approaches in candidates' scripts must be given marks that fairly reflect the relevant knowledge and skills demonstrated.

Mark schemes must be read in conjunction with the question papers and the *Report on the Examination*.

The minimum marks in these components needed for various grades were previously published with these mark schemes, but are now instead included in the Report on the Examination for this session.

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

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					TARGET GRADE	MARK

1 **(a)** larger area — F — B1
smaller pressure — F — B1

(b) **(i)** get larger   OR   get firmer — F — B1

(ii) molecules move faster   )
more collisions (per second)   )   any 2 — 2C — B1 + B1
pressure increased   )

(c) **(i)** increases — F — B1

(ii) smaller volume — F — B1
more collisions (per second) — C — B1
anywhere in (b)(ii) or (c)(ii), collisions with walls — C — B1
9

2 **(a)** 6.0 ± 0.1)
2.4 ± 0.1)   -1 each error or omission — 2F — B2
3.1 ± 0.1)

(b) AB x BC x CD   OR   l x b x h   OR   his figures shown multiplied — F — B1

(c) cm^3 OR   cu.cm   OR   cubic cm — F — B1
4

3 **(a)** P <u>and</u> Q — F — B1

(b) R <u>and</u> S — F — B1

(c) **(i)** D = M/V   in any form, including our figures — F — B1

(ii) 57.5/25 — C — C1
2.3 — C — A1
g/cm^3 — C — B1
6

4 **(a)** chemical, gravitational, internal, kinetic — 2F,2C — B1 x 4
(if more than 4 ticked, use ✓ + ✗ = 0)

(b) kinetic   NOT   internal — F — B1

(c) potential — F — B1

(d) chemical — C — B1
7

5 **(a)** idea of greater speed — F — B1
idea of molecules further apart — C — B1

(b) **(i)** any suitable example involving expansion or contraction
e.g. thermometer, thermostat, bimetal strip, rivets, fitting steel tyres — F — B1

(ii) any suitable example involving expansion or contraction
e.g. expansion gaps in bridges etc, overhead cables, cracking glass — C — B1
4

6 (a) (i) wavelength labelled clearly ± 3mm   F   C1
          wavelength labelled clearly ± 1mm   C   A1

      (ii) horizontal line   F   M1
           anywhere between top & bottom of wave pattern   C   A1

    (b) (measure time for)   (count number of)   (measure time)
        (a number of   ) OR (waves passing) OR (for 1 wave   )   F   M1
        (waves to pass   )   (   )   (to pass   )
        $f = \dfrac{\text{no. of waves}}{\text{time}}$ OR   in 1 second   OR $f = 1/T$ F   A1
                                                          6

7 (a) ray bent down at first surface   F   M1
       not below normal   F   A1
       ray bent down at second surface   C   B1

    (b) (i) dispersion ticked   F   B1

       (ii) red   C   B1

      (iii) violet   C   B1
            (allow B1,B0 if red and violet both written but interchanged)   **6**

8 (a) end/point on magnet   C   B1
       idea of pointing N (when freely suspended)   F   B1

    (b) repulsive   F   B1

    (c) (i) S at top <u>and</u> N at bottom   F   B1

       (ii) disappears   F   B1
                                                           5

9 (a) strontium-90   F   M1
       decays most slowly   OR   longest half-life   F   A1

    (b) (i) points correctly plotted ± ½ small square   -1 each error or omission   3F   B3

       (ii) reasonable curve   F   B1

      (iii) 8 (days) ± 0.5   OR   his correct value ± 0.5   C   B1
            correct working shown on graph (minimum: dot on line)   C   B1
                                                           8

10 (a) (i) A <u>and</u> B   (both)   OR   A <u>and</u> C   (both)   C   B1

       (ii) filament   F   B1

      (iii) electrons ticked   F   B1

      (iv) line along axis (by eye)   OR conical beam along axis   F   B1

       (v) light or glow indicated somehow   F   B1

    (b) beam deflection shown   F   C1
       beam deflected upwards   C   A1
       indication of curve (condone curve outside electric field)   C   B1

    (c) idea of no obstruction for cathode rays/electrons   C   <u>B1</u>
                                                               9

11 (a) (i) 10 x 2.5   F   C1

              25 (m)   F   A1

       (ii) speed = distance/time   in any form   F   C1

              500/10   F   M1

              50 (s)   F   A1

    (b) 75/2.5   C   C1

         30   (m/s)   C   A1

    (c) accelerated   F   B1

    (d) total distance = 3000 (m)   F   C1

         total time = 150 (s)   F   C1

         average speed = total distance/total time   C   C1

         3000/150   C   C1

         20   (m/s)   C   A1

                                                             13

12 L1 joined to R3 or R1   F   B1

    L2 joined to R4   F   B1

    L4 joined to R1   F   B1

                                                             3