MARK SCHEME for the November 2005 question paper

0625 PHYSICS

0625/02   Paper 2 (Theory)

Maximum mark 80

MARK

1 **(a)** 8.5 (cm) **B1**

(b) 19.0 OR 19 (± 0.1) (cm) **B1**

(c) his **(b)** – his **(a)** **C1**

his correct subtraction **A1**

[4]

2 **(a)** distance/time **C1**

25/2 **C1**

12.5 **A1**

m/s **B1**

(b) less OR decreased OR slowing down **B1**

(c) more than ecf **B1**

[6]

3 **(a)** skate **M1**

small area (in contact with ice) **A1**

(b) large area)
wind causes large force on side of truck) any 2 **B1,B1**
vehicle liable to blow over)

[4]

4 **(a)** 40 or 160 **B1**

(b) 720 **B1**

(c) W = F x d **C1**

720 x 0.2 **C1**

144 **A1**

J OR joule **B1**

(d) his**(c)**/1.2 **C1**

his**(c)**/1.2 correctly evaluated **C1**

0.5 x his**(c)**/1.2 correctly evaluated **A1**
i.e. 60 gets C1, C1, A1 and 120 gets C1, C1, A0)
W OR watt OR J/s **B1**

[10]

5 **(a)** level in tube lower, or equivalent **B1**

    (b) air has expanded (could be scored in **(a)**, but not twice)
        OR Kinetic Theory application to pressure **B1**

    (c) any sensible comment **B1**
        e.g.   limited temp range, air bubbles out of tube, slow acting,
               large volume of air, change in air pressure, no scale

                                                                        [3]

6 **(a)** **(i)** current (in coil) **B1**

             magnetic field (around coil) **B1**

      (ii) magnetised OR attract **B1**

    (b) current zero at first (even if only at origin) **B1**

        horizontal first part **B1**

        vertical rise somewhere **B1**

        horizontal final part **B1**

                                                                        [7]

7 **(a)** three rays parallel and horizontal **B1**

    (b) **(i)** both principal foci marked **B1**

      (ii) refraction at mid-line, then through F **B1**
            (allow 2 surface refractions if lead back to mid-line)

      (iii) ray through F to mid-line, then parallel **B1**
             (allow as **(ii)**)

      (iv) image drawn between axis and intersection, perpendicular to axis C **B1**
             (condone no labelling)

             drawing accuracy mark for image 2 squares tall ± 2mm <u>and</u>
                                      4 squares away ± 2mm **B1**

                                                                       [6]

8 **(a)** **(i)** iron OR steel OR any ferromagnetic material **B1**
            (B0 if magnetised stated)

      (ii) 1. nothing ecf from **(i)** **B1**
            2. nothing **B1**

    (b) L.H. compass pointing to R **B1**

        top compass pointing to L **B1**

bottom compass pointing to L   **B1**

                                                                                                      [6]

9 **(a)** 1 correct   **C1**

   2 correct   **C1**

   4 correct   **A1**

(b) **(i)** all 6 components shown in series (any order)   **B1**
              ecf from **(a)** for symbols

       (ii) voltmeter connected across cell, either our diag or his   **B1**

       (iii) both   **B1**

       (iv) 0.5   **B1**

       (v) current stops OR ammeters read zero OR other bulb goes out   **B1**

                                                                                                      [8]

10 **(a)** 10 x 4 x 6.5   **C1**

   260 (cm^3)   **A1**

(b) D = M/V in any form, words, letters, numbers, mixed   **C1**

   250/his V   ecf if written down   **C1**

   0.961538   any no. of sig figs ecf   **C1**

   0.96 ecf   **A1**

   g/cm^3 unless inconsistent with his figures   **B1**

                                                                                                      [7]

11 (a) electrons   **B1**

   (b) A   **B1**

   (c) (i) D   **B1**

       (ii) idea of detecting electrons/making spot visible   **B1**

   (d) deflects them   **B1**

   (e) no air OR no molecules OR no particles OR "nothing"   **B1**

        to stop/slow down/absorb the electrons/cathode rays   **B1**

                                                                      [7]

12 (a) (i) time taken for (B0 for half the time)   **B1**

           activity/count-rate/mass etc.   **B1**

           to decrease to half original value   **B1**

       (ii) radiation due to surroundings   **B1**

   (b) (i) 80 – 25   **C1**

           55 cao   **A1**

       (ii) 1. 27.5 ecf   **B1**

            2. 52.5 ecf   **B1**

      (iii) 15 ± 1 ecf   **B1**

      (iv) background remains, even when source has decayed   **B1**

       (v) curve to the left of existing one   **B1**

           flattening out at 25 count/min   **B1**

                                                                      [12]