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, which would have considered the acceptability of alternative answers.

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 2010 question papers for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level syllabuses and some Ordinary Level syllabuses.
1 (a) 31.9 / 25.6 (1) 6.3 (1)

(b) exothermic (1)

(c) hydrogen (1) pops in flame (1)

(d) (i) sodium hydroxide (1)

(ii) blue (1)

(e) sodium moves around the surface / catches fire / floats / melts / effervescence / explodes / violent or vigorous reaction / disappears / dissolves. Any 2 (2)

2 (a) water in/out reversed / water flow wrong (1) closed system (1)

(b) (i) fractionating column (1)

(ii) separates components/vapours (1)

(iii) condenser (1)

(iv) liquefies vapours, turns vapour to liquid (1)

(c) (i) 69 (1)

(ii) hexane (1)

(iii) temperature rises (1)

(d) both liquids are flammable (1)

(e) $40/86 = 0.47$; $60/100 = 0.60 (1) 0.47/1.07 \times 100 = 44\% (1)$

3 (a)

4 (a)

5 (b)

6 (c)

7 (a)
8  (a)  6.24 (1)

(b) (i) green/colourless

(ii) purple/pink (1)

(c) \[
\begin{array}{ccc}
22.8 & 39.7 & 31.3 \\
0.0 & 17.5 & 8.9 \\
22.8 & 22.2 & 22.4 \\
\end{array}
\]

[Mark rows or columns to the benefit of the candidate. One mark for each correct row or column.] (3)

Mean titre = 22.3 cm$^3$ (1)

(d) 0.000446 (1)

(e) 0.00223 (1)

(f) 0.0223 (1)

(g) 3.39 (1)

(h) 2.85 (1)

(i) 0.158 (1)

(j) 7.09 (7.1) (1)

(k) FeSO$_4$.7H$_2$O (1)

(l) simultaneous oxidation and reduction (1)

relating to MnO$_4^-$ and Fe$^{2+}$ ions (1)

(m) Fe$^{3+}$ cannot be oxidised (1) [17]
9 (a) transition metal ions not present (1)

(b) (i) white ppt. (1)
     (ii) insoluble in excess (1)

(c) no ppt. / slight white ppt. (1)

(d) Dilute HNO$_3$ (1), aq. Pb(NO$_3$)$_2$ / AgNO$_3$ (1) yellow ppt. (1)
    Acidified loses acid mark, HCl loses both test marks. Use of AgI or PbI$_2$ loses both test marks. [7]

10 (a) gas produced / evolved / given off (1)

(b) 0.63, 0.73, 0.80, 0.80 (1)
    0.76, 0.80, 0.80, 0.80 (1)

(c) all points correctly plotted (1)
    two smooth curves passing through zero (2)

(d) reaction is complete / no more gas given off / acid used up (1)

(e) (i) 0.56 (1)
     (ii) 90.30 (1)

(f) reaction is faster (1)

In parts (c) and (e) please read candidate’s graph in awarding marks.
Read graphs to +/- half small square. [10]