THE MOLE & CONCENTRATION
MARK SCHEME

Q1.

Question	Answer	Extra information	Marks
	0.06	correct answer with or without working = **2** marks if answer is incorrect (0.1 x 15)/25 **or** 0.0015 x 40 gains **1** mark	2
Total marks			2

Q2.

Question	Answer	Extra information	Marks
	17.6/44 (moles) or 0.4 (moles) CO_2 7.2/18 (moles) or 0.4 (moles) H_2O empirical formula = CH_2	 allow 1C:2H **or** correct simplest ratio related to elements **or** ecf from previous stage allow this mark for correct formula alone	1 1 1
Total marks			3

Q3.

Question	Answer	Extra information	Marks
(a)	reasonable smooth curve through all the points over the range 10 - 80	ignore outside range do **not** accept multiple lines	1
(b)	5.7	range 5.5–5.9 if outside range check graph	1
(c)	7.6	correct answer with or without working = **2** marks if answer incorrect 10 **or** 2.4 gains **1** mark	2
Total marks			4

Q4.

Question	Answer	Extra information	Marks
	0.11(04)	correct answer with or without working = **2** marks if answer incorrect (0.15 × 18.4) / 25 gains **1** mark	2
Total marks			2

Q5.

Question	Answer	Extra information	Marks
	CO_2 $2H_2O$ $\frac{1.1}{44}$ $\frac{0.9}{18}$ $= 0.025$ $= 0.05$ 1 (mole) CO_2 2 (moles) H_2O 1 4 **or** CH_4 **or alternative method** Mass of C = $\frac{12}{44}$ x 1.1 = 0.3g (1) Mass of H = $\frac{2}{18}$ x 0.9 = 0.1g (1) C : H mass $\frac{0.3}{12} : \frac{0.1}{1}$ proportions 0.025 : 0.1 (1) whole number 1 : 4 (1) **or** CH_4	correct formula with no working is only 1 mark M3 can be awarded from the formula if steps one and two are clear correct formula from their incorrect ratio gets 1 mark if fraction is wrong way around e.g. M_r / mass, then lose M1 and M2 but accept ecf for M3 and M4	1 1 1 1
Total marks			4

Q6.

Question	Answer	Extra information	Marks
(i)	0.2255 / 0.226 / 0.23 (mole)	correct answer gains **2** marks 0.2 / 0.22 = **1** mark 27.06 × 0.9 for 1 mark or 24.354 or 108/27.06 or 0.25055 for 1 mark	2
(ii)	loss in mass due to wear / eroding / corroding / weathering / clipping	ignore damage	1
Total marks			3

Q7.

Question	Answer	Extra information	Marks
	0.054	for **2** marks (0.1 × 13.5)/25 for 1 mark	2
Total marks			2

Q8.

Question	Answer	Extra information	Marks
	0.2288	correct answer gains **3** marks with or without working accept 0.229 or 0.23 if answer is incorrect 28.6 x 0.2 ÷ 1000 (=0.00572) gains **1** mark 0.00572 x 1000 ÷ 25 or ecf gains **1** mark **or** 28.6 x 0.2 ÷ 25 gains **2** marks	3
Total marks			3