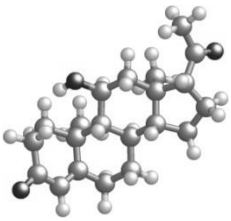

Chem!stry

Name: …… **( )**

Class: ……

Date: …… **/** …… **/** ……

Redox Titration – Answers

Question 1:

a) 7.39 – 5.74 = 1.65 g

b) **i)** Oxygen from the air would oxidise the iron(II) ions, Fe^{2+}, to iron(III) ions, Fe^{3+}.
Iron(III) ions, Fe^{3+}, will not react with the potassium manganate(VII), $KMnO_4$.

ii) $Fe\ (s) + H_2SO_4\ (aq) \rightarrow FeSO_4(aq) + H_2\ (g)$

iii) A burning / lighted splint is extinguished with a "pop" sound.

c)

Titration Number	First	Second	Third
Final Reading / cm^3	27.80	32.10	47.30
Initial Reading / cm^3	0.00	5.70	20.70
Volume of 0.020 mol/dm^3 potassium manganate(VII) used / cm^3	27.80	26.40	26.60
Best Titration Results (✓)		✓	✓

Average volume of 0.020 mol/dm^3 potassium manganate(VII) = (26.40 + 26.60) ÷ 2 = 26.50 cm^3

d) moles of $KMnO_4$ in solution = $c \times v \times 10^{-3}$
= $0.020 \times 26.50 \times 10^{-3}$
= 0.000530 mol

e) moles of Fe^{2+} in 25 cm^3 = 5×0.000530
= 0.00265 mol

f) moles of Fe^{2+} in 250 cm^3 = $(250 \div 25) \times 0.00265$
= 0.0265 mol

g) mass of iron in grams = moles × A_r
= 0.0265×56
= 1.484 g 1.48 g to 3 s.f.

h) $(1.48 \div 1.65) \times 100$ = 89.7 % to 3 s.f.