MWAKICAN TERM 1 2016

FORM 3 CHEMISTRY PAPER 3 MARKING SCHEME

Q1 Table 1

 Complete table: 3 titrations (1mk)

 2 titrations (½mk)

 1 titration O

 CONSISTENCY $\pm $ 0.2 (1mk)

 (any two) $\pm 0.1$ (½mk)

 Decimals 1 or 2 consistently used (1mk)

 Accuracy $\pm $0.1 of S.V (1mk)

 $\pm $0.2 of S.V (½mk)

 (4mks)

(i) The KMnO4 changes colour from purple to pink. (1mk)

 (½mk) for each colour

(ii) Average volume $≈ $ 16.0cm3 (1mk)

(iii) RFM = 392 (1mk)

 Moles = $\frac{23.5}{392}$ = 0.05995 moles (½mk)

 0.05995 moles 1000cm3

 ? 25cm3 (½mk)

$\frac{0.05995 x 25}{1000}$ = 0.00149875 moles (allow to 5 dp) (1mk)

 Total (3mks)

(iv) D : E

 I : S

 ? : 0.00149875 moles (1mk)

 =$\frac{0.00149875 x 1}{5}$

 = 0.00029975 moles

(v) 0.00029975 moles 16.3cm3 (1mk)

 ? 1000

 $\frac{0.00029975 x 1000}{16}$ = 0.01873M (1mk)

Q2 Table II ................................... as for table 1 (4mks)

 (i) Average volume $≈$ 15.0cm3

 (ii) 0.125 moles \_\_\_\_\_\_\_\_\_\_\_\_\_\_1000cm3

 ? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 15cm3

 $\frac{0.125 x 15}{1000}$ = 0.001875 moles of HCl

(iii) Na2CO3(s) + 2HCl(aq) 2NaCl(aq) + CO2(g)  + H2O(i) (1mk)

 (½mk for wrong or missing states)

(iv) Mole ratio

 Na2 CO3 : HCl

 1 : 2

 ? : 0.001875 moles

 $\frac{1 x 0.001875}{2}$ = 0.0009375 moles (1mk)

(v) 0.0009375 moles \_\_\_\_\_\_\_\_\_ 25cm3

 ? \_\_\_\_\_\_\_\_\_\_ 250cm3

 $\frac{0.0009375 x 250}{25}$ = 0.009375 moles (1mk)

(vi) RFM = 106 (1mk)

 Mass = moles x M.M

 0.009375 X 106

 = 0.99375g (1mk)

Q3(I)(i) A blue solution is formed (1mk)

 (ii) Copper(II) sulphate (1mk)

 (iii) CuO(s) + H2SO4(aq) CuSO4(aq) + H2O(l)

(II) A white solid is left (1mk)

(III) The white solid dissolves to give a blue solution (1mk)

(iv) - is a reversible reaction

* Is a temporary change (any one) (1mk)

(V) Neutralization or action of acids on metal oxides (1mk)

(b)(I)(i) - produces a cracking sound

 - a brown gas is evolved

 - wet blue litmus paper turns red and red remains red

 - rekindles a glowing splint

 - the solid is orange when hot and turns yellow on cooling

 (1 mk each)

(ii) Lead(II) nitrate

 Allow (Pb(NO3)2) (1mk)

(II) Dissolves to form a colourless solution (1mk)

(III) Forms a white precipitate (1mk)

(iV) Pb2+ (aq) + SO42-(aq) PbSO4(s) (1mk)

(v) Double decomposition or precipitation (1mk)