**MWAKICAN JOINT EXAM (MJET)**

 **CHEMISTRY**

**FORM THREE**

**PRACTICAL PAPER 3- 233/3**

**TERM 2 - 2016**

**MARKING SCHEME**

Q1(1) Table 3 titrations - 1mk

 2 titrations - 1/2mk

 1 titration - 0mk

(2) Decimals 1dp or 2dp used consistently - 1mk

 (if 2dp,the 2nd should be a 0 or 5)

(3) Accuracy -Compare with any of SV within + 0.1 - 1mk

 +0.2 - 1/2mk

(4) Principles of averaging

 2 0r 3 consistent values averaged - 1mk

 :- penalize 1/2mk for arithmetic error

(5) Final answer \_\_\_\_ 1mk

 Within + 0.1 of SV - 1mk

 + 0.2 of SV \_\_\_\_\_\_ 1/2mk

(a) See 4 and 5 above ($≈$ 23.5cm3)

(b)(i) $\frac{40g}{40}$ = 1M

 No of moles = $\frac{1 x25}{1000}$ = 0.025 moles of NaOH

(ii) NaOH + HCL NaCl + H2O

 Mole ratio

 NaOH : HCl

 1 : 1

 0.025 : ? = 0.025 moles of HCl

(iii) 0.025 moles = X (volm from (a) above)

 ? = 100cm3

$\frac{0.025 x 100}{X}$ = $\frac{2.5}{X}$ moles of HCl

(iv) 2 moles \_\_\_\_\_ 1000cm3

 ? \_\_\_\_ 100cm3

 = $\frac{100 x 2}{1000}$ = 0.2 moles of P

(v) (0.2 - $\frac{2.5}{X}$) moles of HCl

(vi) M2CO3  + 2HCl 2MCl + CO2  + H2O

 Mole ratio

 M2CO3 : HCl

 1 : 2

 ? \_\_ 0.2 – $\frac{2.5}{x}$

= (0.2 – $\frac{2.5}{X}$) X ½ = moles of Q

(vii) RFM = $\frac{5.0}{\left(0.2- \frac{2.5}{X}\right)X\frac{1}{2}} $

(viii) 2M + 60 = $\frac{5.0}{\left(0.2- \frac{2.5}{X}\right)x\frac{1}{2}}$

 M = $\frac{1}{2}$ ($\frac{5.0}{\left(0.2- \frac{2.5}{X}\right)x\frac{1}{2}}$ - 60)

 Observations Inferences

Q2 (a)(i) Dissolves to form a presence of a soluble salt

 Colourless solution Award absence of coloured ions

 (ii) No white ppt formed Absence of Pb2+, Al3+,Zn2+

 (iii) Burns with a yellow flame Presence of Na+

 (b)(i) Dissolves to form a colourless solution As (a)(i) above

(ii) Effervescence is produced Presence of a CO3-2

(c)(i) – solid changes from white to -Presence of Zn2+

 Yellow and back to white - Presence of NO3\_

 On cooling -Presence of an acidic gas

* Brown gas is produced
* Turns wet blue litmus paper red

and red remains red

* Relights a glowing splint - Presence of O2 ½ each for any 3

(ii) - Dissolves to form a colourless solution - Presence of a soluble salt

* White ppt formed,soluble in excess - Presence of Zn2+

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| --- | --- |
| (d) White ppt formed insoluble in excess | Presence of Pb 2+ ,Al3+ |
| (e) Blue ppt formed,soluble in excess to form a deep blue solution | Presence of Cu2+ |
| (f)(i) PH 1 or 2 | Presence of a strong acid |
| (ii) Produces effervescence and a gas that burns with a pop sound | * Presence of an acidic solution
* Allow presence of H+
 |
| (iii) Produces effervescence and a colourless gas | * Presence of an acidic solution
* Allow presence of H+
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