**MWAKICAN JOINT EXAMINATION TEAM (MJET) TERM II 2017**

**233/3 CHEMISTRY PAPER 3 PRACTICAL MARKING SCHEME**

1. (a) (i) CT – 1mk, ½ mk penalty for inverted table wrong arithmetic incomplete table.

1d.p or 2d.p consistently used/ if 2d.p last digit should be zero or 5.

D.P – 1mk

Accuracy – 1mk

0.1 (1mk)

0.2 (1/2mk)

(Consistent values) PA- (1mk)

(ii) Average volume of solution R

(1/2mk)

(1/2 mk)

1. (i) Moles of solution R used.

(1/2mk)

(1/2mk)

(ii) Na2CO3(aq) + 2HCl(aq)  2NaCl(aq) + CO2(g) + H2O(l) (1mk)

(iii) Moles of Na2CO3 in 25cm3 of solution T

Mole ratio 1:2 (1/2 mk)

Moles of T = ½ x 0.0025 (1/2 mk)

= 0.00125 moles (1mk)

(iv) Moles of Na2CO3 in 100cm3 of solution T.

0.00125 moles 25cm3

? 100 cm3

(1mk)

(1mk)

(v) Moles of Na2CO3 in 50cm3 of the original solution P.

= 0.005 moles (same as in 100cm3 of T) (1mk)

1. (i) Mass of Na2CO3 (xg)

0.005moles 50cm3

? 250 cm3

(1/2 mk)

= 0.025 moles (1/2 mk)

Mass = moles x R.F.M

= 0.025 X 106 (1/2 mk)

= 2.65 g (1/2 mk)

(ii) Concentration of P in moles per litre.

2.65g 250cm3

? 1000 cm3

(1/2mk)

(1/2mk)

= (1/2mk)

(1/2mk)

1. a)

|  |  |
| --- | --- |
| **Observation** | **Inference** |
| * Colourless gas that turns moist red litmus paper to blue. (1/2mk) * Colourless droplets of liquid forms on the upper cooler parts of the test tube. (1/2mk) | NH4+ present (1/2mk)  M is a hydrated salt/contains water of crystallization. (1/2mk) |

b)

|  |  |
| --- | --- |
| **Observation** (1/2 mk) | **Inference** |
| * Solid dissolves to form a colourless solution. (1/2 mk) | Soluble salt present. (1/2 mk)  Cu2+, Fe2+, Fe3+ absent. (1/2 mk)/ Absence of coloured ions  **All must be mentioned.** |

c) i)

|  |  |
| --- | --- |
| **Observation** | **Inference** |
| * A white precipitate (1mk)   Soluble in excess (1mk) | Zn2+ present (1mk) |

ii)

|  |  |
| --- | --- |
| **Observation** | **Inference** |
| * A white precipitate (1mk)   Insoluble on warming. (1mk) | SO42- present or Cl- absent. (1mk) |

II a)

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| --- | --- |
| **Observation** | **Inference** |
| * Solid J dissolves forming a blue solution. (1mk) | Cu2+ present. (1mk) |

b)

|  |  |
| --- | --- |
| **Observation** | **Inference** |
| * A blue precipitate (1mk)   Which dissolves to form a deep blue solution(1mk) | Cu2+ present. (1mk) |

1. a)

|  |  |
| --- | --- |
| **Observation** | **Inference** |
| A burns with a yellow sooty flame. (1mk) | C =C- (1/2 mk) or  C =C- present (1/2 mk) |

b)

|  |  |
| --- | --- |
| **Observation** | **Inference** |
| Solid dissolves to form a colourless solution. (1mk) | Solid A is a polar compound. (1mk)  Award solid A is soluble. (1mk) |

c) i)

|  |  |
| --- | --- |
| **Observation** | **Inference** |
| * Blue litmus paper turns red. (1mk) * Red litmus remains red. (1mk) | H+ present. (1mk) |

ii)

|  |  |
| --- | --- |
| **Observation** | **Inference** |
| * Purple colour of acidified KMnO4 is decolourised. (1mk) * KMnO4 changes from purple to colourless. | C =C- (1/2 mk) or  C =C- present (1/2 mk) |

iii)

|  |  |
| --- | --- |
| **Observation** | **Inference** |
| * PH of 4,5or 6. (1mk) for any | Solution is weakly acidic. (1mk) |

iv)

|  |  |
| --- | --- |
| **Observation** | **Inference** |
| * Effervescence/Bubbles of a colourless gas present. (1mk) | H+ present. (1mk) |