**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

 $\frac{20.0 cm^{3}+20.0 cm^{3}+20.0 cm^{3}}{3 }=20.0$ (1/2mk)

 (1/2 mk)

1. (i) Moles of solution R used.

$\frac{20 x 0.125}{1000}=0.0025 moles $(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

 $\frac{0.00125 x 100}{25}=0.005 moles$ (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

 $\frac{0.005 x 250}{50}$ (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

 $\frac{2.65 x 1000}{250}=10.6g per litre$ (1/2mk)

 (1/2mk)

 = $\frac{10.6}{106}=0.1M $(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)

|  |  |
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| **Observation** | **Inference** |
| * A white precipitate (1mk)

Soluble in excess (1mk) | Zn2+ present (1mk) |

ii)

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| **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) orC =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) orC =C- present (1/2 mk) |

iii)

|  |  |
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| **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) |