**MARKING SCHEME**

**ARISE AND SHINE**

FORM FOUR TRIAL 1 EXAMINATION **–MARCH /APRIL 2023**

KENYA CERTIFICATE OF SECONDARY EDUCATION

**CHEMISTRY PRACTICAL – PAPER 233/3**

Q1. Table I/procedure I

 Complete table – (1mark)

5 values -1mk

3-4 values ½ mk

1-2 values 0 mk

Accuracy (1mk)

Compare the first value with teachers value I within range $\pm 2 units award 1 mark otherwise award 0 mark if outside the range$

Trend – (1mk)

Continuous decrease in time (1mk)

Graph (3mk)

Scale – ½ mk

Occupy at least 8 squares on both axes

Labelling axes – ½ mk

Both axes labelled correctly showing correct variables- ½ mk

(Units may or may not be given. But if given must be correct. Otherwise penalize fully for wrong units

Plotting 1 mk

4-5 correctly plotted points -1mk

2-3 correctly plotted points – ½ mk

Shape/curve-1mk

Smooth curve – 1mk

(ii) Correct showing on graph√1  1mk. Correct reading from graph – (1 mark)

(iii). Rate of reaction increase with increase in temperature√ 1mk

Procedure II

Table

Complete Table (C.T- 1 mark

C.T with 3 titrations 1 mark

C.T with 2 titrations 1 mark

C.T with 1 0 mark

Penalties

Inverted table penalize ½ mk

Wrong arithmetic ½ mk

Unrealistic values below 1cm3 and above 50cm3 penalize ½ mk

NB/ penalize to a maximum of ½ mk

Decimal place (D.P) (1mk)

Values to 1 d.p or 2 d.p of $2$5, 50, 75 i.e

2nd d.p should be 0 or 5

Accuracy (A) – 1mk

If any value is within the range $\pm $0.1 of school value award 1 mk

If any value is within the range of $\pm $0.2 of school value award ½ mk

Principle of averaging (P.A) – 1mk

Average value that are $\pm $0.2 of each other (1mk)

Final answer/accuracy (F.A) – 1mk

Compare the averaged value with school value.

If within range of $\pm $01 1mk, if range of $\pm $0.2 ½ mk

(ii). RFM of (NH4)2SO4. FeSO4. 6H2O = 392

.$∴concentration= \frac{19.6}{392}√$1

 = 0.05moles$√$1 (2mks)

(iii). Moles of C used =

.$\frac{0.05 x 25}{1000} √$1/2  = 0.00125 moles$√$1/2

(iv). Moles of A used = 1/5 x 0.00125$√$1/2

= 0.00025 moles $√$1/2

(v) Average tire $\rightarrow $0.00025 moles

 1000cm3$ \rightarrow $

.$\frac{0.00025 x 1000√1 }{Average tutre }$= correct answer $√$1

2.(i).

|  |  |
| --- | --- |
| Observation | Inference |
| * Colourless liquid condense on cooler part of test tube
* Yellow solid formed
* Blue litmus changes to red

 (Any 2 ( ½ x 2) (1mk | * Hydrated/contains water of crystallisation. Tied to colour liquid condenser
* Acidic gas

 (Any one for 1 mark) |

(iii).

|  |  |
| --- | --- |
| Observation | Inference |
| Dissolves$√$1/2  forming colourless $√$1/2 solution$√$1/2  | * Soluble salt/substance $√$1

½ for Absence of coloured ions  |

(a).

|  |  |
| --- | --- |
| Observation | Inference |
| White ppt$√$1/2  soluble in excess$√$1/2  | Zn2+,Pb2+, Al3+ present$√$1(3 ions 1 mk)(2 ions ½ mark1 ion 0mkCorrectly inferred* Penalize ½ mark each for any contradictory ion to a maximum of 1 mark

  |

(b).

|  |  |
| --- | --- |
| Observation | Inference |
| No white precipitate  | Zn2+, Al3+ present$√$1* Pb2+ absent for ½ mk

  |

(c)

|  |  |
| --- | --- |
| Observation | Inference |
| White precipitate $√$1/2  soluble in excess $√$1/2  (1mk) | Zn2**+** $√$1Present (1mk)  |

(d).

|  |  |
| --- | --- |
| Observation | Inference |
| White precipitate formed$√$1 (1mk) | SO42- present$√$1 (1mk)  |

3.(a)

(i)

|  |  |
| --- | --- |
| Observation | Inference |
| Solid dissolve$√$1/2  to form colourless solution$√$1/2 | Polar substance $√$1  |

(ii).

|  |  |
| --- | --- |
| Observation | Inference |
| Decolourize potassium manganite(VII) / potassium manganite(VIII) change from purple to colourless  | C = C/-C $≡$C present any for 1 mk  |

(iii).

|  |  |
| --- | --- |
| Observation | Inference |
| Effervescence/bubbles/fizzing (1mk) | R-COOH/H+/H3O+ present (1mk)  |

(b).

|  |  |
| --- | --- |
| Observation | Inference |
| Burns with yellow/smoky/sooty/luminous flame(1mk) | C = C / -C $≡$ C- present (1mk)Any 1mk  |