**SET 5**

**233/3**

**CHEMISTRY**

**PAPER 3**

**PRACTICAL**

**MARKING SCHEME**

**Question 1**

1. Complete table 1mk

Incomplete table with 3 titres 2mks

Incomplete table with 2 titres 1mk

Incomplete table with 1 titre ½ mk

Blank table 0mks

Penalties

Penalize ½ mk maximum for any of the following conditions;

1. Arithmetic error
2. Inverted table
3. Unrealistic values e.g. values less than 1cm3 or greater than 50cm3 unless where explained.
4. Decimal 1mk

Award 1mk for either 1d.p or 2d.p used consistently

Allow inconsistency in use of zeros e.g. 0, 0.0, 00, 0.00 provided there is no other number infront of zero.

1. Accuracy 1mk

Award 1mk for any titre ± 0.1 s.v

Award ½ mk for any titre ± 0.2 s.v

Award 0mk if no titre is within ±0.2 s.v

School value (s.v.) – is the value obtained by the teacher on performing the experiment.

1. Principles of averaging 1mk

$$\frac{t1+t2+t3}{3}=corr.ans$$

* Values averaged must be consistent i.e. within ±0.2 of each other.
* If 3 titres and only 2 titres are consistent values
* If 2 titres are done and are consistent then two consistent values are averaged.
* If 3 consistent titres and only 2 titres are averaged …… award 0mk
1. Final answer 1mk

Award 1mk if final answer is ± 0.1 s.v.

Award ½ mk if final answer ± 0.2 s.v.

Marked as C.T. 2mks

 D 1mk

 A 1mk

 PA 1mk

 FA 1mk Total 6mks

**Question one**

|  |  |  |  |
| --- | --- | --- | --- |
|  | 1 | 2 | 3 |
| Final burette reading (cm3) | 25.0 | 25.0 | 25.0 |
| Initial burette reading (cm3) | 0.0 | 0.0 | 0.0 |
| Volume of solution B used (cm3) | 25.0 | 25.0 | 25.0 |

Complete Table 2mks

Decimal 1mk

Accuracy 1mk

Principles 1mk

Averaging 1mk

Final ans. 1mk total 6mk

NB: use S.V

1. Average

$\frac{t1+t2+t3 }{3} cm^{3}$ = ans. ½ mk

1. 0.1m → 1000cm3

? ← 25cm3

$$\frac{0.1 x 25}{1000}=0.0025moles $$

1. RFM of KOH = 56

1mole → 56

 ? ← 11.2

= $\frac{1 x 11.2}{56}=0.2 M$

1. 0.2 → 1000cm3

? ← 25cm3

$$\left(\frac{0.2 x 25}{1000}\right)= 0.005moles $$

1. ${xKOH \_{\left(aq\right) }+ H\_{x}R\_{\left(aq\right) }\rightarrow K\_{x}R\_{\left(aq\right) }+ H\_{2}O\_{(l)}}/{1mk}$

From equation above,

Mole ratio KOH : HR

 X : 1

 0.005 : 0.0025 1mk

 Therefore;

 $x=\frac{0.005}{0.0025}=2$

Thus acid is H2R

Bacisity of the acid is 2

**Question 2**

|  |  |
| --- | --- |
| Observations  | Inferences  |
| 1.
2. Slighty / sparingly soluble 1mk
 | Mixture contain soluble and insoluble salt 1mk |
| 1. White ppt ½ mk soluble in excess ½ mk
 |  Al3+ , Pb2+, Zn2+ present *All 3 1mk**2 Corr. ½ mk**1 Corr. 0mk* |
| 1. White ppt  ½ mk soluble in excess  ½ mk
 | Zn2+  present  |
| 1. White ppt 1 mk
 | SO42- present 1mk |
| 1.
2. Bubbles / effervescence ½ mk occurs as colourless / odourless gas produced. ½ mk
 | CO32- ½ mk, HCO3 ½ mk Gas CO2 |
| 1. White ppt ½ mk soluble in excess ½ mk
 | Al3+, Pb2+, Zn2+ Present 1 mk |
| 1. White ppt ½ mk insoluble in excess ½ mk
 | AL3+, Pb2+, Present 1 mk |
| 1. White ppt 1mk
 |  Pb2+, Present 1 mk |

**Question 3**

|  |  |
| --- | --- |
| Observations  | Inferences  |
| 1. Yellow non – sooty flame / no soot / no smoke
 | Absence of \C = C / / \Or  ─ C $≡$ C ─OR Presence of saturated organic compound. 1mk |
| 1. No decolourization / purple colour of acidified potassium manganate (vii) remains 1mk
 | Absence of \C = C / / \Or  ─ C $≡$ C ─OR Presence of saturated organic compound. 1mk |
| 1. Orange colour of K2Cr2O7 remains 1mk
 | Absence of \C = C / / \Or  ─ C $≡$ C ─OR Presence of saturated organic compound. 1mk |