**KENYA HIGH**

***Kenya Certificate of Secondary Education***

**233/3**

**CHEMISTRY**

**PAPER 3**

**PRACTICAL**

**MARKING SCHEME**

**Question one**

**(a)**

1. Complete table √1mk

Complete table with 3 titres √1mk

Incomplete table with 2 titres √½ mk

Incomplete table with 1 titre −0 mk

*Conditions*

* *Penalize ½ mk for unrealistic values unless where explained*
* *Penalize ½ mk for any inversion of table*
* *Penalize ½ mk for any arithmetic error*

*NB: penalize a maximum of ½ mk for any of the conditions above.*

1. Decimal √*1mk*

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

*If 2d.p used, 2ndd.p. can only be “0” or “5”*

1. Accuracy √*1mk*

*Award 1mk for any value +* 0.1 of s.v.

*Award ½ mk for any value +* 0.2 of s.v.

*Award 0mk (penalize fully) for any value beyond + 0.2 of s.v.*

1. Principles of averaging √*1mk*

*Values averaged must be consistent*

*If 3 titres but only 2 are consistent and averaged award 1mk*

*If 3 titres done and averaged award 1mk*

*If 3 titres done and inconsistent and averaged award 0mk*

*If 3 titres done and all are consistent but only 2 are averaged award 0mk*

1. Final answer √*1mk*

*Award 1mk for ans. + 0.1 of s.v.*

*Award ½mk for ans. + 0.2 of s.v.*

*Award 0mk ifansnot within + 0.2 of s.v.*

*Marks awarder as follows: CT 1mk*

*D 1mk*

*A 1mk*

*PA 1mk*

*FA 1mk*

*5mks*

(b)Average titre = t1  + t2 + t3 = (*√½ mk)Correct Ans ½ mk*



(c) Moles of NAOH = M x V

1000

= 0.1 x 25√*1mk* = 0.0025moles √*1mk*

1000

(d) 2 NaOH (aq) + H2C2O4 (aq)  Na2C2O4 (aq) + 2H2O (l)

Moles ratio = 2 :1 

Therefore moles of organic acid = ½ x 0.0025 moles √*1mk*

= 0.00125 moles √*1mk*

1. Ans (b) cm3 has 0.00125moles 

1000cm3 ?

= 0.00125 x 1000 √*1mk*

Ans (b)

= Correct answer √*1mk*

(f) Ans (e) moles / L has 6.3g/l 

1mole ? √*1mk*

= 6.3 x 1 √*1mk*

Ans (e)

*=* Correct answer √*1mk*

(g) Value of n

Ans (f) = H2C2O4. nH2O

Ans (f) = 2 + 24 + 64 + 18n √*1mk*

N = ans f – 90 √*1mk*

18

= correct ans √*1mk*

**Question two**

|  |  |  |
| --- | --- | --- |
|  | **Observation** | **Inferences** |
|  | Yellow flame √*1mk* | Na+ ions √*1mk* |
|  | * Colourless, odourless gas produced * Gas turns moist blue litmus paper red * Red litmus paper remains red * Droplets of colourless liquid on cooler parts of test tube *Any 2 x ½ = √1mk* | Gas acidic  CO 32- , HCO3- ions  Hydrated salt / water of crystallization  *Any 2 correct x ½ = √1mk* |
|  | * Effervescence / bubbles * Colourless , odourless gas produced * Gas turns moist blue litmus paper red * Red litmus paper remains red   *Any 4 x ½ = √2mks* | CO 32- , HCO3- ions  Gas acidic  *Any 2 x 1 = √2mks* |
|  | **Observation** | **Inferences** |
| 3. (a) | Pale green ppt√½ mk  insoluble in excess √½ mk | Fe2+√*1mk* |
| (b) (i) | Pale green ppt√*½ mk*  Insoluble in excess √*½ mk* | Fe2+√*1mk* |
| (ii) | * Gas with pungent . chocking smell 1mk * Moist red litmus paper turns to blue 1mk * Blue litmus paper remains blue *any 2 x 1 = √2mks* | Gas basic √*½ mk*  NH4+ ions present√*½ mk* |
| C.(i) | White ppt | CO 32-, Cl-ions , SO32- |
| (ii) | White ppt√*½ mk*  Insoluble / persists √*½ mk* | Cl- ions √*1mk*  Confirmed |
| D. | White ppt√*½ mk*  Insoluble √*½ mk* | SO42- ions √*1mk* |
| E. | Pale green solution turns to yellow solution √*1mk*  Brown ppt insoluble in excess √*1mk* | Fe2+ oxidized to Fe3+ ions  *√½ mk*  Fe3+ ions confirmed √*½ mk* |