ASUMBI GIRLS HIGH SCHOOL

 PRE-MOCK

MAY-JUNE

2022

Kenya Certificate of Secondary Education

**CHEMISTRY**

Paper - **233**/**3**

**Marking Scheme**

**1.** PROCEDURE 1

Table 1 . . . . . .(5 marks) Complete table . . . . . 1 mark

Complete table with 3 titration done - 1 mk Incomplete table with 2 titrations done - ½mk Incomplete table with 1 titration done - 0 mk

Penalties - Penalise ½ mk ONCE for i) Wrong arithmetic / subtraction

ii) Inverted table.

iii) Burette readings beyond 50cm³ unless explained.

iv) Unrealistic titre values e.g. below 1.00cm³ or in hundreds.

Use of Decimal . . . .1 mark Conditions.

Accept either 1 or 2 d.p used consistently otherwise penalise fully.

- If two d.ps used, the second decimal must be either a zero of five.

Otherwise penalise fully.

Accept inconsistency in the use of zero's used an initial burette readings i.e. 0; 0.0; 0.0.

Accuracy

Compare the candidates correct titre value to school value and tick () the chosen value. If it earns a mark.

Principles of averaging 1mark

Conditions.

i) If three consistent titrations done and averaged . . . 1 mark

ii) If three titrations done but only two are consistent and averaged . . .1 mark

iii) If two titrations done, consistent and averaged . . . 1 mark

iv) If three titrations are done, inconsistent but averaged = 0 mark

**Penalties**

1. Penalise ½ mk if no working is shown but answer given is correct.

Penalise fully if no working is shown and the answer is wrong.

1. Accept rounding off or trancating of the answer to 2d.p e.g. 25.666 ~ 25.66 or 25.67 otherwis4e penalise ½ mk for rounding off to 1 d.p

Accept the answer if it works out exactly to a whole no. or to 1.d.p and credit fully.

**1**

Final accuracy . . . 1 mark

Tied to correct averaged titre.

Compare the candidates correct averaged titre to the school value.

If within ± 0.10 cm³ of S.V. . . . 1 mark

iv) Molarity of solution C Moles of solution C used

 *Ansbii* ***½***

2

If not within ± 0.10 cm³ of S.V but withint ±

0.20cm³ of S.V award . . . .½ mark

If beyond (outside) ± 0.20cm³ of S.V .0 mk

Ans b(i) contains   *Ansb ii*

2

1000cm³ of solution C contains

 1000  *Ans b* ***½***

*ii* ***½***

  *Covered ans*

*Ans b ii* 2

1000

*Average*

 *Correct*

*titre*  2

*Ans* ***½***

Table 1

Alternative

Using formula method

 *M aV a*

*M V*

  *na*

*n*

*b b b*

 0.005

F.A 1

|  |  |
| --- | --- |
| C.T | 1 |
| D | 1 |
| Acc | 1 |
| Av | 1 |

*Ma* *Ansbi*  2

5 0.2  25

0.005

Calculations:

*M a* 

0.2  25  0.0025***1***

*Ansb*(*i*)  0.005

a)

iv) Moles of solution D used

252***½***

 2.5

*Ansb*(*i*)

 *Correct Ans* ***1***

Moles of B used



1000

 0.05*moles*

250cm³ of soln D contains 0.05 moles

1000cm³ of soln D contains

Conditions

i) Ans b(ii) must be transferred intact otherwise

 1000

250

***½***

 0.05  0.2*m*

penalise ½mk for wrong transfer.

ii) Penalise fully for any strange figure used.

Hence moles of solution D used

25 0 . 2 ***½***

iii) Answer must be worked out to 3.dp. otherwise penalise ½ mk for rounding off to



1000

 0 . 005

*moles* ***½***

less that 3d.p.

vi) RFM of acid C

Ans b (iii) contains 12.25g of C

 1 mole of solution C contain

 1 12.25

*Ansb*(*iii*)

 12.25 ***½***

*Ansb*(*iii*)

 *Correct Ans* ***½***

Conditions.

i) Ans must not have any unit otherwise penalise ½ mk for **g** or any other unit.

ii) Accept R.FM as :

88  RFM  108

**Procedure II**

TABLE

a) Complete table . . . . 1 mark

Complete table with seven (7) readings and realistic values

Trend . . . 1 mark

Conditions.

i) Award 1 mark for a continuous rise followed by a constant then a drop

Graph . . . . 3 marks

Award a total of 3 marks distributed as follows.

i) Labelling of axes . . . . ½ mark

If both axes are correctly labelled.

Penalties.

Penalise fully for inverted axes.

Penalise fully for wrong units used. Otherwise ignore if units are omitted.

Penalise fully (award 0) if only one axes is correctly labelled.

Scale . . . . ½ mark

Conditions.

i) Area covered by plots should be at least ½

the grid provided i.e .7 big squares verti

and 8 big square horizontally.

ii) Scale interval must be consistent on each

Use of decimal . . . (1 mark)

i) If one decimal place is used, it can either be 0 or 5.

ii) If 2 d.p are used then they must be 0.00, 0.25,

0.50 or 0.75

iii) Decimal points must be used consistently as either whole numbers or 1d.p

Accuracy . . . .1 mark

Compare the candidates constant temperature readings with school value (S.V) S.V is the teachers reading at 0. If within ± 2.0°C of S.V award 1 mark.

axis.

iii) Scale chosen must be able to accommodate all the readings whether plotted or not.

Plotting . . . 1 mark

If 7 or 6 points are correctly plotted . . 1mk

If 4 or 5 points correctly plotted . . .½ mk

If less than 4 points correctly plotted . . . 0mk

NB

Accept correct plots even if the axes are inverted and award accordingly.

ii) If scale intervals are inconsistent credit correct plots. If any, within the 1st scale interval and treat all other plots as wrong.

iii) Mark all the plots on the graph with either a tick () or a cross (×)

Shapes . . . . (1 mark)

|  |
| --- |
| **2.a)** White crystalline solid / white crystals. ***1*** |
| ii) | Colourless gas turn blue litmus red and red litmus paper remain redDissolve to form ***½***green solution ***½***Green precipitate insoluble in excess Brown precipitate formedWhite precipitate formedWhite precipitate formed | Acidic gas present Fe2+, Cu2+Fe2+ presentFe2+ oxidized to Fe3+SO 4,***½*** Cl-,***½***2- ***Penalise ½mk for any contradictory ion*****SO42- Present*****Reject any contradictory ion*** |
|  |

Award 1 mark for plots on an extrapolated graph.

d) i) Accept reading shown on the graph correctly

 d(ii) same as d(i)

e) Moles of acid C used

H = mCT

  *Ansd* (*i* )  *Ansa* (*v* )

1000

= Ans d(i) × 4.2 × Ans d(ii)

  *Ansd* (*i* )  *Ans* (*v* )

1000

gives Ans d(i) × 4.2 × Ans d(ii)

1 mole of acid C gives

 1  *Ansd* (*i* )  4.2  *Ansd* (*ii* )

*Ansd* (*i* )  *Ans* (*v* )  10  3

 4.2 *Ansd* (*ii* )

*Ansa* (*v* )  10  3

 *CorrectAns J* / *mole*

**3.a)**

a) Dissolves in water to form a colourless solution/miscible liquids

b) No bubbles / no effervescence. No fizzing

c) Orange colour of H+ / K2 Cr2 O7 turn green

Polar organic compound / Polar compound

R-COOH absent

R-OH Present

GEM - MARKING SCHEME - 2016 **6**

(RK) FORM 4 - CHEMISTRY - 3