**NYANDARUA WEST CLUSTER EXAM**

**JULY 2018**

**CHEMISTRY**

**MARKING SCHEME**

**Table 1**

Complete table 3 marks

 Consistent use of decimal 1 mark

Accuracy 1 mark

 Trend 1 mark

 **Total 6 marks**

Complete table Penalise ½ mk to a maximum of 2 marks for

(i)Any arithmetic error

(ii) Giving  as a fraction e.g. 

Consistent use of decimals

1. Penalise (1mk) i.e. Award zero for inconsistent use of decimals in the Time column.

**Note:** Accept time given as whole numbers or to 1 decimal place otherwise award zero.

Accurancy

First value in Time Column within + 2 seconds of school value award 1 mark otherwise award zero.

Trend

Increasing time otherwise award Zero.

**Sample result**

|  |  |  |
| --- | --- | --- |
|  | **Time in sec** |  **sec -1** |
|  | 20 | 0.05 |
|  | 32 | 0.0313 √½ |
|  | 40 | 0.025 √½ |
|  | 48 | 0.02 √½ |
|  | 60 | 0.0167 √½ |

(ii) Graph

 Labelling two axes √½

 Scale √½



 Plotting 1 mark

 Curve 1 mark

 **Total 3 marks**

 Volume of acid

**Labelling**

Two axes must be labelled otherwise award Zero.

**Scale**

Plotted points must occupy more than √½ the grid.

**Curve** Must be smooth

(iii) Showing on the graph (1 mark)

 7.5

 = 0.022

t = 

 = 45.5 sec

 45 + 2 seconds

(iv)  √ 1 mark

= 1.2 M √½

(v) Rate of reaction increases with increase in concentration of the acid.

**Table 2**

 Complete table 1 mark

 Decimal place 1 mark

 First accuracy 1 mark

 Principles of averaging 1 mark

 Final accuracy 1 mark

 **Total 5 marks**

**Sample results**

1

|  |  |  |  |
| --- | --- | --- | --- |
| Titration | 1 | 2 | 31 |
| Final burette reading | 12.5 | 25.0 | 37.51 |
| Initial burette reading | 0.0 | 12.5 | 25.01 |
| Volume of solution Q | 12.5 | 12.5 | 12.5 |

**5mks**

½

12.5 + 12.5 + 12.5 = 12.5 √½

 3

(b) (i) 0.4 moles 1000cm3

 ? 12.5cm

 = 0.4 x 12.5 √½ \_\_\_

1000 01

 = 0.005 moles √½

 (ii) NaOH(aq) + HCl (aq) NaCl(aq) + H2O(l)

 Mole ratio NaOH: HCl

 = 1:1 √½ \_\_\_\_

 01

.. 0.005 moles √½ 25cm3 of NaOH

.

(iii) 0.005 moles 25cm3

 1000 cm3

 =0.005 x1000 √½

 25 \_\_\_

 = 0.2 M √½ 01

(iv) 0.2 moles 1000cm3

 ? 250 cm3

No of moles in 250cm3 of Q = 0.2 x 250

 1000

 = 0.05 moles √½

0.05moles 25cm3 of T

 ? 1000

 Molarity of T

 = 0.05 x 1000 \_\_\_\_\_

 25 √½ 01

 = 2M

2. Observations Inferences

(a)Colourless liquid Hydrated salt √½

 Formed on the cooler part of

 test tube √

Moist blue litmus paper turn red Acidic gas√½

Moist red litmus paper remains red √

 ½

(b) White precipitate soluble√½ Al 3+, Pb2+, Zn 2+

(i) In excess Present √ All 3 02

 ½

(ii) White precipitate Zn2+ present 02

√½

 Soluble in excess

(iii) White ppt √ $ CO\_{3}^{2-}$ , $SO\_{4}^{2-}$ , $SO\_{3}^{2-}$

 Cl - Present √ 02

 All 4 mentioned

 ½

(iv) White ppt insoluble

½

 In hydrochloric acid $SO\_{4}^{2-}$ Present √ 02

3(a) Acidified ROH absent √½ ½

 Potassium Manganate VII \_\_

 not decolourised. √ C = C - C C- absent 02

 O √ \_\_\_\_

(b) efferversence - C present 02

 occurs √ OH

(c ) pH 5 √ solution √ \_\_\_\_

 weakly acid 02