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 $\frac{1}{time}$ as a fraction e.g. $\frac{1}{20}$

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.

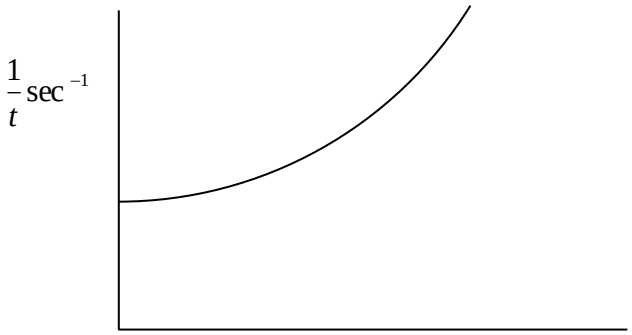
Accurancy
First value in Time Column within ± 2 seconds of school value award 1 mark otherwise award zero.

Trend
Increasing time otherwise award Zero.

Sample result

	Time in sec	$\frac{1}{t}$ **sec -1**
	20	0.05
	32	0.0313 √½
	40	0.025 √½
	48	0.02 √½
	60	0.0167 √½

(ii) Graph



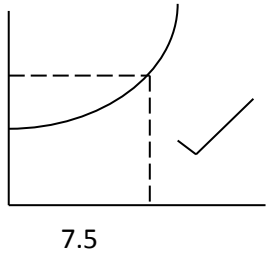
Labelling two axes	√½
Scale	√½
Plotting	1 mark
Curve	1 mark
Total	**3 marks**

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)



$\frac{1}{t}$ = 0.022

$t = \frac{1}{0.022}$

= 45.5 sec

45 ± 2 seconds

(iv) $\frac{2 \times 6}{10}$ √ 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

Titration	1	2	3	1
Final burette reading	12.5	25.0	37.5	1
Initial burette reading	0.0	12.5	25.0	1
Volume of solution Q	12.5	12.5	12.5	1

5mks

½

$\frac{12.5 + 12.5 + 12.5}{3}$ = 12.5 √½

(b) (i) 0.4 moles ⟶ 1000cm^3

? ⟶ 12.5cm

= $\frac{0.4 \times 12.5}{1000}$ √½ 01

= 0.005 moles √½

(ii) $NaOH_{(aq)} + HCl_{(aq)} \longrightarrow NaCl_{(aq)} + H_2O_{(l)}$

Mole ratio NaOH: HCl

= 1:1 √½ 01

.. 0.005 moles √½ 25cm^3 of NaOH

.

(iii) 0.005 moles $\longrightarrow$ 25cm^3

$\longrightarrow$ 1000 cm^3

$$= \frac{0.005 \times 1000}{25} \quad \surd\frac{1}{2}$$

= 0.2 M $\surd\frac{1}{2}$ 01

(iv) 0.2 moles $\longrightarrow$ 1000cm^3

? $\longrightarrow$ 250 cm^3

No of moles in 250cm^3 of Q $= \frac{0.2 \times 250}{1000}$

= 0.05 moles $\surd\frac{1}{2}$

0.05moles $\longrightarrow$ 25cm^3 of T

? $\longrightarrow$ 1000

Molarity of T

$$= \frac{0.05 \times 1000}{25} \quad \surd\frac{1}{2}$$ 01

09

= 2M

2. Observations	Inferences
(a)Colourless liquid Formed on the cooler part of test tube √	Hydrated salt √½
Moist blue litmus paper turn red Moist red litmus paper remains red √	Acidic gas√½

(b) White precipitate soluble√½ ½

(i) In excess

Al^{3+}, Pb^{2+}, Zn^{2+}

Present √ All 3 02

(ii) White precipitate ½

Soluble in excess √½

Zn^{2+} present √ 02

(iii) White ppt √

CO_3^{2-} , SO_4^{2-} , SO_3^{2-}

Cl^- Present √ 02

All 4 mentioned

(iv) White ppt insoluble ½

In hydrochloric acid ½

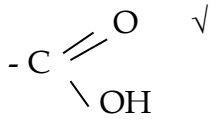
SO_4^{2-} Present √ 02

3(a) Acidified
Potassium Manganate VII
not decolourised. √

ROH absent √½ ½

C = C - C ≡ C- absent 02

(b) efferversence occurs √



√ present

02

(c) pH 5 √

solution √
weakly acid

02

06