THE PRESIDENT'S OFFICE

REGIONAL ADMINISTRATION AND LOCAL GORVERNMENT

SHINYANGA REGION

FORM FOUR REGIONAL MOCK EXAMINATION, MAY 2024

032/2B

CHEMISTRY 2B MARKING SCHEME

1.

Burette reading

Experiments	Pilot	1	2	3
Final burette reading (cm ³)	25.10	25.00	25.00	25.00
Initial burette reading (cm ³)	0.00	0.00	0.00	0.00
Volume used (cm ³)	25.10	25.00	25.00	25.00

(04marks)

Pipette used was 25cm³ (01 mark)

Note: if 20.00cm³ pipette was used the volume of acid will be 12.00cm³

(i) Average volume =
$$V_1 + V_2 + V_3$$
(00 marks)

= 25.00cm³ + 25.00cm³ + 25.00cm³(00 marks)

= 3

(00 marks)

= 25.00cm³

= 25.00cm³

Therefore, the mean titre volume is $= 25.00 \text{cm}^3$

$$(00^{\frac{1}{marks}})$$

2

- (ii) 25.00cm³ of solution J required 25.00cm³ of solution B for complete reaction (01 marks)
 - (iii) The colour change from Yellow to Pink (01 marks)
 - (iv) $H_2SO_{4(aq)} + 2NaOH_{(aq)} \rightarrow Na_2SO_{4(aq)} + 2H_2O_{(l)}$ (02 mark)
 - (v) Concentration of pure NaOH

From

$$100\% \rightarrow 15 \text{g/dm}^3$$

$$66.67\% \rightarrow ?$$

$$= 66.67 \times 15 \text{g/dm}^3$$

Since; Mol

a r t y C o n \mathbf{c} e n t r a o n **g** / d m 3 0 M r \mathbf{k} S M o 1 a r \mathbf{M} a S S **g** /

m

```
0
              1
                                                                            d
                                                                            m
                 1
                                                                            4
                0
                                                                            0
                                                                   = 0.25 \text{ Mol/dm}^3 \text{ of NaOH}
                 g
        Concentration of H<sub>2</sub>SO<sub>4</sub> in
(vi)
        g/dm³ Given:
      Data , Mb = 0.25 \text{mol/dm}^3 (Molarity of base)
                Va = 25.00 \text{cm}^3 (volume of acid)
                  Ma = ? (molarity of base)
                  Vb = 25cm^3 (volume of
                  base) na = 1 (number of
                  acid)
                  nb = 2 (number of base)
from the formula
                                                   nb
                                                                     (01 marks)
           Mb
                            mavanb
                       vbna
        = 0.25 \times 25 \times 1
               25 x2
                  = 0.125 \text{M of H}_2 \text{SO}_4
 therefore, the Molarity of solution B(base) = 0.125 \text{mol/dm}^3
                                                                           (03 marks)
                 From
                 Molarity = concentration
                              Molar mass
                  Molarity x molar mass = concentration
                  Concentration = 0.125 \text{mol/dm}^3 \times 98 \text{g/mol}
                                   = 12.25 g/dm^3
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The concentration of pure NaOH = $12.25g/dm^3$ (02 marks

2. solution

a) The room temperature is 25°C (depends on the environment). (01mark)

Temperature (°C)	Time "t" (sec)	Rate of reaction 1/t (sec ⁻¹)
30	30	0.03
40	14	0.07
50	12	0.08
60	8	0.13
70	6	0.17

(2 marks) (2 marks)

c) The balanced ionic equation for the reaction between **AA** and **BB** is:

The net ionic equation is
$$2H^{+}$$
 (aq) + S O $^{2-}$ (aq) S (s) + H O (l) + SO (g) 2 3 2 2 (01mark)

d) The fine particles of **Sulphur deposits** formed during the reaction are the ones that make the

reaction mixture to turn cloud and obscure the cross (x). (02marks)

- e) The substance that causes cloudiness in the reaction above is Sulphur and its uses are:
 - a. Most of the Sulphur produced in the world is used to make sulphuric acid.
 - b. It is used as a component in gun powder.
 - c. It is used to manufacture various organic compounds like plastics and Sulphur medicines.
 - d. It is used to dust vines to prevent the growth of fungus.
 - e. It is used in the vulcanization of natural rubber.
 - f. It is used to manufacture Sulphur dioxide gas.

Any three uses @ 02marks = 06marks

(b) THE GRAPH OF TEMPERATURE AGAINST RATE. (01mark)

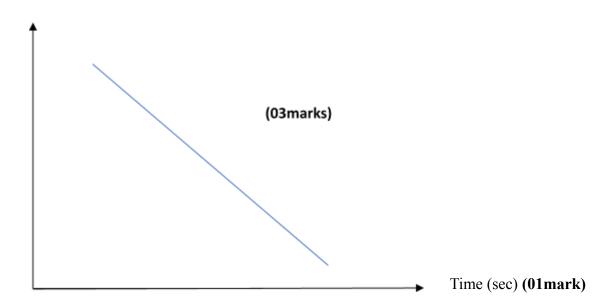
Scale

Vertical Scale: 1cm to represent 5°C. (0.5mark)

Horizontal Scale: 1cm to represent 3sec

(0.5mark)

Temperature (°C) (01mark)



(c) The graph shows that as the temperature increases, the Time of a chemical reaction decreases. Thus Temperature is inversely directly proportional to the Time of chemical reaction. (02marks)