

THE PRESIDENT'S OFFICE
REGIONAL ADMINISTRATION AND LOCAL GOVERNMENT
SHINYANGA REGION
FORM FOUR REGIONAL MOCK EXAMINATION, MAY 2024

032/2A

ACTUAL PRACTICAL
CHEMISTRY 2A

(For Both School and Private Candidates)

TIME: 3 Hours

Year: 2024

INSTRUCTIONS

1. This paper consists of two questions answer all questions
2. Each question carries twenty-five (25) marks
3. Non – programmable calculators may be used
4. Write your examination Number on every page of your answer booklets(sheets)
5. The following constant may be used;

Atomic masses; H = 1, C = 12, Na = 23, Cl = 35.5, K = 39, S = 32, O = 16

G.M.V = 22.4dm^3 or 22400cm^3

1 litre = $1\text{dm}^3 = 1000\text{cm}^3$

1. You are provided with the following solutions.

J: A solution containing made by diluting 50 cm^3 of 1.5M oxalic acid, $(\text{COOH})_2$ to make 5dm^3 of the solution

B: A solution containing 0.45 g of impure Sodium hydroxide (NaOH) in 0.5 dm^3 of the solution phenolphthalein indicator and methyl orange indicator.

Procedures

- (i) Pour solution J in the burette
- (ii) Pipette 20 cm^3 or 25 cm^3 of solution B and put in the titrating flask then add two drops of suitable indicator
- (iii) Titration solution J in the burette against solution B in the flask until the observed.
- (iv) Record the volume of solution J require to neutralize solution B.
- (v) Repeat procedure (1) to (iv) to obtain three more volume of solution.
- (vi) Use a suitable form to tabulate your result

- (a) Find the mean titre of J.
- (b) (i)cm³ of solution J required cm³ of solution B for complete neutralization
- (ii) the colour change at the end point was.....
- (c) Which indicator did you choose? Why?
- (d) how many moles of solution J were required for complete reaction?
- (e) Calculate the percentage purity of sodium hydroxide
- (f) How the reaction between J and B can be applied in daily life? (Give two points)

2. You are provided with the following:

R: 0.25M Sodium thiosulphate solution.

S: 0.5M Nitric acid solution

Stopwatch, Thermometer and a piece of white plain paper with a cross (x) Procedure:

- (i) Place a 100cm³ beaker on top of a cross on the piece of white plain paper provided, such that the cross is visible through the solution when viewed from above.
- (ii) Measure 10cm³ of R and 10cm³ of S and pour into separate boiling test tubes.
- (iii) Put the two boiling test tube into the water bath and warm the contents to 40°C
- (iv) Immediately pour the hot solution R and S into the 100cm³ beaker in (i) above and immediately start the stopwatch. Record the time taken in seconds for the cross to disappear completely.
- (v) Repeat procedure (ii) to (iv) at different temperature 50°C, 60°C and 70°C. Record your results in the following table.

Temperature(°C)	Time (sec)	1/time (sec ⁻¹)
40		
50		
60		
70		

Questions:

- (a) (i) Record the room temperature.
- (ii) Complete the table above by filling the blank columns.
- (b) Write a balanced ionic equation for the reaction between R and S
- (c) What causes the solution to Cloud and observe the cross (x)?
- (d) State any three uses of the substance that causes cloudiness in (c) above.
- (e) Plot a graph of Temperature against Rate.
- (f) What conclusion can you draw from the graph plotted in (e) above?