THE UNITED REPUBLIC OF TANZANIA
NATIONAL EXAMINATIONS COUNCIL OF TANZANIA
ADVANCED CERTIFICATE OF SECONDARY EDUCATION EXAMINATION 2024

132/3A

CHEMISTRY 3A
ACTUAL PRACTICAL A

3 HOURS PRACTICAL ADVANCE INSTRUCTIONS

1.0 IMPORTANT

1.1 GREAT CARE MUST BE TAKEN **NOT** TO DIVULGE THESE INSTRUCTIONS TO BOTH CANDIDATES AND UNAUTHORIZED PERSONS EITHER DIRECTLY OR INDIRECTLY.

1.2 MAKE SURE THAT THE CANDIDATES ARE PROVIDED WITH CHEMICALS AND APPARATUSES AS INDICATED IN THESE 3 HOURS PRACTICAL ADVANCE INSTRUCTIONS ONLY AND **NOT** OTHERWISE.

2.0 PREPARATION AND LABELLING OF CHEMICALS AND APPARATUSES

2.1 Question 1

- Prepare 0.2 M HCl, label it **M2** and allow 100 cm^3 per candidate. Follow the following procedure to prepare the solution:

  Choose from the following table the appropriate volume of stock (concentrated) solution to be diluted to make 1 litre solution basing on the specification indicated on the bottle of the stock solution.

S/N	Percentage Purity/Assay or its Average when Given in a Range	Density of a Stock Solution (g/cc)	Volume of Stock Solution to be Diluted to make 1 L (cm^3)
1	31 - 32	1.16	19.96
2	= 34	1.18	18.18
3	= 35	1.18	17.66
4	= 36	1.18	17.17
5	= 37	1.18	16.70
6	= 38	1.18	16.26

- **Dissolve 4.24 g anhydrous sodium carbonate and 0.84 g sodium hydrogen carbonate in 1 dm^3 of solution and label the resulting mixture as M1. Provide each candidate with 100 cm^3 of the solution.**
- **Provide each candidate with a 10 cm^3 measuring cylinder.**
- **Provide the candidates with a 100 cm^3 measuring cylinder for sharing in the ratio of 1:4.**
- **Provide phenolphthalein indicator to each candidate, label it POP.**

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- Provide methyl orange indicator to each candidate, label it **MO**.
- Provide each candidate with 1 burette, 1 white tile, 1 pipette (20 cm^3 or 25 cm^3), 2 titration flasks and 1 retort stand with accessories.
- Provide each candidate with pipette filler.

2.2 Question 2

- Prepare 0.02 M by dissolving 3.16 of $KMnO_4$ in water to make 1 litre solution and label it **TZ**. Allow 50 cm^3 per candidate.
- Dissolve 1.575 g of $H_2C_2O_4.2H_2O$ in 0.25 dm^3 of 0.5 M H_2SO_4 and label it **TY**. Allow 50 cm^3 per candidate.
- Provide each candidate with a stop watch.
- Provide each candidate with a 250 or 300 cm^3 beaker.
- Provide each candidate with two measuring cylinder of 10 cm^3.
- Provide each candidate with 2 boiling test tubes.
- Provide each candidate with a thermometer (0 °C – 100 °C).
- Prepare a heat source or burner for sharing in the maximum ratio of 1:4.
- Provide each candidate with 2 test tube holders.
- Provide wire gauze and tripod stand.

2.3 Question 3

- Provide each candidate with 4 g of hydrated ammonium iron(II) sulphate ($FeSO_4(NH_4)_2SO_4.6H_2O$).
- Provide each candidate with 4 strips of both red and blue litmus papers.
- Provide about 300 cm^3 distilled water per candidate.
- Provide each candidate with 4 pyrex test tubes.
- Provide dilute hydrochloric acid, sodium hydroxide, barium chloride, lead ethanoate, ethanoic acid, concentrated sulphuric and hydrochloric acid, potassium hexacynoferrate(III) as bench reagents.
- Prepare heat source or burner for sharing in the maximum ratio of 1:4.