

INTERIM JOINT MATRICULATION BOARD



AHMADU BELLO UNIVERSITY

ZARIA

INTERIM JOINT MATRICULATION BOARD EXAMINATION 2024  
INSTRUCTIONS TO SCHOOLS AND COLLEGES FOR PAPER III CHEMISTRY PRACTICAL  
(ALTERNATIVE A)

Q1. Make available to your students the following materials:

- a) Prepare **Solution A** by transferring 26 g of sodium thiosulphate pentahydrate,  $\text{Na}_2\text{S}_2\text{O}_3 \cdot 5\text{H}_2\text{O}$  to  $1\text{dm}^3$  volumetric flask containing about  $500\text{cm}^3$  distilled water. Swirl the flask to dissolve the compound completely. Add more distilled water to make up the solution to the mark. Each student should be provided with about  $100\text{cm}^3$  of this solution.
- b) Prepare **Solution B** by transferring 4g of potassium tetraoxomanganate(VII),  $\text{KMnO}_4$  to  $1\text{dm}^3$  volumetric flask containing about  $600\text{cm}^3$  distilled water. Swirl the flask to dissolve the compound completely. Add more distilled water to make up the solution to the mark. Each student should be provided with about  $170\text{cm}^3$  of this solution.
- c) Prepare **Solution C** by transferring 100g of potassium iodide, KI to  $1\text{dm}^3$  volumetric flask containing about  $700\text{cm}^3$  distilled water. Swirl the flask to dissolve the compound completely. Add more distilled water to make up the solution to the mark. Each student should be provided with about  $40\text{cm}^3$  of this solution.
- d) Prepare a fresh **solution D (indicator)** by making a paste of 1g of soluble starch in a small quantity of distilled water, and add about  $100\text{cm}^3$  of boiling water. Boil the mixture to obtain a clear solution. This should be within the reach of every student.
- e) Prepare **Solution E** by transferring 40g of Ammonium ferrous sulphate hexahydrate,  $(\text{NH}_4)_2\text{SO}_4 \cdot \text{FeSO}_4 \cdot 6\text{H}_2\text{O}$  in to  $350\text{cm}^3$  conical flask containing about  $400\text{cm}^3$  of distilled water. Add to the resulting solution about  $10\text{cm}^3$  of concentrated tetraoxosulphate(VI) acid,  $\text{H}_2\text{SO}_4$ . Swirl the flask to dissolve the compound completely. Transfer the solution quantitatively to  $1\text{dm}^3$  volumetric flask and add more distilled water to make up the solution to the mark. Each student should be provided with about  $110\text{cm}^3$  of this solution.
- f) Prepare **Solution F** by transferring  $110\text{cm}^3$  of concentrated tetraoxosulphate(VI) acid,  $\text{H}_2\text{SO}_4$  (98% w/w, specific gravity 1.80) in to  $1\text{dm}^3$  volumetric flask containing about  $500\text{cm}^3$  distilled water. Allow the solution to cool and gradually make it up to mark with distilled water. Each student should be provided with about  $160\text{cm}^3$  of this solution.
- g) Measuring cylinder (of capacity 10 or  $20\text{cm}^3$ ) in addition to other titration materials.

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Q 2.

Alternative A

Each student should be provided with the following samples (about 1.5 g each) appropriately labeled as indicated

ORGANIC SAMPLE A1

INORGANIC SAMPLE A2

Ensure that all necessary test reagents for inorganic and organic qualitative analysis are provided in the laboratory benches.

**NOTE:** The identity of the samples is to guide in the preparation for the practical examination. Under no circumstances should this identity be disclosed to candidates.

Sample A1 = Benzoic acid

Sample A2 = Copper(II) trioxocarbonate(IV)