TEVETA

Technical Education, Vocational and Entrepreneurship Training Authority

DIPLOMA IN SCIENCE LABORATORY TECHNOLOGY

LEVEL 6 YEAR 1 EXAMINATIONS

FINAL INTEGRATED SUMMATIVE EXAMINATIONS

SITTING: JULY/AUGUST 2026

SUBJECT: FOUNDATION CHEMISTRY PRACTICAL

TIME: ONE (1) HOUR THIRTY (30) MINUTES **TOTAL MARKS: 100**

PASS MARK: 50

INSTRUCTIONS TO CANDIDATE

1. Write your Examination Number and National Registration Card (NRC) number on the Marking Guide provided.
2. Write the ANSWER SCRIPT SERIAL NUMBER on the examination register and on the entry slip.
3. This paper has One (1) task. Perform the task according to the procedure given.
4. Cellphones and programmable calculators are not allowed in the examination room.

DO NOT TURN THIS PAGE UNTIL YOU ARE TOLD TO DO SO

PREPARATION AND STANDARDIZATION OF A SODIUM HYDROXIDE SOLUTION.

Aim

To prepare a sodium hydroxide solution from a weighed mass and determine its standardized concentration by titration with a standard sulphuric acid solution.

Preparation of Sodium Hydroxide Solution

1. Weigh approximately 0.800 g of sodium hydroxide pellets using a clean dry beaker.
2. Transfer the pellets carefully into a 250 mL volumetric flask using a funnel.
3. Add about 120 mL of distilled water and swirl until the pellets dissolve completely.
4. After complete dissolution, add distilled water carefully until the bottom of the meniscus touches the calibration mark.
5. Stopper the flask and mix thoroughly by inversion several times.

Titration Procedure

6. Rinse the burette with a small volume of 0.20 M sulfuric acid and then fill it with the same solution.
7. Using a 20.0 mL pipette, transfer the sodium hydroxide solution into a conical flask.
8. Add 2–3 drops of phenolphthalein indicator.
9. Titrate with sulphuric acid until the pink colour disappears, record the endpoint.
10. Repeat the titration until three (3) concordant values (within 0.10 mL) are obtained.

Titration runs	Initial reading/ mL	Final reading/ mL	Volume of Titrant used (mL)
1st Titration			
2nd Titration			
3rd Titration			

ANALYSIS

1. Write a balanced chemical equation for the above titration. [3 marks]
2. Calculate the theoretical concentration of the sodium hydroxide solution prepared using 0.800 g in 250 mL of solution. [4 marks]
3. Using the average of the concordant titration volumes, determine the actual concentration of the sodium hydroxide solution. [6 marks]
4. State two (2) possible reasons why the calculated concentration and the standardized concentration of NaOH may differ. [2 marks]