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On - the - Job Training Report :- Water Testing Laboratory.

Location :- X - Metric water testing Lab, shiye MIDC.
Student Name :- Aishwarya baburao Patil.
Duration :- 11/12/2025 - 20/12/2025

Day 1 : 11/12/2025

The First day of OJT involved an introductory session and tour of laboratory Facillities. we were brifed by the supervisor regarding laboratory protocols safety precaution and the timing of various operation. The staff explained the general workflow of water testing the specific instrument used, and the chemical reagent required for diff. analyatical proceduces.

Day 2 : 12/12/2025

On the second day, we performed chemical 'O' Demand (COD) and total Dissolved solid (TDS) tests.

1) chemical oxygen demand (COD) :-

This test measures the oxygen required to chemically oxidize organic matter in wastewater.

- Procedure :- A sample is mixed with $K_2Cr_2O_7$ (oxidizing agent), H_2SO_4 and Ag_2SO_4 (catalyst). The mixture is heated at 150°C for 2 - hours.
- Titration :- After digestion the sample is titrated against Ferrous Ammonium sulphate (FAS). The endpoint is indicated by color change from yellow - green to raddish brown.

$$COD = \frac{(A-B) \times M \times 8000}{ml \text{ of sample}}$$

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2. Total Dissolved solids (TDS/ TOS) :-
This method measures the inorganic and organic substance dissolved in water. The sample is placed in a platinum - catalazed combustion chamber at temp. between 900°C to 1000°C to analyze oxygen comsumption during oxidation.

Day 3 : 13/12/2025
1) PH measurment :-
The pH water was calibrated using standard buffer solution. The electrode was rinsed with distilled water, dipped into the test sample, and the stabilized pH reading was recorded.
2) Alkalinity Test :-
- produre :- 100 ml of the sample was taken in a conical flask
- phenolphthalein Alkalinity :- 2-3 drops of phenolphthalein indicator were added. if the sample turned pink, it was titrated with a standard acid solution unitil colourless.
- Total Alkalinity :- 2-3 drops of methyl orange were added to the same flask. Titration continued unit the color changed from yellow to faint orange pink.

Day 4 : 14/12/2025
1) Calcium Test :-
A 50ml sample was mixed with 20ml of NaOH and 100-200 mg of murexide indicator. This was titrated against 0.01M EDTA unit the color changed from pink to purple.
2) Chloride Test :-
A 50 ml sample was mixed with 2ml of $K_2Cr_2O_7$. It was against 0.002 N $AgNO_3$ unitil a persistent red-tinged

precipitate formed.

Day 5 : 16/12/2025.

To determine the concentration of oil and grease a I- representative sample was collected in a wide-mouth glass container. The sample was acidified with 1:1 HCl or H_2SO_4 to a pH of 2 or lower for preservation.

Formula :-

$$\text{Oil and Grease (mg/L)} = \frac{\text{Weight of residue (mg)}}{\text{volume of sample (L)}}.$$

Day 6 : 17/12/2025.

1) Turbidity Test :

Using a calibrated Nephelometric Turbidity meter, the sample vial was cleaned with a lint-free cloth and silicone oil to remove fingerprint. The vial was aligned in the meter to obtain the NTU value.

2) Sample treatment process :-

Wastewater treatment was simulated by adjusting the pH to approximately 11-12 using lime. after pH adjustment, polymers were added to facillite setting. Once setted the clear supernanted was collected for further analysis of TS. TDS and COD.

Professional Development.

Beyond the technical procedurs, this exprience provided a deep dive into the rigors of a professional laboratory environment. Under the expert guidance of the laboratory superviser ge we were briefed on the important of :-

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• Calibration :- Learning that an uncalibrated instrumet (like a pH or Turbidity meter) renders data invalid.

• Safety & precision :- Understanding the handling of hazardous reagents like H_2SO_4 and $AgNO_3$.

• Data Mangement :- Filling out official laboratory forms and maintaining records for further analysis.

On the final day 20/12/2025, all remaining administrative formalities and the 10-days OJT log were completed. We gained a new prespective on how watewater is monitored and treated to meet environmental standards. This training has significant enhanced my technical skillset and provided me with a clear understanding of the standard operting produes (SOPs) required in the field of water quality analysis.

Student signature :-

Examined
06-03-2026

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