Department of biology

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((Analytical Chemistry))

Stage (-First Year -)

LEC- (1)

Introduction to Laboratory Work in Analytical Chemistry

By

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Introduction

Analytical chemistry is an important branch of chemistry that focuses on identifying chemical substances and determining their quantities.

Laboratory work is essential because it helps students understand theoretical concepts through practical experiments and proper use of instruments.

1. Laboratory Instruments

Analytical balance:Used to measure mass accurately.

Graduated cylinder:Used to measure the volume of liquids.

Micropipette:Used: to transfer very small volumes of liquids accurately.

UV-Vis spectrometer:Used to measure the absorption of ultraviolet and visible light by solutions.

2. Preparing Solutions

Solids must be weighed carefully before dissolving.

Distilled water is used to prevent contamination.

The concentration of solutions can be adjusted using titration when required.

3. Measuring and Recording Data

Mass and volume must be measured accurately.

Experiments should be repeated to confirm results.

All observations and results must be recorded clearly and carefully.

4. Safety in the Laboratory

Always wear safety goggles, gloves, and a lab coat.

Be aware of the locations of fire extinguishers and emergency equipment.

Chemical waste must be disposed of properly according to laboratory rules.

5. Simple Experiments

Acid–base experiments to measure pH.

Titration experiments to determine the concentration of an unknown solution.

Using indicator paper to test common liquids such as lemon juice or soap solution.

Notes

Accurate note-taking is essential for every experiment.

Understanding laboratory instruments and basic experiments is the first step in learning analytical chemistry.