Major Instruments in Lab No. 5 of Botany Department

Name of Instruments	Brief Description of Instruments	Image of Instruments
Lab No. 5		
UV-VIS Spectrophotometer	It is an analytical instrument used to measure the absorbance or transmittance of ultraviolet (UV, 200-400 nm) and visible (VIS, 400-800 nm) light by a sample. It operates on the principle that molecules in a sample absorb specific wavelengths of light, corresponding to electronic transitions in atoms or molecules. The instrument typically consists of: A light source, A monochromator to select specific wavelengths, A sample holder (cuvette), A detector to measure light intensity. The result is a spectrum that shows the absorbance or transmittance of the sample across the UV and visible regions, which can provide valuable information about its chemical composition or concentration. **Applications:** Quantitative Analysis: Determination of concentrations of analytes using Beer-Lambert Law. Commonly used for colorimetric assays in biochemistry and environmental analysis. Qualitative Analysis: Identification of compounds based on characteristic absorbance spectra. Biochemistry and Life Sciences: Measurement of nucleic acids (DNA/RNA) and proteins. Enzyme kinetics and reaction rates.	

Rotary Evaporator	It is a laboratory device used for the efficient and gentle removal of solvents from samples by evaporation. It operates by lowering the boiling point of the solvent through vacuum application, facilitating faster and safer evaporation at lower temperatures. The system typically consists of a rotating flask, a heating bath, a vacuum pump, and a condenser to collect evaporated solvent. **Applications**: Rotary evaporators are widely used in various fields due to their versatility and efficiency. Mainly it used to Concentrate solutions of chemical compounds, Purifying and recovering solvents, Removing volatile components from reaction mixtures. In Food and Beverage Industry it used for extraction of flavors and fragrances, testing and concentrating natural product extracts like essential oils. In Environmental Science it used to Analyze pollutants by concentrating environmental samples.