

**SARDAR PATEL UNIVERSITY**  
**Programme & Subject: B.sc (Instrumentation)**  
**Semester: V**  
**Syllabus with Effect from: June - 2013**

<b>Paper Code: US05CINS06</b>	<b>Total Credit: 3</b>
<b>Title Of Paper: Analytical Instrumentation</b>	

Unit	Description in detail	Weighting (%)
I	<b>pH:</b> introduction, principle of pH measurement, pH electrodes: hydrogen, glass, calomel, combined, The asymmetry potential, Buffer solutions, pH meters: null detector, direct reading, chopper amplifier type, Vibrating condenser amplifier type, zero corrected DC amplifier type.	25%
II	<b>GAS chromatography:</b> Introduction, basic parts of chromatograph, carrier gas supply, sample injection system and the size of the sample, chromatographic column, thermal compartment, Detection system: Thermal Conductivity Detector, Flame Ionization Detector (FID), Electron Capture Detector (ECD), Argon ionization Detectors, Cross-sectional area Ionization Detectors.	25%
III	<b>Gas analyzers and Conductivity:</b> Gas analyzers: O <sub>2</sub> : Magnetic wind type, Dumbbell type, CO <sub>2</sub> , CO: IR type, gas chromatography type H <sub>2</sub> : thermal conductivity type. Conductivity: Introduction, measurement of conductance: null method, direct reading method, conductivity cells, Temperature compensation in conductivity measurements, Conductivity measurements using high frequency methods,	25%
IV	<b>Liquid Chromatography:</b> Introduction, Type of liquid Chromatography, the liquid chromatograph, high pressure pump system, gradient elution, sample injection system, The column, Detection system: UV-Visible- Spectrophotometric absorption, fluorescence detector, Refractive Index detectors, adsorption detectors, electrical conductivity detectors, Thermal detectors.	25%

**Basic Text & Reference Books:-**

- Handbook of analytical instrumentation by R.S. Khandpur
- Bio-medical instrumentation and measurement by
- Cromwell, Weibell and Pfeiffer

