

**SARDAR PATEL UNIVERSITY**  
**Programme & Subject: B.sc (Instrumentation)**  
**Semester: III**  
**Syllabus with Effect from: June - 2012**

<b>Paper Code: US03CINS02</b>	<b>Total Credit: 3</b>
<b>Title Of Paper: Basic Instrumentation and Lasers</b>	

Unit	Description in detail	Weighting (%)
I	<b>Transducers 1</b> Introduction: Electrical Transducers, Selecting a Transducer, Resistive transducers: Potentiometer, Resistance Pressure Transducers, Resistive Position Transducers, Strain Gauge: Resistance Wire Gauge, Types of Strain Gauges (Wire), Foil Strain Gauge, Semiconductor Strain Gauge, Resistance Thermometer.	25%
II	<b>Transducers 2</b> Thermistor. Inductive transducers, Differential output Transducers: LVDT, Pressure Inductive transducers. Capacitive transducers: Pressure transducers, Load Cell, Piezoelectric Transducers Temperature Transducers: Thermoelectric transducer, RTD, Thermo couple, Ultrasonic temperature transducers Introduction	25%
III	<b>Probes</b> Types of probes: passive voltage probes, active voltage probes, current probes, logic probes, optical probes, other probes; Probe loading and measurement effects: resistive loading, capacitive loading, inductive loading; probe specifications.	25%
IV	<b>LASER</b> Characteristics, Systems, Numerical Problems(ch.1)Principles of LASER: Introduction, Amplification of Light, Population inversion, Energizing the amplification medium, LASER Oscillators, Quantum Properties of LASER, Numerical Problems Types of LASER: Introduction, Types, Common Lasers and their wavelengths Gas LASER: He-Ne, Krypton, Argon, CO <sub>2</sub> ; Solid state laser: Ruby, Nd:YAG;, Numerical Problems.	25%

**Basic Text & Reference Books:-**

- Electronic Instrumentation by Kalsi
- Electronic Instrumentation and Instrumentation Technology by M.M.S.Anand
- Lasers and Optical Fiber Communnication by P.Sarah

