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

Paper Code: US05CINS03	**Total Credit: 3**
Title Of Paper: Introduction To Control System	

Unit	Description in detail	Weighting (%)
I	**Controller Principles - 1** Introduction, Process Characteristics: Process Equation, Process Load, Transient, Process Lag, Self Regulation; Control System Parameters: Error, Variable Range, Control Parameter Range, control Lag, Dead Time, Cycling, Controller Modes; Discontinuous Controller Modes (with Electronic Design): Two - Position Mode, Multiposition Mode, Floating - Control Mode	25%
II	**Controller Principles - 2** Continuous Controller Modes (with Electronic Design): Propotional (P) Control Mode, Integral (I) Control Mode, Derivative (D) Control Mode; Composite Control Modes (with Electronic Design): PI, PD, PID	25%
III	**Instrument Air System (IAS)** Introduction, Characteristics of Air, Various Factors for Designing IAS: Sizing Criteria, Pressure Level, Air Supply Source (Small Scale Requirement, Typical IAS); Compressor System: Positive Displacement Type, Dynamic; Compressor Cooling, Compressor Control, Oil Removal, Dryer (Desiccant Type, Refrigeration Type), Necessity for Dryers, Distribution System	25%
IV	**Control Valves** Introduction, Valve Terminology, Valve Capacity, Valve Rangeability, Body Design: Globe Bodies; Angle, Needle, Ball, Butterfly, Diaphragm, Pinch, Drag, Flow Characteristics, Trim Design: Materials, Plugs, Seats, Guides, Cage; Bonnet Assembly, Actuators: Pneumatic Type, Electric Type, Electrohydraulic type; Positioners: Pneumatic, Electropneumatic	25%

Basic Text & Reference Books:-

- Process Control Instrumentation Technology By Curtis Johnson
- Handbook of Instrumentation By W. G. Andrew
- Computer - Based Industrial Control By Krishna Kant
- Process Control (Concepts, Dynamics and Applications) By S. K. Singh
- Control System By Nagrath and Gopal