

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

Paper Code: US05CINV02	Total Credit: 3
Title Of Paper: Control Technique - I	

Unit	Description in detail	Weightage (%)
I	Controller Principles - I 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	
II	Controller Principles - II Continuous Controller Modes (with Electronic Design): Proportional (P) Control Mode, Integral (I) Control Mode, Derivative (D) Control Mode; Composite Control Modes (with Electronic Design): PI, PD, PID	
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	
IV	Industrial Gas Analyzers Types of Gas Analyzers, Paramagnetic Oxygen Analyzer, Magnetic Wind Instruments, Infrared Gas Analyzers, Thermal Conductivity Analyzers, Analyzers based on Gas Density, Method Based on Ionization of Gases	

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
- Industrial Electronics By Petruzella
- Control Systems By K. Padmanabhan

