AC/DC DRIVES & THYRISTOR CONTROL OF ELECTRIC MOTORS

Course Contents : -

Review of Electronic components (Resistance, Capacitance, Solid state Switches etc)
AC/DC Converters, Three Phase Bridge Converter.
Types of Regulators & DC Regulated Power Supplies
Linear & Switch Mode Power Supplies
Introduction to Analog Electronics (Op Amp, Timer & Waveform Generators)
Introduction to Power devices (Thyristors)
AC/DC Motors and methods of speed control
Thyristors Classification & Characteristics. Triggering techniques.
Applications in AC/DC Power control and commutation
Pulse Width Modulation
ON/OFF Control, PID Control and Applications
DC Drives – Principle of Operation & circuit description
Inverter – Principle of Operation & types of inverters, power control using inverter
Frequency control technique of AC Drive (VFD) & Parameter settings.

MAINTENANCE & SERVICING OF AC & DC POWER SUPPLIES AND U.P.S.

Course Contents : -

Solid State Switches, Power converters, Power Filters
Classification of Linear and Switching Devices & ICs, their functions and their applications
Regulated Power supplies
Thyristors Classification & Characteristics. Triggering techniques
AC/DC Converters, Three Phase Bridge Converter
Battery Maintenance procedure & Battery charger.
Principle of operation of MOSFET,IGBT
Pulse Width Modulation
Inverters & SMPS
UPS based on SCRs, Power MOSFETs, IGBTs and their Maintenance

INDUSTRIAL AUTOMATION WITH DRIVES AND PLCs

Course Contents : -

Introduction to Programmable Logic Controllers & Drives
PLC History, Advantages of using PLCs
Working principle of PLC, PLC Scanning operation, Internal elements of PLC, Replacing relays etc
Hardware Configuration of PLCs, **DELTA** PLC system operations & configuring PC-PLC interface
Ladder Programming
Basic & Advanced Instructions of Delta PLC and programming
AC/DC Drives and its applications
Practice on Programming of PLCs for various industrial applications using PLC Simulation software packages & Delta PLC with relevant demonstrations
Handling Analog Input / Output modules.

Speed Control of AC/DC Drives using Delta PLC
Programming of PLC for Conveyer and Lift Control

PLC PROGRAMMING & ITS APPLICATIONS IN INDUSTRIAL CONTROL

Course Contents : -

Introduction to Programmable Logic Controllers & Drives
PLC History, Advantages of using PLCs
Working principle of PLC, PLC Scanning operation, Internal elements of PLC, Replacing relays etc
Hardware Configuration of PLCs, **DELTA** PLC system operations & configuring PC-PLC interface
Ladder Programming
Basic & Advanced Instructions of Delta PLC and programming
Practice on Programming of PLCs for various industrial applications using PLC Simulation software packages & Delta PLC with relevant demonstrations
Handling Analog Input / Output modules.
Programming of PLC for Conveyer and Lift Control

MICRO PROCESSOR PROGRAMMING & APPLICATIONS

Course Contents : -

Number systems, BCD, Hexa Decimal, Binary Arithmetic Coding
Introduction to microprocessors – basic blocks, Instruction sets and Machine Cycles
Intel 8085 Architecture, Characteristics and Programming
Software Development, Addressing modes, I/O ports Data transfer techniques, polling interrupt, Memory back up, Input and output elements & DMA
Semiconductor memory organization and memory expansion
Peripheral devices and interfacing devices (like 8255)
Concept of closed loop systems
Sample Industrial applications

AC SERVO DRIVE SYSTEM (SIEMENS)

Course Contents : -

Introduction to Servo System and its applications.
Servo motors & types of feedback devices.
Functional description of basic Servo Drive.
Velocity & Position Control mechanism of Servo drive.
Analog & Digital Controllers.
Demonstration of Servo Drive control using Programmable Logic controller (Siemens).

DIGITAL SIGNAL PROCESSING & APPLICATIONS

Course Contents : -

Introduction to Digital Signal Processing and its applications & advantages over Analog signal processing.
Block description & Architecture of DSP controller chip.
Memory mapping., Classification of Registers & Addressing.
Interfacing with peripherals.
Introduction to Analog signal processing using DSP controller.
PWM generation.
Speed control of AC motor & BLDC motors.

EMBEDDED ARM CONTROLLERS & ITS INDUSTRIAL APPLICATIONS

Course Contents : -

Introduction to Embedded Arm Controllers & advantages over Microprocessors.
Philips LPC 2378 – ARM 7 chip Architecture, special Features, On – board functions of the trainer system and Instruction set.
Memory organization of ARM 7 chip.
Classification of Registers & I/O ports and Modes of addressing.
Programming for simple applications.
Peripheral devices and interfacing.
Introduction to Analog applications.
Introduction to ARM 9 chip Architecture.
Special features of ARM 9 controller,
On – board features of the trainer and Instruction set.
Demonstration of ARM 9 Controller applications.