MODULE-1-AUTOMATION

- WHAT IS AUTOMATION?
- ADVANTAGES OF AUTOMATION.
- DISADVANTAGES OF AUTOMATION.
- APPLICATIONS OF AUTOMATION.
- HISTORY OF AUTOMATION.
- ROLE OF PLC IN AUTOMATION.
- ADVANTAGES OF PLC.
- APPLICATIONS OF PLC.

MODULE-2-PLC

PLC Introduction:

- WHAT IS A PLC?
- THE PURPOSE OF PLC
- HISTORY OF PLC
- RECENT DEVELOPMENTS.
- TYPES OF PLC
- PLC MANUFACTURE COMPANY
- DIFFERENCE BETWEEN PLC & RELAY

PLC Structure:

- BLOCK DIAGRAM OF PLC.
- CPU
- MEMORY
- RAM
- ROM
- POWER SUPPLY
- PROGRAMMING DEVICES
- FIRMWARE

SOFTWARES

- ALLEN BRADLEY
  RS LOGIX 500 ENGLISH
  RS LINX CLASSIC
  CCW
- DELTA
  ISP SOFT
  WPL SOFT
- SIEMENS
  STEP7 MICROWIN
  SIMATIC MANAGER
  TIA PORTAL
- SCHNEIDER ELECTRIC
  (ZELIO & TWIDO)
  ZELIO SOFT & TWIDO SUITE
- OMRON
  CX PROGRAMMER

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Input/Output System:

- INPUT MODULE AND TYPE
- OUTPUT MODULE AND TYPE
- INPUT TYPES THAT CAN BE CONNECTED
- OUTPUT TYPES THAT CAN BE CONNECTED
- FUNCTIONS OF MODULES.
- CIRCUIT ISOLATION IN PLC.
- PLC WIRING.

Basic Concept of Operation:

- HOW PLC OPERATES.
- SCAN CYCLE.
- SCAN TIME.
- SCAN DIAGRAM.
- INPUT SCAN
- PROGRAM SCAN
- OUTPUT SCAN

Programming Languages:

- LADDER LOGIC
- FUNCTIONAL BLOCK DIAGRAM
- INSTRUCTION LIST
- STRUCTURE TEXT
- SEQUENTIAL FUNCTION CHART

Selection of PLC:

- INPUT & OUTPUT REQUIREMENTS
- TYPE OF INPUT & OUTPUT REQUIREMENTS
- MEMORY CAPICITY
- INSTRUCTION SET SUPPORTED
- PLC INPUT AND OUTPUT CIRCUITS
- PLC'S INPUT & OUTPUT WIRING
- PLC'S FORMS OF INPUT & OUTPUT TYPES

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Basic Concepts of Programming:

- PLC HARDWARE DESCRIPTION
- PLC HARDWARE & SOFTWARE RELATION
- PLC BASIC PROGRAMMING CONCEPT
- PLC – RELAY RELATIONSHIP WITH PROGRAM
- PLC INSTRUCTIONS
- NO & NC CONTACT
- O/P CONTACT
- LATCH – UNLATCH (SET – RESET)

Advance Concepts of Programming:

- LOGIC GATES
- HOLDING
- INTERLOCKING
- TIMERS
- COUNTERS
- COMPARE INSTRUCTIONS
- ARITHMETICAL & LOGICAL INSTRUCTIONS

MODULE-3-SCADA

Introduction to SCADA

- Introduction about SCADA software
- Introduction to Graphics & Animation
- Introduction to Tags
- Attaching control to Graphic Objects
- Alarms
- Recipe management
- Real time and Historical trending
- Events
- Derived Tags
- Page Jump
- Automatic Slider
- Automatic Page Jump
- Security(Login & Logout)
- Communication with PLC

SOFTWARES

- ROCKWELL
  RS VIEW 32 WORKS
- WONDERWARE
  INTOUCH
- SIEMENS
  WINCC
- OMRON
  CX SUPERVISOR
- COMM. SOFTWARE
  RS LINX CLASSIC
  KEP SERVER

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- DIRECT DRIVER COMMUNICATION
- DDE SERVER COMMUNICATION
- OPC SERVER COMMUNICATION
- COMMUNICATION WITH MICROSOFT EXCEL
- DIFFERENCE BETWEEN SCADA & HMI

MODULE-4-HMI

- INTRODUCTION ABOUT HMI
- INTRODUCTION ABOUT HMI SOFTWARE
- CREATING APPLICATIONS
- CREATING TAGS
- PAGE JUMP
- CREATING ALARMS
- SECURITY (LOGIN & LOGOUT)
- BOOT PAGE (WELCOME PAGE)
- DOWNLOADING/UPLOADING PROGRAM
- COMMUNICATION WITH PLC
- DIFFERENCE BETWEEN SCADA AND HMI
- FAULT FINDING

SOFTWARES

- DELTA
  TPEditor
- ALLEN BRADLEY
  PANEL BUILDER 32
- SIEMENS
  WINCC FLEXIBLE
- OMRON
  NB DESIGNER

MODULE-5-DRIVES

- INTRODUCTION TO DRIVES
- INTRODUCTION TO AC DRIVE & APPLICATIONS
- AC MOTOR & OPERATIONS
- DC MOTOR & OPERATIONS
- MOTOR STARTERS – DOL, STAR-DELTA
- BENEFITS OF AC DRIVES OVER CONVENTIONAL STARTERS (DOL & STAR/DELTA)
- CRITERIA FOR DRIVE SELECTION
- PARAMETER PROGRAMMING
- ENERGY SAVING CONCEPT
- LIVE DEMONSTRATION OF EFFECT OF EACH PROGRAMMED PARAMETER ON DRIVE
- DESIGNING OF DRIVE CONTROL PANEL
- COMMUNICATION OF DRIVE WITH PLC,HMI & SCADA
  FAULT FINDING/TROUBLESHOOTING

DRIVE

- DELTA
  VFD-L (VFD004L21A)
- ALLEN BRADLEY
  POWERFLEX 4
  POWERFLEX 4M

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MODULE-6-WIRING & PANEL DESIGNING

- NO-NC WIRING
- LOGIC GATES
- RELAY
- HOLDING (START-STOP)
- INTERLOCKING
- SEQUENCING
- DOL
- STAR-DELTA
- PLC WIRING

MODULE-7-AUTOCAD

AUTOCAD 2D+3D

AUTO CAD 2D

- INTRODUCTION TO AUTO CAD, CO-ORDINATE SYSTEMS
- PRACTICE OF CO-ORDINATES
- LINE COMMAND, ERASE
- SPLINE, REVISION CLOUD, X-LINE
- RECTANGLE, CIRCLE, POLYGON, FILLET, CHAMFER
- ELLIPSE, ARC, POLYLINE, EDIT
- MOVE, COPY, OFFSET, ROTATE
- MIRROR, TRIM, EXTENT
- ARRAY, SCALE, STRETCH
- HATCH, LINETYPES
- DIMENSION
- TEXT, EDITING TEXT
- BREAK, MEASURE, DIVED, LENGTHEN, AREA,GROUP, JOIN

AUTOCAD 3D

- INTRODUCTION TO 3D, ISOMETRIC VIEWS
- THICKNESS, ELEVATION
- 3D VIEWS, CHANGING VIEWPORTS, VISUAL STYLES, ORBIT, SOLID PRIMITIVES
- ALIGN , ROATATE3D
- MIRROR3D, 3DARRAY

SOFTWARES

- AUTOCAD