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RO6501 PROGRAMMABLE LOGIC CONTROLLERS

DETAILED SYLLABUS

UNIT I INTRODUCTION TO FACTORY AUTOMATION

History and developments in industrial automation. Vertical integration of industrial automation, Control elements in industrial automation, PLC introduction.

UNIT II PROGRAMMABLE LOGIC CONTROLLERS

Basics of PLC, Advantages, Capabilities of PLC, Architecture of PLC, Scan cycle, Types of PLC, Types of I/O modules, Configuring a PLC, PLC wiring,

UNIT III PROGRAMMING OF PLC

Types of Programming - Simple process control programs using Relay Ladder Logic - PLC arithmetic functions - Timers and counters –data transfer-comparison and manipulation instructions, PID instructions, PTO / PWM generation.

UNIT IV HMI SYSTEMS

Necessity and Role in Industrial Automation, Text display - operator panels - Touch panels – Panel PCs - Integrated displays, interfacing PLC to HMI.

UNIT V INSTALLATION

Installation and maintenance procedures for PLC - Troubleshooting of PLC, PLC Networking- Networking standards & IEEE Standard - Protocols - Field bus - Process bus and Ethernet. APPLICATIONS OF PLC Case studies of Machine automation, Process automation, Selection parameters for PLC. Introduction to Programmable Automation Controller.

TEXT BOOKS

1. John W Webb & Ronald A Reis, “Programmable logic controllers: Principles and Applications”, Prentice Hall India, 2003.

2. Frank D Petruzella “Programmable Logic Controllers ", McGraw Hill Inc, 2005.

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REFERENCES

1. Bolton W. “Mechatronics”, Pearson Education, 2009.

2. Kelvin T Erikson, “Programmable Logic Controllers ", Dogwood Valley Press, 2005.

OBJECTIVES

The student should be made to

- Be familiar with factory automation
- Be exposed to programmable logic controllers
- Learn to programme PLC
- Be exposed to HMI systems
- Learn to install and maintain procedures for PLC
- Be exposed to applications of PLC

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