0903 –DIPLOMA IN ELECTRONICS & COMMUNICATION
SEMESTER -6
090364 (a) - MICRO CONTROLLERS AND PLCs

RATIONALE

In industry, many manufacturing processes demand a sequence of operation, which are to be performed repetitively. Early automation systems were mechanical in design, timing and sequencing being effected by gears and cams. Slowly these design concepts were replaced by electrical drives which were controlled by relays and now by programmable logic controllers (PLCs). A PLC is a solid state device, designed to operate in noisy industrial environments and can perform all logic functions. PLCs are widely used in all industries for efficient control operations

A diploma holder in industry is called upon to design , modify and troubleshoot such control circuits. Looking at the industrial applications of PLCs in the modern industry, this subject finds its usefulness in the present curriculum.

Micro-controllers have assumed a great significance in the electronic and consumer goods industry and are a very vital field..

DETAILED CONTENTS

1. **Microcontroller series (MCS) – 51 Overview**
   - Pin details
   - I/O Port structure
   - Memory Organization
   - Special Function Registers (SFRS)
   - External Memory

2. **Instruction Set; Addressing Modes, Instruction types**
   - Timer operation
   - Serial Port operation
   - Interrupts

3. **Assembly language programming**
   - Assembler directives
   - Assembler operation

4. **Design and Interface**

   s like keypad interface, 7- segment interface etc

5. **Introduction to PLCs**
   - Architectural details – Processor
   - Memory structure, I/O Structure
   - Programming terminal, Power Supply

6. **Working of PLC**

   Basic principle, response time, effects of response time, relay replacing,

Basic instructions, PLC registers and program scan

7. **Instruction Set**

Latching, counter, timers one shet, shift register, math, Boolean instructions

8. **Ladder diagram programming**

9. **Applications of PLCs** in industry with case studies from electronics industry

RECOMMENDED BOOKS

1. The 8051 Micro controller by I Scot Mackenzie, Prentice Hall International, London
2. The 8051 Micro Controllers Architecture, Programming and Applications by Ayala; Penram International
3. Process Control Instrumentation Technology by Johnson, Curtis; EEE Edition, Prentice Hall of India, New Delhi
4. Programmable Logic Controller by Job Dan Otter; P. H. International, Inc, USA