RO8502 MICROCONTROLLER AND PLC

DETAILED SYLLABUS

UNIT I INTRODUCTION TO MICROCONTROLLER

8051 Architecture:– Memory map - Addressing modes, I/O Ports –Counters and Timers – Serial data - I/O – Interrupts –Instruction set,, Data transfer instructions, Arithmetic and Logical Instructions, Jump and Call Instructions , Assembly Language Programming tools.

UNIT II MICROCONTROLLER PROGRAMMING

8051 Assembly Language Programming- Block transfer, arithmetic operations, Code conversion, Time delay generation, Interrupt programming, Lookup table techniques

UNIT III MICROCONTROLLER APPLICATIONS

Interfacing of Keyboards – Interfacing of Display Devices – Pulse measurement – Analog to Digital and Digital to Analog Converter – Interfacing Hardware Circuit – Serial Data Communication – Network Configuration.

UNIT IV PROGRAMMABLE LOGIC CONTROLLERS

Introduction –– Principles of operation – PLC Architecture and specifications – PLC hardware components Analog & digital I/O modules , CPU & memory module – Programming devices – PLC ladder diagram, Converting simple relay ladder diagram in to PLC relay ladder diagram. PLC programming Simple instructions – Manually operated switches – Mechanically operated a Proximity switches - Latching relays,

UNIT V APPLICATIONS OF PROGRAMMABLE LOGIC CONTROLLERS.

Timer instructions - On delay, Off delay, Cyclic and Retentive timers, Up /Down Counters, control instructions – Data manipulating instructions, math instructions; Applications of PLC – Simple materials handling applications, Automatic control of warehouse door, Automatic lubrication of supplier Conveyor belt, motor control, Automatic car washing machine, Bottle label detection and process control application.

TEXT BOOKS:

Muhammad Ali Mazdi ,J.G.Mazdi & R.D.McKinlay “The 8051 Microcontroller& Embedded systems Using assembly & C “ 2nd Edition Pearson Education , Inc ,2006

Udayasankara.v & Mallikarjunaswamy .M.S ,’8051 Microcontroller, Hardware, Software & Applications ,Tata McGraw Hill Education Pvt Limited. New Delhi ,2009.

3. Gary Dunning , ‘Introduction to Programmable Logic Controllers‘’ Thomson Learning, 2001.

OBJECTIVES:

To introduce the basic features, programming methods and applications of Micro controllers

To study about programming in microcontroller

Discuss different applications in microcontroller

To know about the design of systems using PLC is introduced in detail.

To know about the applications in PLC

REFERENCES:

1. Singh. B.P., "Microprocessors and Microcontrollers", Galcotia Publications (P) Ltd, First edition,

New Delhi, 1997.

2. Parr, "Programmable Controllers: An Engineers Guide", 3rd Edition, Elsevier, Indian Reprint, 2013

3. Valdes-Perez, Microcontrollers: Fundamentals and Applications with PIC, Taylor & Francis, Indian

Reprint, 2013.

4. Bolton , "Programmable Logic Controllers” 5th Edition Newnes, ,2009