20PE013 - PROGRAMMABLE LOGIC CONTROLLERS AND THEIR APPLICATIONS

UNIT – I   **L- 08**

PLC Basics: PLC system, I/O modules and interfacing, CPU processor, programming equipment, programming formats, construction of PLC ladder diagrams, devices connected to I/Omodules. PLC programming: Input instructions, outputs, operational procedures, programming examples using contacts and coils, drill press operation.

UNIT – II   **L- 08**

Digital logic gates : programming in the Boolean algebra system, conversion examples.
Ladder diagrams for process control: Ladder diagrams and sequence listings, ladder diagram construction and flow chart for spray process system.

UNIT – III   **L- 08**

PLC Registers: Characteristics of Registers, module addressing, holding registers, input registers output registers. PLC Functions: Timer functions and industrial applications, counters, counter function industrial applications, arithmetic functions, number comparison functions, number conversion functions.

UNIT – IV   **L- 08**

Data Handling functions: SKIP, Master control relay, Jump, Move, FIFO, FAL, ONS, CLR and Sweep functions and their applications. Bit pattern and changing a bit shift register, sequence functions and applications, controlling of two axis and three axis Robots with PLC, Matrix functions.

UNIT – V   **L- 08**

Analog PLC operation: Analog modules and systems, Analog signal processing, multi bit data processing, analog output application examples, PID principles, position indicator with PID control, PID modules, PID tuning, PID functions.

TEXT BOOKS:

1. John W. Webb and Ronald A. Reiss, "Programmable Logic Controllers– Principle and applications" 5th ed., PHI.
2. JR. Hackworth and F.D. Hackworth, "Programmable Logic Controllers– Programming Method and applications", Jr. Pearson, 2004.

REFERENCES:

1. Micrologix 1000 Programmable Controllers – User Manual
2. Allen-Bradley – Advanced Programming Software
3. Logix5000 Controller Common Procedures
4. SLC500 User Manuel Cat. No. 1747-KFC15