**Lesson plan**

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| **Name of Faculty** | Sh. Mohan/ Sh. Amit Kumar |
| **Discipline** | Electrical Engineering |
| **Semester** | 5th |
| **Subject** | Programmable LogicControllers and µc |
| **Lesson Plan Duration** | (From Sept2023 to Jan 2024) Theory:05,Practical :02 |

| **Week** | **Theory** | | **Practical** | |
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| | **LectureDay** | **Topic including Assignment/ Test** | **Practical Day** | **Topic** |
| 1st | Day 1 | **1 Introduction** to PLC What is PLC | Day 1 | Components/subcomponents of a PLC, Learning functions of different modules of a PLC system |
| | Day 2 | Advantages Building blocks of PLC | | |
| | Day 3 | Functions of various blocks, Limitations of relays | | |
| | Day 4 | Advantages of PLCs over electromagnetic relays. | | |
| | Day 5 | Different programming languages | | |
| 2nd | Day 1 | PLC manufacturer etc. | Day 1 | Practical steps in programming a PLC (a) using a Hand held programmer (b) using computer interface |
| | Day 2 | Revision/checking | | |
| | Day 3 | Problems solutions | | |
| | Day 4 | **2Introduction to working of PLC** | | |
| | Day 5 | Basic operation and principles of PLC | | |
| 3rd | Day 1 | Architectural details processor | Day 1 | Revision/ File checking |
| | Day 2 | Memory structures | | |
| | Day 3 | I/O structure of plc | | |
| | Day 4 | Programming terminal | | |
| | Day 5 | Power supply for plc | | |
| 4th | Day 1 | Problems solutions | Day 1 | Introduction to step 5 programming language, ladder diagram concepts, instruction list syntax |
| | Day 2 | Revision/checking | | |
| | Day 3 | **3Introduction to Instruction Set** | | |
| | Day 4 | Basic instructions like latch, | | |
| | Day 5 | master control self-holding relays | | |
| 5th | Day 1 | Timer instruction like retentive timers, | Day 1 | Basic logic operations, AND, OR, NOT functions |
| | Day 2 | resetting of timers. | | |
| | Day 3 | Counter instructions like up counter | | |
| | Day 4 | down counter, resetting of counters | | |
| | Day 5 | Revision/checking | | |
| 6th | Day 1 | Arithmetic Instructions (ADD,SUB, | Day 1 | Revision/ File checking |
| | Day 2 | DIV,MUL etc. | | |
| | Day 3 | MOV instruction | | |

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| | Day 4 | RTC(Real Time Clock Function) | | |
| | Day 5 | Comparison instructions like equal, not equal, greater than equal | | |
| 7th | Day 1 | Less than, less than equal | Day 1 | Logic control systems with time response as applied to clamping operation |
| | Day 2 | Revision/checking/Problems solutions | | |
| | Day 3 | **4Ladder Diagram Programming** | | |
| | Day 4 | Programming based on basic instructions, | | |
| | Day 5 | Timers | | |
| 8th | Day 1 | Counters | Day 1 | Sequence control system e.g. in lifting a device for packaging and counting |
| | Day 2 | Sequencer | | |
| | Day 3 | Comparison instructions using ladder program. | | |
| | Day 4 | Revision/checking | | |
| | Day 5 | Problems solutions | | |
| 9th | Day 1 | **5 Applications of PLCs Assembly** | Day 1 | Revision/ File checking |
| | Day 2 | Packaging, Process controls | | |
| | Day 3 | Car parking, Doorbell operation, | | |
| | Day 4 | Traffic light control | | |
| | Day 5 | Microwave Oven, Washing machine | | |
| 10th | Day 1 | Motor in forward and reverse direction | Day 1 | Use of PLC for an application ( teacher may decide) |
| | Day 2 | Star-Delta, DOL Starters | | |
| | Day 3 | Paint Industry, | | |
| | Day 4 | filling of Bottles | | |
| | Day 5 | Room Automation | | |
| 11th | Day 1 | **6 Introduction to SCADA** | Day 1 | Demonstration and study of Micro Controllers (8051) kit |
| | Day 2 | **7Micro Controller Series (MCS)-51** | | |
| | Day 3 | Over View , Block diagram | | |
| | Day 4 | Pin details | | |
| | Day 5 | I/o Port structure | | |
| 12th | Day 1 | Port structure explanation | Day 1 | Revision/File checking |
| | Day 2 | Memory Organization | | |
| | Day 3 | Special function registers | | |
| | Day 4 | Revision/checking | | |
| | Day 5 | Problems solutions | | |
| 13th | Day 1 | **8Instruction Set Addressing Modes** | Day 1 | Testing of general input/output on Micro controller board |
| | Day 2 | Timer operation | | |
| | Day 3 | Timer modes | | |
| | Day 4 | Serial Port operation | | |
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| 14th | Day 1 | & Pcon | Day 1 | Controlling of LEDs using microcontroller program |
| | Day 2 | Interrupts | | |
| | Day 3 | Types of interrupts | | |
| | Day 4 | **9 Assembly language programming** | | |
| | Day 5 | Data Transfer operations | | |
| 15th | Day 1 | Input / Output operations | Day 1 | Revision/File checking |
| | Day 2 | **10Design and Interface keypad interface** | | |
| | Day 3 | 7- segment interface, | | |
| | Day 4 | LCD | | |
| | Day 5 | Stepper motor. | | |
| 16th | Day 1 | RTC interface. | | Internal Practical |
| | Day 2 | **11 Application of Micro controllers** | | |
| | Day 3 | Revision of HSBTE old Papers | | |
| | Day 4 | Revision of HSBTE old Papers | | |
| | Day 5 | Revision of HSBTE old Papers | | |