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| **Lesson plan** | | | | | | | |
| **Name of Faculty** | | | | Mrs. Renu Bala | | |  |
| **Discipline** | | | | Electrical Engineering | | |
| **Semester** | | | | 4th | | |
| **Subject** | | | | Programmable LogicControllers and µc | | |
| **Lesson Plan Duration** | | | | (From Feb 2024 to June 2024Theory:05,Practical :02 | | |
| **Week** | | **Theory** | | | **Practical** | |
|  | **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 program. | instructions | using | ladder |
| 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 | | | |
|  | 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 | | | |
| 10t | Day 3 | Paint Industry, | | | |
| h |
| Day 4 | filling of Bottles | | | |
|  | Day 5 | Room Automation | | | |
|  | Day 1 | **6 Introduction to SCADA** | | | | Day 1 | Demonstration and study of Micro Controllers (8051) kit |
|  | Day 2 | **7Micro Controller Series (MCS)-51** | | | |
| 11t | Day 3 | Over View , Block diagram | | | |
| h |
|  | Day 4 | Pin details | | | |
|  | Day 5 | I/o Port structure | | | |
|  | Day 1 | Port structure explanation | | | | Day 1 | Revision/File checking |
|  | Day 2 | Memory Organization | | | |
| 12t | Day 3 | Special function registers | | | |
| h |
|  | Day 4 | Revision/checking | | | |
|  | Day 5 | Problems solutions | | | |
| 13t | Day 1 | **8Instruction Set Addressing Modes** | | | | Day 1 | Testing of general input/output on Micro controller board |
| h |
| Day 2 | Timer operation | | | |
|  | Day 3 | Timer modes | | | |
|  | Day 4 | Serial Port operation | | | |
|  | Day 5 | Scon | | | |

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| 14t  h | 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 |
| 15t  h | 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. |
| 16t  h | 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 |