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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 aPLC, Learning functions of different modules of a PLC system |
| Day 2 | Advantages Building blocks of PLC |
| Day 3 | Functions of various blocks, Limitationsof relays |
| Day 4 | Advantages of PLCs overelectromagnetic relays. |
| Day 5 | Different programming languages |
| 2nd | Day 1 | PLC manufacturer etc. | Day 1 | Practical steps in programming aPLC (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 programminglanguage, 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 |
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|  | 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 |
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| Day 2 | Timer operation |
|  | Day 3 | Timer modes |
|  | Day 4 | Serial Port operation |
|  | Day 5 | Scon |

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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 |