**LESSON PLAN**

|  |  |  |  |
| --- | --- | --- | --- |
| **Name of Faculty Rajesh Kumar & Rajesh Chopra** | | | |
| **Electrical Engineering** | | | |
| **5th sem** | | | |
| **Programmable logic controllers and Microcontrollers** | | | |
| **from 15/09/2022 to 16/01/2023** | | | |
| **Week** | | **Theory/Practical** | | |
| **Topic** | **Practical day** | **Topic** | |
| 1st | | Vision mission and CO  What is PLC, concept of  PLC | 1st | Components/ subcomponents of a PLC and learning functions of different modules of a PLC system | |
| Building blocks of PLC |
| Functions of various blocks of PLC |
| Limitations of relays, Advantages of PLCs over electromagnetic relays |
|  | | Revision and class test |
| 2nd | | Different programming languages, | 2nd | Practical steps in programming a PLC using hand held programmer | |
| PLC manufacturers and applications of PLC |
| Basic operation of PLC- |
| Principles of PLC |
|  | | Revision and seminar |
| 3rd | | Architectural details of Processor-Part-I | 3rd | Practical steps in programming a PLC using computer interfacing | |
| Architectural details of  Processor-Part-II |
| Memory Structures |
| Input/output structures |
|  | | Revision |
| 4th | | Programming Terminals of PLC | 4th | Introduction to step 5programming language, ladder diagram concepts, instruction list syntax | |
| Power supply to PLC |
| Basic instructions for  latch |
| Master control self holding |

|  |  |  |  |
| --- | --- | --- | --- |
|  | relays |  |  |
|  | Revision and class test |
| 5th | Timer instructions-ON and OFF delay | 5th | Basic logic operations, AND, Or, NOT functions |
| Retentive timers, resetting of timers |
| Counter instructions like up counter, down counter, resetting of  counters |
| Arithmetic Instructions (ADD,SUB,DIV,MUL etc.) |
|  | Assignment and doubt class |
| 6th | MOV instruction, RTC (Real Time Clock function) | 6th | Logic control systems with time response as applied to clamping operation  VIVA |
| Comparison instructions like equal, not equal, greater, greater than equal, less than, less  than equal |
| Programming on Basic instructions |
| Programming on Timer  instructions |
|  | Revision and class sessional test |
| 7th | Programming on Counter instructions | 7th | Sequence control system in lifting a device for packaging and counting |
| Programming on Sequencer instructions |
| Programming on  comparison instructions |
| Revision of Ladder  diagram Programming |
|  | Revision |
| 8th | Assembly line, Packaging, Process control | 8th | Use of PLC for Door Bell operation |
| Car parking, Doorbell  operation, Traffic light control |
| Microwave oven, Washing machine, Motor in forward  and reverse direction |
| Star delta, DOL Starter, paint industry ,filling of bottles, room Automation |
|  | Revision and seminar |

|  |  |  |  |
| --- | --- | --- | --- |
| 9th | Microcontroller -Overview | 9th | Use of PLC for Traffic light system  VIVA |
| Block diagram and architecture of  Microcontroller |
| Overview of MCS-51 |
| 8051 -Pin details |
|  | Revision |
| 10th | Input port structures | 10th | Use of PLC for Packing process control |
| Output port structures |
| Memory organisation |
| Special function registers |
|  | Revision and class test |
| 11th | Revision of Microcontroller | 11th | Use of PLC for Car parking system |
| Instruction set of MCS-51 |
| Addressing modes |
| Timer operation |
|  | Revision and class sessional test |
| 12th | Serial port operation and communication | 12th | Familiarization with the study of architecture of 8085 kit, basicsub systems and input output connectors, functionkeys |
| Interrupts and its types |
| Assemblers operations & compilers |
| Assembler directives |
|  | Revision and class test |
| 13th | keypad interfacing | 13th | Familiarization of Microcontroller 8051 kit |
| 7- segment interface, LCD |
| Stepper motor interfacing |
| A/D, D/A interfacing |
|  | Revision and class test |
| 14th | RTC interfacing | 14th | Testing of general input/output on microcontroller board  VIVA |
| Introduction of PIC Micro controllers |
| Features of PIC 16C84 |
| Architecture of PIC 16C84 |
|  | Revision and class test |
| 15th | Applications of microcontrollers | 15th | Development of Electrical, Instrumentation applications using 8051 microcontroller |
| Radio control system |
| Revision of complete syllabus |
| Revision |
| Discussion of previous year HSBTE question  papers |
| 16th | Class test  Discussion of previous year HSBTE question  papers |  |  |