2CSE404 : Microprocessor & Interfacing [3 0 2 4]

Learning Outcomes:

After successful completion of this course, students will be able to:

- Understand the working of a microprocessor.
- Apply the knowledge of combinational and sequential logical circuits to design different parts of microprocessor and memory interface as well other hardware interface.
- Understand the input / output and Memory related flow of signals.
- Understand concept of Interrupts.
- Write, debug and simulate assembly language programs.
- Understand the concept of interfacing using various interfacing chips with 8085.

Syllabus:

Unit No	Topics
1	**Introduction to Microprocessor:** 8085 Microprocessor architecture, buses, 8085 programming model, flags, 8085 pin configuration and function of each pin. Fetch-decode-and execute operations. T-states, Machine cycle, Instruction cycle, Op-code Fetch cycle, Memory and I/O read and write cycles, Wait state, Interrupt timing diagram and timing diagram in general for any instruction.
2	**8085 Instruction set and Programming** Instruction classification depending on size and operations. Addressing modes. Instruction groups viz. Data transfer, Arithmetic, Logical, Branch and Machine control instructions and related programs. Time delays, concept of Stack and related instructions. 8085 interrupts, RST, RIM, SIM instructions. Conditional and un conditional CALL and RET and subroutines
3	**Interfacing of Memory Chips & Input / Output Chips :** Address decoding, interfacing of memory chips with 8085. Memory mapped I/O and I/O mapped I/O. Interfacing input / output chips with 8085.
4	**Peripheral ICs and Applications :** Interfacing Concepts, Ports, Interfacing of I/O Devices, Interfacing of Data Converters (D-To-A And A-To-D). Programmable Interfacing Devices Like 8279 Keyboard/Display Interface, 8255A PPI, 8253/8254 Timer, 8259A PIT, 8237 DMA Controller, Serial I/O Concepts, SID And SOD, 8251A USART. Block diagrams, pin description, control words, and Interfacing of above chips With 8085, Programming them in Different Modes and practical applications.

Reference Books:

1. Microprocessor Architecture, Programming, and Applications with the 8085 – Ramesh S. Gaonkar Pub: Penram International.
2. Microprocessor 8085 and its Interfacing, By Sunil Mathur, PHI Learning Pvt. Ltd.
3. 8085 Microprocessor And its Applications, By A. Nagoor Kani, TMH Education Pvt. Ltd