EC 2020 MICROPROCESSORS, MICROCONTROLLERS & INTERFACING
Cr-4

Course Outcomes : At the end of the course, students will be able to :

CO1. understand the concept of Bus structure, a basic 8 bit Microprocessor system, its architecture, concept of stack, Addressing modes etc.

CO2. understand the architecture of a 16 bit Microprocessor like 8086 including the concept of instruction queue, segmented memory structure and address generation.

CO3. understand the Addressing modes, Assembly language instructions of 8086 and implement them to solve 8086 related design problems.

CO4. design Memory Interfacing using memory chips with proper decoder circuits with a 16 bit processor and analyze the interrupt structure of 8086 Microprocessor.

CO5. understand the peripherals such as PPI, Programmable interrupt control, USART and their interfacing with a 16 bit processor.

CO6. analyze memory organization of a 8 bit Microcontroller (like 8051), its addressing modes, instructions, timers & counters and its serial operation.

Prerequisite:Digital Electronics (EC 2011)

Introduction : Review of Semiconductor Memory Chips, Tristate Concept & Bus Structure, A Basic Microprocessor based system

Outline of a 8 bit Processor : Brief discussion of a 8085 Microprocessor based system, Architecture, Concept of stack, Overview of Instructions & Addressing Modes etc.

8086 (16 bit Microprocessor) : Introduction, Architecture, Pins & Signals, Minimum & Maximum Mode Configuration, Timing Diagrams; Addressing Modes, 8086 Assembly Language Instructions and Sample Problems, interrupts, Memory Interfacing and Multiprocessor Configuration.

Interfacing chips : 8255 (PPI), 8259 (PIC), 8251 (USART), Interfacing with A/D Converter

8051 Family of Microcontrollers : Introduction, Overview of MCS-51 Family of Microcontrollers
Memory Organization - Program Memory, Data Memory, Register Banks & SFRs, Bit Addressable RAM, Pins & Signals, Addressing Modes, 8051 Instruction Set & Sample problems, interrupts, timers & Counters, Serial Communication.