

M.TECH FIRST SEMESTER

EEPC1T1

MICROPROCESSORS & MICRO CONTROLLERS

Credits: 4

Lecture: 4 periods/week

Internal assessment: 30 marks
Semester end examination: 70 mark

Objective: The main objective is to know the basic structure, Registers, addressing modes, instruction sets, system timings, assemble directives of 8086 system, Interfacing peripherals and memory with 8086. And to know the architecture, Registers, addressing modes, instruction sets, different modes of operation of timers/counter of 8051 micro controller.

Learning outcomes: After completing of this subject

1. Student can write their own assembly language problems on both 8086 & 8051
2. Can interface 8086 system with any peripherals (or) memory

Unit-I: Register Organization of 8086, Architecture, Signal description of 8086, Physical memory Organization, addressing modes of 8086.

Unit-II : 8086/8088 instruction set and assembler directives, machine language instruction formats.

Unit-III: General Bus Operation, minimum mode 8086 system and timings, maximum mode 8086 system and timings

Unit-IV : Fundamental I/O considerations, Programmed I/O, Interrupt I/O, Block transfers and DMA.

Unit-V : Introduction to stack, stack structure of 8086/8088, Interrupts and Interrupt service routine, interrupt cycle of 8086/8088.

Unit-VI: Interfacing ROM, RAM and I/O ports to Micro Computer System, PPI (Programmable Peripheral Interface), 8255 modes of operation, Interfacing A to D converters, Interfacing D to A converters, Interfacing various I/o peripherals and stepper motor interfacing.

Unit-VII : Programmable Interval timer 8254, Programmable Interrupt Controller 8259A, Key Board or Display Controller 8279, Programmable Communication Interface 8251 USART.

Unit-VIII: Introduction to 8051/31 Micro Controller, PIN diagram, architecture, Different modes of Operation of timer/counters, addressing modes of 8051 and instruction set.

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Reference Books:

1. Microprocessors and Interfacing : Programming and Hardware by Douglas V. Hall, 2nd edition, TMH, New Delhi, 1999.
2. Micro Computer Systems : The 8086/8088 family by YU-CHENG LIU, GLENN A. GIBSON, 2nd edition, PHI India, 2000.
3. The 8051Microcontrollers : Architecture, Programming & Applications by Kenneth J Ayala, Second Edition, Penram International Publishing (India).
4. Advanced Microprocessors and Peripherals, Architecture Programming and Interfacing by A.K. Ray & K.M. Bhurchandi, Forth reprint 2004, TMH.
5. The 8051 Microcontroller and Embedded Systems – Mohammad Ali Mazdi, Janice Gillispie Mazidi, Pearson Education (Singapore) Pvt. Ltd., 2003.