

3/4 B.Tech. FIRST SEMESTER

IT5T3

MICROPROCESSOR AND INTERFACING

Credits: 4

Lecture: 4 periods/week

Internal assessment: 30 marks

Tutorial: 1 period /week

Semester end examination: 70 marks

Objectives:

- To help the student to understand various aspects of hardware design, such as addressing, bus structure of memory interfacing.
- To learn addressing bus structures of different I/O devices interfacing.
- To understand the interrupt mechanism.
- To provide experience to write software in machine or assembly language for embedded system applications.

Outcomes:

The Student Will able to :

- Describe the fundamental features and operation of contemporary microprocessors.
- Explain the pin configuration and memory organization of a typical 8086 microprocessor.
- Analyze the 8086 Instruction Set .
- Develop assembly language source code for applications that use I/O ports, timer and single/multiple interrupts.
- Produce interfacing examples using 8086 microprocessor.

Syllabus:

UNIT-I

An overview of 8085, Architecture of 8086 Microprocessor, Special functions of General purpose registers, 8086 flag register and function of 8086 Flags, Addressing modes of 8086, Instruction set of 8086, Assembler directives, simple programs, procedures, and macros.

UNIT-II

Assembly language programs involving logical, Branch & Call instructions, sorting, evaluation of arithmetic expressions, string manipulation.

UNIT-III

Pin diagram of 8086-Minimum mode and Maximum mode of operation, Timing diagram, Memory interfacing to 8086 (Static RAM & EPROM), Need for DMA, DMA data transfer Method, Interfacing with 8237/8257.

UNIT-IV

8255 PPI – various modes of operation and interfacing to 8086, Interfacing Keyboard, Displays, 8279 Stepper Motor and actuators, D/A and A/D converter interfacing.

UNIT-V

Interrupt structure of 8086, Vector interrupt table, Interrupt service routines, Introduction to DOS and BIOS interrupts, 8259 PIC Architecture and interfacing cascading of interrupt controller and its importance.

UNIT-VI

Serial data transfer schemes, Asynchronous and Synchronous data transfer schemes, 8251 USART architecture and interfacing, TTL to RS 232C and RS232C to TTL conversion, Sample program of serial data transfer, Introduction to High-speed serial communications standards, USB.

UNIT VII

CPU architecture of Intel 80286 CPU, Intel 80386 and 32-bit CPU- 80486-Microprocessor (No instruction set).

UNIT VIII

Introduction to Pentium Processor architecture, dual Core and Core Duo Basic characteristics, Architecture and comparison with other CPU's.

Text Books :

1. Micro Processors & Interfacing – Douglas V. Hall, 2007.
2. The X86 Microprocessors, architecture, Programming and Interfacing(8086 to Pentium), Lyla B Das, PEA

Reference Books:

1. Micro Computer System 8086/8088 Family Architecture, Programming and Design - By Liu and GA Gibson, PHI, 2nd Ed.
2. The Intel Microprocessors by Barry B.Brey
3. The 8086 Microprocessor Programming & Interfacing the PC, Ayala Cengage