Microprocessor & Interfacing
Lecture 1
INTRODUCTION

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SYLLABUS

Section-A

- **The 8085 Microprocessor:** Introduction of 8085 microprocessor, architecture of 8085, instruction set, interrupt structure & assembly language programming.
- **The 8086 Microprocessor Architecture:** Architecture, block diagram of 8086, detail of sub-blocks EU & BIU, memory segmentation and physical address computation, program relocation, addressing modes, pin diagram and description of various signals.

SYLLABUS cont..

Section-B

- **Instruction set of 8086: instruction** execution timing, assembler instruction format, data transfer instruction, arithmetic instruction, branch instruction, loop instruction, NOP and HALT instruction, flag manipulation instruction, logical instruction, shift and rotate instruction, directives and operators, programming examples

SYLLABUS cont..

Section-C

- **Interface devices:** 8255 programmable peripheral interface chip: Architecture, control words, modes and examples.

Section-D

- Introduction to DMA process, 8237 DMA controller
- Interrupt and timer: 8259 PIC, programmable interval timer chips

INTRODUCTION

- The MICROPROCESSOR is the most important component of the digital computer. It acts as the brain of the computer.
- The Intel 8085 is an 8-bit microprocessor introduced by Intel in 1977. It was binary-compatible with the more-famous Intel 8080 but required less supporting hardware, thus allowing simpler and less expensive microcomputer systems to be built.
- The "5" in the model number came from the fact that the 8085 requires only a +5-volt (V) power supply rather than the +5V, −5V and +12V supplies the 8080 needed.

MICROPROCESSOR EVOLUTION

- The first microprocessor was introduced in the year 1971. It was introduced by Intel and was named Intel 4004
- Intel 4004 is a 4 bit microprocessor and it was not a powerful microprocessor. It can perform addition and subtraction operation on 4 bits at a time.
- However **Intel's 8080 was the first microprocessor to make** it to Home computers.
- It was introduced during the year 1974 and it can perform 8 bit operations.
- In 1976, Intel introduced 8085 processors which is nothing but an update of 8080 processors.
- 8080 processors are updated by adding two Enable/Disable Instructions, Three added interrupt pins and serial I/O pins.
- Intel introduced 8086 pins during the year 1976. The major difference between 8085 and 8086 processor is that 8085 is an 8 bit processor, but 8086 processor is a 16 bit processor.

Manufacturers

- Apart from Intel, there are some other manufacturers who produce the CMOS version of 8085 microprocessor. Such manufacturers are called second source manufacturers. Eg:
  - AMD
  - Mitsubishi
  - NEC
  - OKI
  - Toshiba
  - Siemens

Technology

- CMOS stands for **COMPLEMENTARY METAL OXIDE SEMICONDUCTOR. It is a technology** used in Microprocessors and Microcontrollers for making Integrated circuits.
- The devices which are made of CMOS have high immunity towards noise and the static power consumption is low.
- Intel later introduced 8087 processor which was the first math co-processor and later the 8088 processor which was incorporated into IBM personal computers.

Microprocessor Advantages

- It is cheap and cost of manufacture is low.
- They are very small in size.
- High Reliability
- High Versatility
- Power consumption is very low