

MICROPROCESSORS AND MICROCONTROLLERS

Course Objectives:-

To develop an understanding of the operations of microprocessors and microcontrollers; machine language programming and interfacing techniques.

UNIT - I

8086 Architecture

Topics to be covered:-

- 8086 Architecture - Functional diagram
- Register Organization
- Memory Segmentation
- Programming Model
- Memory addresses
- physical Memory Organization.
- Architecture of 8086
- Signal Descriptions of 8086
- Interrupts of 8086.

Instruction Set and Assembly Language

Programming of 8086:-

- Instruction Formats
- Addressing modes.
- Instruction Set.
- Assembly Directives
- Macros, Simple programs
Involving logical, Branch and Call Instructions,
Sorting, String Manipulations.

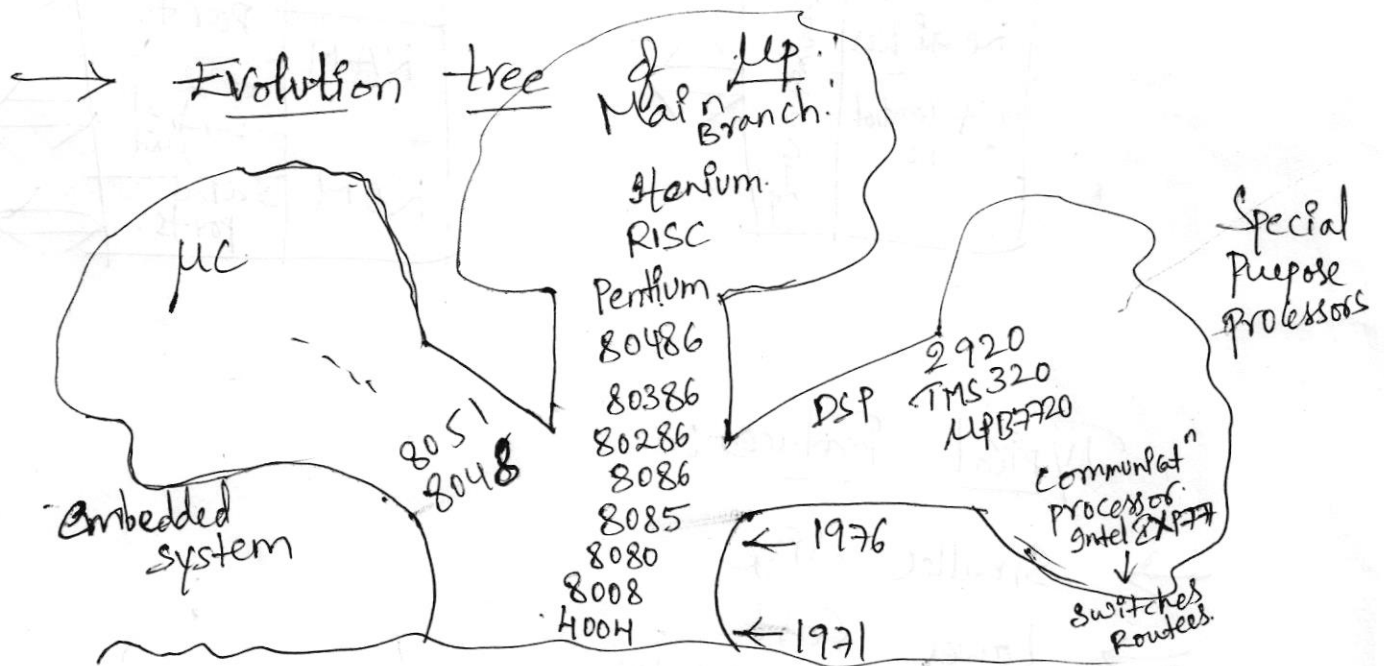
Introduction :-

A Microprocessor also known as a CPU or Central Processing Unit.
Intel released its first 4-bit microprocessor in 1971 as 4004 having 2300 transistors, 640 bytes of memory addressing capacity and a 108 KHz clock speed. The Intel 4004 was quickly replaced by 8-bit microprocessor as 8008.

Introduction to Microprocessors

→ Historical Background

- 1947 : Invention of Transistor (Ge, Si. Can carry electric current)
- 1959 : Invention of Integrated circuit (no. of tr's are fabricated on a Si chip)
- 1965 : Birth of Moore's Law (65,000 transistors)
- 1971 : Development of first MP (by Intel)
- 1976 : Introduction to MC.



Main branch: General purpose processors.

4 bit → 8-bit → 16-bit → 32-bit → 64 bit
 pipelining, Superscalars, Cache memory