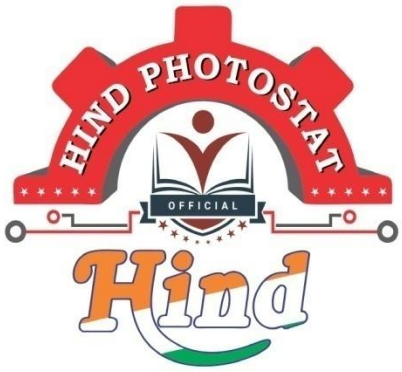

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ELECTRICAL ENGINEERING

Microprocessor

By.Vijay Sir

- Theory
- Explanation
- Derivation
- Example
- Shortcuts
- Previous Years Question With Solution

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1947 - Transistor

SSI → < 10 Transistor (small scale integration)

MSI → 10 - 100 Transistor (Medium scale —" —)

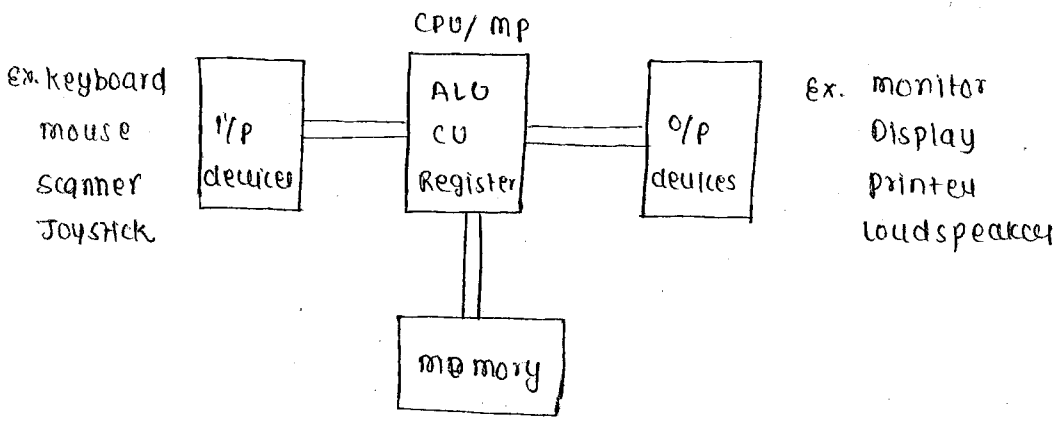
LSI → 100 - 10K Transistor (Large —" —" —)

VLSI → > 10K Transistors (Very large —" —) (L)

ULSI → ⋮

SLSI → ⋮

Block diagram of a computer



Microprocessor

It is a semiconductor component designed by using VLSI Technology and it contains ALU, CU and Registers of a CP.U in a single package

NOTE- for a microprocessor memory is connected exeternally, the Resistors inside the processor can not be considered as memory, As they are used to hold the data temperarily. Latest processor may have some memory inside to store frequently used data or instruction

Ex. Cache memory

Bit → Binary digit

→ 0/1

⊥ Nibble → 4 Bits

⊥ Byte → 8 Bits

word length → depends on type of up

Word length

No. of Bits that can be processessed by a processor parallely at a line

Ex. 8 Bit µp → 8 bits (word length) / 1 Byte

16 Bit µp → 16 Bits / 2 Byte

32-" → → 4 Bytes

1971 → Intel 4004 → 4 Bit µp

1972 → Intel 8008 → 8 Bit µp

1974 → Intel 8080 → 8 Bits µp

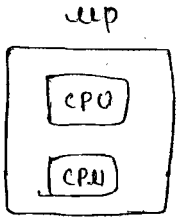
1977/78 → Intel 8085 → 8 Bit µp → Mate + IES

1979 → Intel 8086 → 16 Bit µp → IES

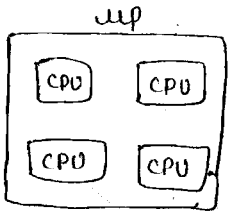
8088, 80186, 80286, 80386 [32 Bits]

PenHum ----- Dual core, ----- i_3, i_5, i_7 (64 Bit

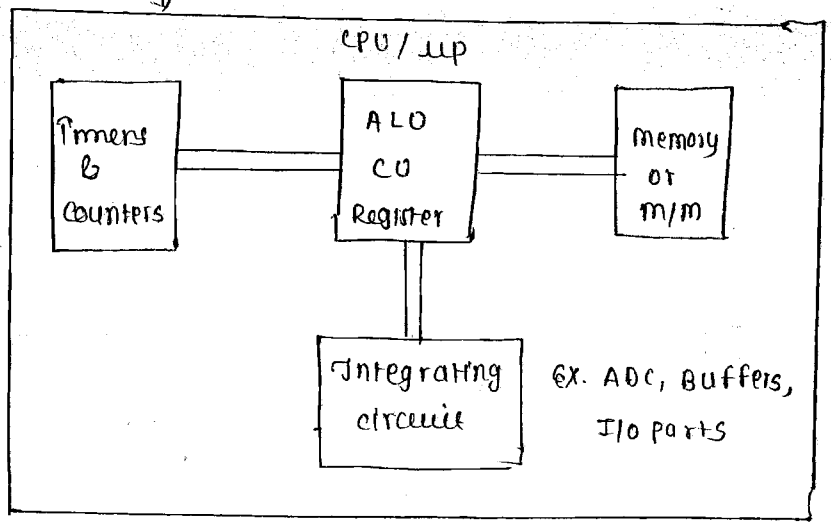
Dual core



Quad core



Micro controller

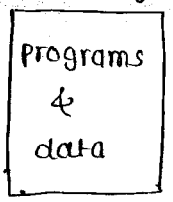
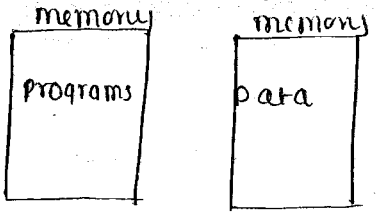


Microprocessor (µp)	Microcontroller (µC)
(1) It has ALU, CU, Register	(1) It has ALU, CU, Registers
(2) No Internal memory (m/m)	(2) has Internal /on-Board m/m
(3) No interfacing circuit's Timers / counters	(3) has interfacing circuit, Timers / counters
(4) used for general purpose application	(4) Used for specific purpose or application
(5) Ex. Intel 8085, iT, - mc 6800, Z-105 (Z80), AMD, Phillips, Toshiba, Qualcomm, national Semiconductors, Rockwell, fairchild	(5) Ex. TMS 1000 (4 Bit), Intel 8085 (8 Bit) Intel 80196 (16 Bit), PIC → 8 Bit & 16 Bit AT89C51, motorolla, phillips, Toshiba, Dallas semiconductors

Based on How programms and data are stored in the memory there are two types of Architecture

(1) Von-Neumann or princeton architecture

(2) Harvard Architecture

Von-Neumann or Princeton Architecture	Harvard Architecture
same memory for programme & data memory  Ex. Intel 8085 Intel 8086	seperate memory for programme & data (ROM) memory RAM memory  Ex. Intel 8051 (microcontroller)